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Personality, interests, and self-efficacy: The incremental validity of basic level constructs in discriminating among college majors and occupational aspirations

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Chapter 1: Introduction

Understanding how students make academic and career-related choices is an important area of vocational psychology. Researchers have examined the potential utility of many constructs for predicting the choice process, with individual differences measures of personality, interests, and self-efficacy frequently linked to academic and career choices (Rottinghaus, Betz, & Borgen, 2003; Betz, Borgen, & Harmon, 2006; Larson, Wu, Bailey, Gasser, Bonitz, & Borgen, 2010). Ultimately the goal of understanding the choice process is to help individuals maximize their educational and occupational success and satisfaction. The present study will compare the incremental validity of basic interests, personality facets, and basic self-efficacy with corresponding broad measures of personality, interests, and self-efficacy for discriminating among college majors and occupational aspirations.

The use of interest measures to predict career choices has a long tradition in vocational psychology (Armstrong & Rounds, 2008). Interests, defined as preference for activities and work environments (Rounds, 2005), are effective for predicting a variety of choice behaviors ranging from future occupational aspirations (Campbell, 1971; Hansen & Dik, 2005) to educational aspirations (Gasser, Larson, & Borgen, 2004). Interests have also been shown to predict the current major or current occupation of an individual (Donnay & Borgen, 1996; Gasser, Larson, & Borgen, 2007).

Self-efficacy has also featured prominently in the vocational choice literature. Self-efficacy, defined as people's beliefs about their ability to successfully complete particular tasks (Bandura, 1986), has been firmly supported as a predictor of both choice actions and choice goals. Self-efficacy for the RIASEC interest types have been found to predict major

choice (Bailey, Larson, & Borgen, 2004), educational aspirations (Rottinghaus, Lindley, Green, & Borgen, 2002), occupational choice (Donnay & Borgen, 1999; Betz, Borgen, & Harmon, 2006), and occupational aspirations (Bailey et al., 2004; Rottinghaus, Betz, & Borgen, 2003).

Personality, defined as the intrinsic organization of an individual's mental world, is what makes individuals unique and shapes the way we lead our lives (Piedmont, 1998). It too has been examined in the vocational arena, though not as extensively as interests and self-efficacy. De Fruyt and Mervielde (1999) found that personality was a valid predictor of the nature of employment for individuals in their sample, with Bailey et al. (2004) supporting personality as a predictor of occupational aspirations. Personality is also a valid predictor of choice of academic major (Ackerman & Beier, 2003; Bailey et al., 2004).

Each of these individual difference construct domains can be operationalized and measured at multiple levels of specificity. Interests, for example, are often measured for Holland's (1997) six RIASEC (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) types, a broad level of measurement. However, interests can be divided into a three level taxonomy, ranging from general to specific. Holland's RIASEC model divides interest into six general interest factors. In the middle of the taxonomy lies basic interests, which are composed of work activities grouped together to transcend specific situations or job descriptions by identifying shared properties of occupations such as context, setting, objects of interest, and processes. The other end of the taxonomy is classified by much more specific interests, generally called occupational interests, each consisting of a very specific set of work activities associated with a specific job title.

Similar to interests, self-efficacy can be divided into a taxonomy with different levels of specificity ranging from broad self-efficacy domains based on Holland's RIASEC taxonomy, to more domain specific measures of self-efficacy corresponding to basic interests, and also measures of self-efficacy associated with specific occupations. Varying levels of specificity can also be found for personality, with broad factors, such as the five factor model of personality (Goldberg, date), that can also be divided into a larger set of facet scales. It should be noted that although the intermediate levels of interests and self-efficacy measurement are typically referred to as *basic* scales, and for personality this level is referred to as *facets*, these two terms are effectively interchangeable and will be used as such throughout this document.

Much of research regarding personality, interests, and self-efficacy in the vocational literature assesses at the broad level, but researchers are recently beginning to recognize the incremental validity of facet level measures beyond that of broad trait measures. For example, basic interests have been found to have incremental validity beyond broad interests (as measured by the GOTs of the SII) in predicting college major (Ralston, Borgen, Rottinghaus, & Donnay, 2004; Gasser, Larson, & Borgen, 2007) and in predicting occupational group membership (Donnay & Borgen, 1996). Donnay and Borgen (1996) reported that basic interests predicted occupational group membership twice as well as broad interests, and suggested that these measures were more effective at representing the multidimensional nature of the career choice process.

Vocational research using measures of personality, interests, and self-efficacy has often focused on a single construct domain at a time (Armstrong & Rounds, 2008), but in recent years there has been a shift towards more integrative research that utilizes a

combination of constructs simultaneously in the prediction of vocational behavior and outcomes. Lubinski (2000) expressed his belief that the use of a constellation of individual difference variables creates a much richer picture of humanity and psychological diversity. A number of researchers have reached a consensus that the examination of multiple constructs at once enhances our understanding of vocational behavior and career development (Ackerman, 1999; Armstrong, Day, McVay, & Rounds, 2008; Borgen, 1999; Betz, 2008). In short, many of the behaviors and outcomes examined in vocational psychology are hypothesized to be multiply determined, thus it is not realistic to expect any single variable to fully explain important outcomes such as career choice.

Studies that have used various combinations of personality, interests, and self-efficacy to predict vocational outcomes have found support for the incremental concurrent validity of each of these constructs. Meta-analyses have shown that interests and self-efficacy are moderately related (effect size of .59; Rottinghaus, Larson, and Borgen, 2003), yet when examined together each clearly shows incremental validity over the other (Donnay & Borgen, 1999; Ralston, Borgen, Rottinghaus, & Donnay 2004). Despite some overlap between constructs, interests and self-efficacy each contribute uniquely to the prediction of occupational and college major choice (Armstrong, 2008). Personality has also been found to have incremental validity beyond self-efficacy and interests in discriminating between academic majors (De Fruyt & Mervielde, 1999; Betz, Borgen, & Harmon, 2006; Larson, Wei, Wu, Borgen, & Bailey, 2007; Larson, Wu, Bailey, Gasser, et al., 2010). Personality facets have been found to have incremental validity over broad personality factors for predicting academic major (De Fruyt & Mervielde, 1996). Incremental concurrent validity has also been found for basic self-efficacy beyond broad self-efficacy in predicting major

choice (Rottinghaus et al., 2003) and for occupational choice (Rottinghaus et al., 2003; Betz, Borgen, & Harmon, 2006). In short, research clearly supports the utility of simultaneous measurement of broad individual differences constructs to predict vocational outcomes.

An emerging area of research is the examination of the incremental validity of basic-level measures for predicting vocational outcomes. For example, Rottinghaus et al. (2003) found that basic self-efficacy predicted major and occupational choice incrementally beyond basic interests. Larson, Wu, Bailey, Borgen, and Gasser (2010) also examined both basic interests and basic self-efficacy, finding that combining both predictor sets predicted male and female students' college majors better than either basic interests or basic self-efficacy alone. They reported evidence for the incremental validity of basic self-efficacy beyond basic interests. However, the literature review conducted for this dissertation did not uncover any published research which truly addresses both issues, that is, the importance of measuring multiple construct domains and the incremental validity of using facet level measures of personality, interests, and self-efficacy. The present study seeks to fill this gap in the literature, examining all three constructs at the basic or facet level in their discrimination between college major and occupational aspirations. Each construct will also be assessed at the broad level in order to facilitate a direct comparison between the predictive utility of broad and basic level constructs. The present study will add to the understanding of the relationships between basic/facet level variables in addition to their incremental concurrent validity beyond broad level variables.

Chapter 2: Literature Review

Interests: The RIASEC Types and Basic Interests

Interests are a construct used to represent preferences for certain activities, behaviors, contexts for preferred activities, and the outcomes associated with the preferred activities (Rounds, 1995). Interests have long been used in vocational psychology to predict career choices (Armstrong & Rounds, 2008), as well as work satisfaction and job performance. Research on interests typically focuses on Holland's (1959, 1997) Theory of Vocational Personality Types. However, interest measurement can also be divided into three levels based on the specificity of the interest domain assessed (Hansen, 1984). Holland's interest theory would fall at the general interest factor level at one end of the spectrum, with specific occupational level on the other end, and basic interests as an intermediate level of aggregation falling between the two (Day & Rounds, 1997).

Holland's Theory of Vocational Interests

Over the years there have been a variety of models proposed to describe vocational interests, but Holland's (1959) model has received the most research attention over the past 40 years and has become the standard model for understanding vocational interests and environments (Borgen, 1986). In fact, Holland's RIASEC typology now dominates career counseling research and practice to the point where may be difficult to design a study that does not address his model (Borgen, 1986, Nauta, 2010, Rounds, 1995).

Holland's (1997) theory states that people and environments can be characterized into six personality types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. These types are referred to collectively by the first-letters acronym RIASEC,

and are often represented using a hexagon to reflect the degree of similarity between types (see Figure 1). Each type description represents a theoretical or ideal type that is characterized by a constellation of interests, preferred activities, beliefs, abilities, values, goals, self-beliefs, characteristics, and problem-solving styles. The types are seen as active in that they both seek and avoid certain environments, problems, and tasks.

Realistic. Individuals of the Realistic type prefer activities that include explicit, ordered, or systematic manipulation of objects, tools, machines, and animals. These individuals prefer Realistic occupations such as mechanic or farmer where preferred activities such as working with their hands or physical activities can be engaged in, and un-preferred activities such as working with people can be avoided. When solving problems individuals of this type may prefer concrete, practical, and structured solutions. Holland (1997) describes the personality of a Realistic type as conforming, materialistic, dogmatic, robust, persistent, and practical.

Investigative. Individuals in the Investigative type tend to prefer activities that include observational, symbolic, systematic, and creative investigation of physical, biological, and cultural phenomena in order to understand and control such phenomena. Individuals of this type tend to prefer occupations such as medical technologist or biologist in which they can exercise their preferred activities and unique skills. Investigative individuals often value scientific and scholarly activities, self-determination, and personal traits such as intelligence, logicalness, and achievement. Holland (1997) describes the personality of the Investigative type as being analytical, independent, rational, introspective, critical, and retiring.

Artistic. Those of the Artistic type prefer ambiguous, free, unsystematized activities that entail the manipulation of physical, verbal, or human materials to create art forms or

products. Occupations that Artistic individuals often prefer are interior decorator, writer, or actor. Holland (1997) describes the personality of the Artistic type as expressive, open, original, intuitive, liberal, nonconforming, introspective, independent, and disorderly.

Social. Individuals in the Social type prefer activities that entail the manipulation of others to inform, train, develop, cure, or enlighten. These preferences tend to lead to human relations competencies and a preference for occupations such as teaching and counseling. Social individuals want to serve and be helpful to others in situations such as medical support, institutional service, or reciprocal interaction. Holland (1997) describes the Social personality type as being helpful, responsible, empathetic, understanding, friendly, and generous.

Enterprising. Individuals of the Enterprising type prefer activities that entail manipulation of others to attain organizational goals or economic gain. These preferences lead them to acquire leadership, interpersonal, and persuasive skills. Managers and sales personnel are examples of typical Enterprising occupations. Holland (1997) describes the personality of the Enterprising type as somewhat aggressive, popular, self-confident, sociable, and possessing leadership and speaking abilities. They may view problems in terms of social influence, and apply their specific skills to problem solving.

Conventional. Individuals in the Conventional type tend to prefer activities that entail the explicit, ordered, systematic manipulation of data. Examples of this can be keeping records and filing materials. Conventional individuals are often in occupations such as bookkeeper or banker. When solving problems a Conventional individual is likely to use established rules, practices, and procedures. Holland (1997) also uses the adjectives

inflexible, persistent, methodical, obedient, efficient, and unimaginative to describe the Conventional personality type.

Holland (1997) noted that people tend to resemble more than one, and often, all, of the types to some degree. Therefore, an individual's vocational personality is a combination of several of the types. The pattern of each individual's types is called a sub-type, and is described by the first letter of each type in the order of magnitude for that person. More frequently, a "Holland code" composed of the highest three letters of the type code is used in assessment and intervention. In addition to people being characterized by combinations of the different types, the other main component of Holland's (1997) theory is the tenet that work environments can also be described on the basis of the six types, determined by the personalities of the people working in them and by the types of work activities in which people in those work environments typically engage in. Work environments can also be described in terms of summary codes, allowing for the study and comparison of people or groups with specific environments.

RIASEC Concurrent and Incremental Validity

While some research has focused on the theoretical construct of congruence in career choices, much research has also focused on more general concurrent validity of interests. De Fruyt and Mervielde (1996) sought to predict educational achievement from vocational interests. The study assessed 934 last-year students from two universities in Ghent, representing students from various majors/areas including Philosophy, History, and Languages, Law, Science, Applied Sciences, Economics, Psychology and Educational Sciences, Applied Biological Sciences, Political and Social Science, Electricity, and Architecture. The university evaluation system in Belgium has two exam periods at the end

of each academic year. If students do not pass their examinations in the first exam period, they can try a second time in a second examination period. Three outcome variables were used, including first exam period grades, final grades upon leaving the university, and total number of re-examinations during the study career.

For the first sample, scores on the Investigative scale and final grades were moderately positively correlated for the male sample. A negative correlation between first exam period grades and the Artistic scale, and a positive correlation with the Conventional scale was found for females. Some variation was also present for different majors. The civil engineer sample had a positive correlation between the Investigative scale and first exam results and final exam results, and a negative correlation with the total number of re-examinations. The Artistic scale had a reversed pattern of results. A positive correlation also existed for this group with final grades and the Conventional scale. None of the RIASEC measures were related to outcome behavior for the second sample.

Other researchers have sought to use vocational interests to predict level of educational aspirations (bachelor's degree, master's degree, and doctoral degree). Rottinghaus, Lindley, Green, and Borgen (2002) conducted a study aimed at exploring the incremental effects of personality, self-efficacy, and interest domains in predicting college students' educational aspirations. Their sample consisted of 365 undergraduate students enrolled in a large Midwestern university. The General Occupational Themes (GOTs) of the Strong Interest Inventory (Harmon et al., 1994) were used to measure vocational interests, the Skills Confidence Inventory (SCI) (Betz, Borgen, & Harmon, 1996) was used to measure participants' perceived level of confidence in each of the six RIASEC areas, and the Adjective Check List (Gough & Heilbrun, 1983) was used to measure the Big Five

personality factors. Hierarchical regression analyses were performed, with blocks of the Big Five, six General Confidence Themes, and six GOTs were entered to predict educational level. The R^2 rose from .10, to .26, to .29 with each block for the total sample. This indicates that interests make an independent contribution towards explaining the level of educational aspirations of students beyond personality and confidence.

Prediction of educational (major) and occupational choice has been a much studied area in terms of the predictive utility of interests. Two of Holland's main tenets are that people of different types search for different kinds of environments or work, as well as that environments seek people of congruent types. Lent, Brown, and Hackett (1994) presented a meta-analysis of studies which examined a variety of constructs related to Social Cognitive Career Theory, including interests and career choice. Interests were found to correlate .60 with career choice. These results indicate that interests appear important in determining career choice, however much of the research included in the meta-analysis focus on a relatively narrow range of interests (often only Realistic and Investigative types) which limits the generalizability of these results (Tracey & Hopkins, 2001).

Interests have been found to explain tenured and satisfied membership in an occupational group. Using both univariate ANOVA and multivariate discriminate function analysis, Donnay and Borgen (1999) demonstrated the explanatory power of vocational interest scale in predicting occupational group membership. The sample consisted of 1,105 individuals from the normative samples for the 1994 Strong Interest Inventory. Twenty-one occupations were represented among the sample, which were found to be representative of all six Holland types and included professional and nonprofessional careers. Interests were measured via the six General Occupational Themes (GOTs) of the 1994 Strong Interest

Inventory (Harmon et al., 1994). All six GOTs made a significant contribution to occupational group separation, accounting for 79% of the variance in occupational group membership. The set of GOTs classified occupational group membership at a rate 5 times greater than chance, clearly demonstrating the concurrent validity of interests for occupational group membership.

Tracey and Hopkins (2001) also found that interests had a high level of correspondence with occupational choice. Tracey and Hopkins used a sample consisting of 4,679 Grade 12 students from a nationally representative sample of 49 high schools. Interests were assessed via the UNIACT, a measure consisting of 90 activities to which participants were asked to indicate their liking on a 3-point scale. The items could then be scored on the six RIASEC types, as well as on the two bipolar dimensions of Things-People and Data-Ideas (Prediger, 1982). Occupational choice was assessed by having participants state their future job choice, review a list of 23 job families, and select the job family to which their future job choice corresponded. Each job family could also be coded on the Things-People and Data-Ideas dimensions. The researchers posited that representing interests and job family with two point codes is a more parsimonious representation than using a full RIASEC ordering, and more inclusive than using a three-letter high point code. Through examination of canonical and partial correlations, Tracey and Hopkins (2001) determined that the relation of interest scores to occupational choice (R^2) was .139, thus interest accounted for significant variance in occupational choice.

A study by De Fruyt and Mervielde (1999) investigated interests as a predictor of the nature of employment, as well as of employment status. With the use of ANOVA analyses, it was shown that employed individuals differed from unemployed individuals on two of the

RIASEC scales. Stepwise hierarchical multiple regression analysis indicated that vocational interest types significantly and substantially predict the nature of employment, explaining 7% to 24% of the variance. Employment in Realistic, Artistic, Social, and Enterprising environments were better predicted by the interest dimensions than employment in Investigative or Conventional job environments. This study also reported results supporting Holland's (1997) calculus assumption that people seek out environments congruent with their RIASEC profiles; the highest positive correlation coefficients were found between identical person-environment types. A gradual but significant decrease in the average correlations from identical to alternate RIASEC person-environment pairs was found, as well as significant negative person-environment correlations for types that were employed in alternate or opposite positions on the RIASEC hexagon.

In a study evaluating the concurrent validity of the 2005 Strong Interest Inventory, Gasser, Larson, and Borgen (2007) examined whether the General Occupational Themes (GOTs) could differentiate between college majors. Participants were 1,403 women and 469 men from the sample used in the 2005 Strong Interest Inventory revision. Analyses were first conducted on the sample of women, and the male sample was used for cross-validation. After elimination due to small sample size, 31 majors were used in the analysis. The GOTs correctly classified 15.5%, (12.1% when using a jackknife procedure). This indicates the GOTs correctly classified at a rate four times greater than chance, showing that they are useful in being able to separate college majors for women and men.

Larson, Wu, Bailey, Gasser, et al. (2010) examined the impact of interests on selecting a college major, looking at the role of personality, self-efficacy and interests. The sample consisted of 368 undergraduate students from a large Midwestern university. Using

discriminate function analysis, it was shown that all three sets of predictors significantly differentiated students' college major (Hit rate – 53.5%, jack knife hit rate – 33.7%), a rate three times greater than chance. The addition of the six GOTs increased the hit rate from 42.7% to 53.5%, and the jack knife hit rate from 29.3% to 33.7%. The findings of this study confirmed the importance of interests in selecting a major, as well as providing information about the importance of personality and self-efficacy.

Basic Interests

While Holland's model has been long accepted and used as the dominant model in interest assessment, it has also been suggested that the six RIASEC types are not enough to represent the whole range of individual differences in interests (Armstrong, Smith, Donnay & Rounds, 2004; Deng, Armstrong & Rounds, 2007; Donnay & Borgen, 1996). In comparison, basic interests are composed of work activities grouped together to transcend specific situations or job descriptions by identifying shared properties of occupations such as context, setting, objects of interest, and processes. In a three level taxonomy of interests, basic interests fall between the general level of broad interests and the specific end of occupational interests. By measuring interests at the Basic Interest level, it may be possible to provide a more accurate a picture of individual differences in interests (Rounds, 1995) and also improve the prediction of career choices and other work related outcomes.

Campbell, Borgen, Eastes, Johansson and Peterson (1968) developed the first set of widely used basic interest measures for the Strong Vocational Interest Blank over 40 years ago (SVIB; Campbell, 1971; Strong, 1943). The motivation behind the development of the Basic Interest Scales was the perceived weakness of the Strong Interest Inventory occupational scales in vocational counseling. The occupational scales were developed from

the interests of men in particular occupations, and Campbell et al. (1986) remarked that the heterogeneous content of the occupational scales made it difficult to expand and generalize the interpretation of results to other occupations. The Basic Interest Scales were developed as a set of homogenous content scales according to similarity of content, guided by item correlations and human judgment (Campbell, Borgen, Eastes, Johansson & Peterson, 1968), and provided a clearly interpretable pattern of work activities that a person likes and dislikes (Harmon, Hansen, Borgen & Hammer, 1994). Campbell et al. (1968) developed 23 basic interest scales named Adventure, Art, Business Management, Law/Politics, Mathematics, Mechanical, Medical Service, Merchandising, Military Activities, Music, Nature, Office Practices, Public Speaking, Recreational Leadership, Religious Activities, Sales, Science, Social Service, Teaching, Technical Supervision, and Writing. It was soon apparent that the basic interest scales did indeed complement the original occupational scales, and were useful in both counseling and research (Campbell & Borgen, 1999).

As the number of scales on the Strong Vocational Interest Bank (SVIB) increased with the addition of more basic interest scales, it became clear that some type of classification system was needed (Campbell & Borgen, 1999). During this time Holland was developing his formulation of broad vocational types, which came to the attention and interest of Campbell who suggested that scoring scales for each of Holland's six themes be developed for both the Men's and Women's forms of the SVIB. As such, Holland's RIASEC types were integrated into the SVIB as the General Occupational Themes just four short years after the Basic Interest Scales were added to the 1968 version of the Strong Vocational Interest Blank. Much attention was then shifted to this new set of scales, eclipsing basic interests despite how useful they can be (Day & Rounds, 1997). Despite the monumental

impact of the RIASEC types on the field of vocational psychology, researchers are beginning to recognize that sole emphasis on the RIASEC types has its limitations and an increased emphasis on the use of basic interest has occurred.

In addition to providing more general interpretation than occupational scales, and more specific interpretation than general interest scales, basic interests have also been argued to be beneficial due to the changing nature of occupational patterns in the world of work. While in the past many held a single job as an adult, or worked for a single organization throughout their career, this pattern has changed greatly in the twentieth century. Individuals are now likely to change jobs regularly, and even to change career paths. Even within one occupation workers must adapt frequently due to rapid technologic advances (Day & Rounds, 1997). Due to these changes, individuals no longer make just one primary career decision, but rather multiple across time. Rather than basing career decisions on a specific occupational title, focusing on a more general set of activities valued may be more useful. Therefore basic interests are likely best suited to assist individuals in making career decisions in the newly emerging vocational environment (Day & Rounds, 1997). See Table 2 for the basic interest scales used in the present study.

Concurrent Validity of Basic Interests

Basic interests are often discussed as subdivisions or facets of the RIASEC types, or at the very least organized into groups based on the RIASEC types, and have become neglected in both research and applied settings. An investigation into the concurrent validity and predictive structure of the personal style scales, general occupational themes, and basic interest scales of the 1994 Strong Interest Inventory by Donnay & Borgen (1996) provided evidence for the faulty nature of this common practice.

Donnay & Borgen (1996) utilized the general reference sample of the 1994 Strong Interest Inventory as their sample, analyzing their responses to the six Holland measures, 25 basic interest measures and four personal style scales designed to measure preferences for broad styles of working and living (Harmon et al., 1994). At the univariate level, results for all 35 variables were significant, indicating that each variable made a contribution to occupational group separation. At the multivariate level, results indicated that the explained percentage of variance in occupational group membership increased as the number of variables increased and the occupational specificity of variables in the predictor set increased. In other words, the narrow measures (i.e. basic interests) were more effective predictors of occupational group membership than were the broad measures of interests and personal styles. The hit rate for the personal style scales was 8.56, for the general occupational themes was 10.41, and for the basic interest scales the hit rate was 21.76. The basic interest scales clearly predicted group membership better than either the general occupational themes or the personal style scales, predicting twice as well as general occupational themes. Basic interests seem to more effectively deal with the reality of a complex multivariate space (Donnay & Borgen, 1996). In addition to the greater predictive ability of the basic interest scales, this study also showed that the content scales of the Strong not only validly predict occupational group membership, but may also do so with more parsimony and simplicity than the more specific occupational scales.

Another study by Ralston, Borgen, Rottinghaus, & Donnay (2004) also examined the concurrent validity of basic interest scales, with the criterion of major field of study rather than occupational group membership. Participants were 17,074 employed adults from the 1994 General Reference Sample of the Strong Interest Inventory. Three multivariate

discriminant function analyses were conducted, predicting major field of education with three successive sets of variables, the six GOTs, the 25 BISs, and a combination of the GOTs and BISs. The percentage of variance in major field of education or training explained was 51.52%, 76.69%, and 77.91% respectively for the GOTs, BISs, and combined. Hit rates indicating correct prediction of group membership were 14.3% for the GOTs, 24.0% for the BISs, and 24.7% for GOTs and BISs combined. Aside from the incremental validity of the basic interest measures, Ralston et al. (2004) also note that specific dimensions of interests represented by basic interest scales allow for more individualized feedback to clients of career counseling and more nuanced interpretation of interest assessments.

The Strong Interest Inventory (SII) was substantially revised in 2005 from the 1994 version, including an expansion of the Basic Interest Scales (BISs) from 25 to 30 measures. Gasser, Larson, & Borgen (2007) examined the concurrent validity of the revised SII for the criterion of college major. The sample was 1.403 women and 469 men who were taking college courses over the internet who were all full-time students from one of 31 different majors. Three discriminant analyses were performed, which indicated that adding the BISs significantly improved the correct classification of majors, and correctly classified better than the PSSs or the GOTs alone. Cross-validation with the men's sample indicated that same pattern of findings for the men and women.

These and other studies clearly indicate the ability of the basic interests scales in predicting both college major and occupational membership at broad levels. Rottinghaus, Gaffey, Borgen & Ralston (2006) examined this predictive utility at a more specific level, by examining the different career intentions of Psychology majors. Their sample of 183 women and 71 men expressed a range of career intentions, including research, psychological

practice, education, business, law, medicine, and military/law enforcement. While differences were found between the intention groups at the GOT level, the BISs provided a more refined differentiation than did the GOTs (Rottinghaus et al., 2006). Each intention group obtained its highest scores on BISs that were consistent with the content of their career intention, and additional differences emerged when the BISs were rank ordered for each group. These results have implications for both researchers and practitioners alike, highlighting the importance of considering more than just a three-letter Holland code, even for those with a general career direction already.

Personality: The Five Factor Model and Facets

Personality is the intrinsic organization of an individual's mental world that is stable over time and consistent across situations. It is a structured system through which people organize themselves, as well as orient to the world around them. Overall, personality is what makes us unique individuals and shapes the way in which we lead our lives. Personality as a construct has been researched for quite some time, but only in the late 1980s was any type of consensus reached. The 1980s were the home to a rapid convergence of views about personality, namely that most individual differences in personality can be understood in terms of five main dimensions (Digman, 1990; Costa & McCrae, 1992a).

Interpretations of the Personality Dimensions

Dimension One. While the number of dimensions is now well established, there is less agreement in terms of the meaning or interpretation of each dimension. The first of the "Big Five" dimensions is generally agreed on as corresponding to Eysenck's (1947) Extraversion/Introversion dimension (Digman, 1990), and is generally labeled simply as *Extraversion*. This dimension has a number of underlying components including; sociability,

activity, fun loving, affectionate, friendly, talkative, and the tendency to experience positive emotions such as joy and pleasure (Costa & McCrae, 1992b; McCrae & Costa, 1987). While most theorists agree on the general concept of Extraversion, with sociability at the core, disagreement about which elements are central versus which are peripheral exists. Sociability, cheerfulness, activity level, assertiveness, and sensation seeking all covary, but some have argued the need to differentiate sociability and assertiveness (Hogan, 1983).

Dimension Two. Dimension two has typically been interpreted as *Agreeableness* (Costa & McCrae, 1992b; McCrae & Costa, 1987). Altruism, nurturance, caring, sympathy and emotional support characterize one end of the dimension, with hostility, indifference to others, self-centeredness, spitefulness, callousness, cynicism and jealousy characterizing the other end. Some researchers have suggested alternative labels for this dimension, including Friendliness (Guilford & Zimmerman, 1949), Conformity (Fisk, 1949), and Friendly Compliance versus Hostile Noncompliance (Digman & Takemoto-Chock, 1981). This dimension been termed *antagonism*, with those high in antagonism seem to frequently set themselves against others, are mistrustful and skeptical, are callous and unsympathetic, and are uncooperative, stubborn, and rude. While the antagonistic end of the dimension is easily seen as problematic, extreme scores on the agreeable side of the dimension can also be maladaptive. Those extremely high in agreeableness may be dependent and fawning towards others, and can manifest in a neurotic manner (McCrae & Costa, 1987).

Dimension Three. The third dimension has been referred to as Will to Achieve (Digman & Takemoto-Chock, 1981), but is commonly termed *Conscientiousness.* A person high in conscientiousness is characterized as scrupulous, well-organized, careful, thorough, and diligent, and a person low in conscientiousness as lax, disorganized, and lackadaisical on

the other end (Costa & McCrae, 1992b). A number of adjectives with a more proactive direction are also descriptive, including: hardworking, ambitious, energetic, and persevering. These descriptors are emphasized with those who argue that Will to Achieve is a better label for the dimension.

Dimension Four. Dimension four is usually referred to as *Neuroticism versus Emotional Stability*, or just *Neuroticism*, and is probably the factor with the most agreement about interpretation (McCrae & Costa, 1987). This dimension represents an individual's tendency to experience psychological distress or negative affect (such as anxiety, depression, anger, or embarrassment), and lines up with the work of both Tellegen (1985) and Eysenck (1947). It can be defined with terms such as worrying, insecure, self-conscious, and tempermental. Virtually all theorists agree about the centrality of negative affect to neuroticism, but it also appears that the disturbed thoughts and behaviors that accompany emotional distress are also included in *Neuroticism* (McCrae & Costa, 1987).

Dimension Five. The fifth and final dimension has been interpreted in various ways, including Intellect (Goldberg, 1981; Hogan, 1983), Intelligence (Borgatta, 1964), and Openness (Costa & McCrae, 1985). More recently, the most common label for this dimension is *Openness to Experience* (Costa & McCrae, 1992b). This dimension appears to represent a domain of trait characteristics, including openness to feelings and new ideas, flexibility of thought, readiness to indulge in fantasy, cultural interests, educational aptitude, creative interests, inquiring intellect, and intelligence (Digman, 1990). Costa and McCrae (1992b) describe the high Openness person as imaginative, sensitive to art and beauty, have a rich and complex emotional life, intellectually curious, behaviorally flexible, and non-dogmatic in their attitudes and values.

Concurrent Validity of Personality Traits

Personality has been used to predict a wide variety of constructs and outcomes, including well-being, mental health, popularity, creative achievement, job performance, personnel selection, health behaviors, prejudice, and coping (McCrae & Costa, 2008). In the vocational realm, personality has been linked with career choice behaviors, other career-relevant individual differences (e.g., vocational interests, work values), and various aspects of career adjustment (e.g., satisfaction) (Tokar, Fischer, & Subich (1998).

The Big Five personality factors have been found to predict academic performance (O'Connor & Paunonen, 2007; Noftle & Robins, 2007; Cheng & Ickes, 2009). The Big Five factor *Conscientiousness* is the most strongly and consistently related across the literature, though the magnitude of the association has varied from small to quite substantial. *Openness to Experience* is sometimes positively associated with academic achievement, and *Extraversion* is sometimes negatively related. A few studies have found a negative association between *Neuroticism* and academic performance, and *Agreeableness* has been mostly unassociated in the literature (O'Connor & Paunonen, 2007).

Level of educational aspirations has also been linked with the Big Five. Rottinghaus, Lindley, Green and Borgen (2002) found that as a group the Big Five personality factors accounted for a significant amount of variance (10.0%) in educational aspiration level in a group of 365 college students. After controlling for the other personality factors, Openness to Experience was the only significant predictor of educational aspirations.

In a first study of the relationship between personality and college major satisfaction, Logue, Lounsbury, Gupta & Leong (2007) found that three of the Big Five traits were significantly and positively related to major satisfaction for 164 undergraduate business

majors: Conscientiousness, Extraversion, and Emotional Stability (*Neuroticism*). When entered into a multiple regression analysis, it was found that these three personality factors accounted for 15% of the variance in satisfaction with major. Similarly, it has been found that Neuroticism, Conscientiousness, and Extraversion were most highly related to job satisfaction in a meta-analysis by Judge, Heller, and Mount (2002).

Another vocational outcome that has been assessed in relation to personality is that of career success. Judge, Higgins, Thoresen, and Barrick (1999) argued that career success can be broken down into intrinsic success, or job satisfaction, and extrinsic success, or income and occupational status. With data obtained from the Intergenerational Studies, a set of 3 longitudinal studies following participants from childhood to retirement, found that intrinsic success (job satisfaction) was positively predicted by Conscientiousness. Judge and colleagues findings regarding job satisfaction differed from those of other researchers in that they did not find a significant relationship between Neuroticism or Extraversion and job satisfaction. The other portion of their study looked at the outcome of extrinsic success, measured by income and occupational status. Judge et al. (1999) found that low Neuroticism, low Agreeableness, high Extraversion, and high Conscientiousness were all associated with extrinsic career success.

A number of studies have also examined the role of personality in the choice of college majors, including De Fruyt and Mervielde (1996, 1999), Larson, Wei, Wu, Borgen, and Bailey (2007), and Larson, Wu, Bailey, Gasser, et al. (2010), and only two studies that looked at personality and career aspirations (Larson et al., 2007) or nature of employment (De Fruyt & Mervielde, 1999).

De Fruyt and Mervielde (1996) looked at how personality and interests differentiated among study majors. The sample consisted of 934 last-year students enrolled in two Universities in Ghent, from a variety of majors who completed a Dutch/Flemish adaptation of the NEO-PI-R (Costa and McCrae, 1992c) and the Self-Directed Search (Holland, 1977; 1979). Their findings showed broad and distinct differences in personality and interest across the range of majors included in the study. Participants in the behavioral/social sciences and humanities scored lower on Neuroticism, higher on Openness, and had the lowest Conscientiousness scores of all the groups. Students in the economic majors were highly extraverted and conscientious. However, in a discriminant analysis De Fruyt and Mervielde found that the five NEO-PI-R domain factors were only twice as good as random classification for predicting major group, and suggested that the Big Five domains were too general to distinguish academic majors.

Larson, Wei, Wu, Borgen and Bailey (2007) conducted a study to discriminate among educational majors and career aspirations in Taiwanese students. Participants were 312 Taiwanese college students from four Taiwanese universities. Personality was assessed with the NEO-FFI (Costa & McCrae, 1992c) a short form of the NEO-PI-R that was translated by the authors. Through use of discriminant analysis, it was shown that the five personality factors significantly differentiated participants' college majors for men and for women, with a hit rate of 45.1% for men and 38.5% for women. These hit rates indicate that the personality factors differentiated college majors at a rate greater than chance (25%). After controlling for sex, the five personality factors also significantly predicted participants' career aspirations with a hit rate of 34.6%, a rate significantly greater than chance, indicating that personality is a valid predictor of occupational aspirations.

Larson and colleagues conducted another study examining the role of personality in the choice of a major with a U.S. sample and a different measure of personality. Larson, Wu, Bailey, Gasser, et al. (2010) utilized the Multidimensional Personality Questionnaire (MPQ; Tellegen, 2000), a personality measure with 11 primary scales that includes markers for the Big Five and additional traits. Participants were 368 undergraduate students from a large Midwestern university, who were selected for inclusion in the study because they were decided in their major. A discriminant function, controlling for sex and including all 11 MPQ scales, indicated that sex and personality as a set significantly differentiated nine college majors with a hit rate of 28% and a more conservative jack knife hit rate of 18.5%. The squared canonical correlation for this effect was .164, indicating that 16.4% of the variance in the first discriminant function was explained by sex and personality. Overall this study showed that personality is able to discriminate among major families at a rate significantly better than chance, and that certain personality factors are more important to this differentiation than others.

One final study examined the influence of personality on career choice, or nature of employment specifically. De Fruyt and Mervielde (1999) investigated the validity of the Five-Factor Model of personality to predict the nature of employment in a sample of newly graduated participants as they entered the work force. The sample consisted of 934 graduates from various majors who completed the NEO-PI-R (Costa & McCrae, 1992c) while in school, and one year after graduation reported their labor market position. The FFM was found to explain between 4% and 5% of the variance in nature of employment. Personality factors were found to be related to the occupational/environment types. Extraversion was related to employment in Enterprising, Social, and somewhat to Conventional environments.

Openness was positively correlated to being employed in Social, Artistic, and Enterprising environments, but negatively associated with Realistic environments. Conscientiousness was negatively related to working in Artistic environments, but positively with the Enterprising, Conventional, and Realistic environments. Neuroticism was not significantly related to any of the environmental types (De Fruyt and Mervielde, 1999).

Personality Facets

A number of researchers have criticized the five factor model, some arguing that five factors are too many while others arguing that five factors are too few. Evidence has been provided showing that many personality traits exist that are not accounted for by the five factor model, such as conservativeness, honesty, conceit, and humorousness (Paunonen and Jackson, 2000), and many argue that if one requires a more differentiated and detailed perspective of personality that the FFM may not be ideal (Briggs, 1989; Buss, 1989). However, there is little agreement in the field regarding the optimal number of narrow traits to be measured and the current method of choice seems to be an arbitrary process (Goldberg, 1993). Personality has been viewed as various levels of abstraction for quite some time, with Norman (1967) delineating a four levels of abstraction with the Big Five at the fourth and highest level of abstraction, an intermediate level consisting of characteristics, scales, and facets, a lower level composed of habits, act frequencies, or behavior aggregates, and a lowest level consisting of specific responses in specific situations (Digman, 1990).

One of the proposed approaches to the identification of narrower personality traits conceptualizes the five factor model as a hierarchical model where each broad factor or domain can be divided into a set of more numerous, narrow, and specific traits called facets. For example, Costa and McCrae (1995) define personality domains as multifaceted

collections of specific cognitive, affective, and behavioral tendencies that might be grouped in many different ways, and declare the use of the term *facet* to designate the lower level traits corresponding to these groupings. Noting that the number of ways to identify specific traits within a domain is virtually limitless, Costa and McCrae lay out a method for faceting domains to maximize meaningfulness of the facets. They argue that facets should represent closely co-varying elements within a domain, not an arbitrary combination of elements. They also argue that facets should be mutually exclusive, with each element assigned to only one facet. Other criteria they put forth is that facets should be of comparable scope and breadth in content, and that the domain being faceted should be comprehensively covered. And finally, stating that facets should be as consistent as possible with existing psychological constructs as supported in empirical literature (Costa and McCrae, 1995). Following the above methodology, Costa and McCrae (1992c) identified six facets for each Big Five personality domain, and which are assessed via the Revised NEO Personality Inventory (NEO-PI-R). A list of the facets associated with each of the FFM traits is provided in Table 3.

Incremental Validity of Personality Facets

The concurrent validity of personality facets has not been as well researched as that of broad personality domains, but research has linked personality facets with health behaviors, prejudice, work ethic, job performance, and over 40 various behavioral criteria. In the vocational field, personality facets have been looked at in relation to academic performance, major satisfaction, and educational streaming.

In a review and meta-analysis of the literature regarding personality as a predictor of post-secondary academic performance, O'Connor and Paunonen (2007) described the predictive power of personality facets, though the number of findings in the literature was too

low to conduct meta-analyses on. All six facets of the Conscientiousness domain have been found to be positively associated with academic success, though the strength of the association varies across facets. Achievement-striving and self-discipline have been the strongest and most consistent predictors of academic performance, with correlations ranging from r = .15 to r = .39 for achievement striving and from r = .18 to r = .46 for self-discipline. The facet of dutifulness has also been found as a predictor in some research, with correlations ranging from r = .25 to r = .38, while the remaining three facets have been found to play a smaller role in the prediction of academic performance.

Logue, Lounsbury, Gupta and Leong (2007) conducted a study assessing the relationship between personality and major satisfaction for a sample of 164 undergraduate business majors, reporting several positive associations between personality and major satisfaction. In addition to finding that the Big Five factors of Conscientiousness, Extraversion, and Neuroticism were positively related to major satisfaction, they also found that the facets of Optimism, assertiveness, and work drive were also positively related. Logue et al. (2007) also reported that a combination of Big Five factors and personality facets accounted for an optimal amount of variance in major satisfaction over and above either by themselves.

Using discriminant analysis to assign students to academic majors based on personality scores, De Fruyt and Mervielde (1996) reported that the five personality factors were only twice as good as chance at predicting academic major (correctly classifying 11.7%), whereas the total hit rate increased to 28% for the 30 personality facets. De Fruyt and Mervielde also used vocational interests as a predictor in their study, both broad and basic interests, similar to personality factors and facets. They reported predictive power for

various combinations of all the predictors, reporting that a combination of basic interests and personality facets (both narrow level) were the best predictors of study major overall, correctly classifying over 50% of participants. The NEO-PI-R facet scales increased the assignment rate by about 15%, indicating their strength as a predictor of academic major.

O'Connor and Paunonen (2007) reviewed the research on the relative predictive utility of Big Five factors versus facets and concluded that personality facets are more accurate predictors of academic performance than broad personality factors. For example, Rothstein et al. (1994) examined the Big Five and facets as predictors of academic performance in an MBA program, reporting that none of the Big Five were significantly correlated with overall GPA, whereas two facets (achievement and dominance) were able to predict GPA (r = .21 and r = .22 respectively). Looking at a more specific measure of academic achievement, classroom performance, Rothstein and colleagues provided further evidence that facets are better predictors of academic achievement. For classroom performance, the Big Five trait of Extraversion was positively correlated, but one of its facets, exhibition, was an even stronger predictor (r = .19 versus r = .33). Results were similar for Agreeableness and its facet of dominance, as well as the factor of Conscientiousness and it's facet of achievement. Chamorro-Premuzic and Furnham (2003a) conducted a similar study with a sample of undergraduate students. For both Neuroticism and Extraversion, there were facets that significantly predicted GPA, despite the fact that the corresponding Big Five measures were not significant.

Paunonen (1998) examined the incremental concurrent validity of personality facets over the Big Five for the criterion of academic performance in two studies, using a more conservative alpha level to address the Type I error problems associated with having more

facets that factors. In the first, they found that the Big Five accounted for 6% of the variance in GPA, whereas the personality facets increased the prediction substantially with the facet of achievement accounting for an additional 7.2% of the variance. In the second study, they found that the Big Five did not predict GPA, whereas the facet of responsibility was able to account for 5.8% of the variance in academic performance. Both of these studies suggest that personality facets increase the prediction of academic performance over the Big Five factors significantly, accounting for 5-7% of additional criterion variance.

Paunonen and Ashton (2001a) took another approach to the Type I error issue by comparing only one Big Five factor with one personality facet, specifically Conscientiousness with achievement, and Openness with need for understanding, in the prediction of final course grade. Results were similar to those of Rothstein et al. (1994), with the factor of Conscientiousness being a positive predictor, but the facet of achievement being a stronger predictor. For Openness, the factor level was not a significant predictor, but the facet of understanding was significant.

Another study by Paunonen and Ashton (2001b) examining the incremental concurrent validity of personality facets used two sets of facet scales judged to be most likely to be predictive of academic performance. The first set was drawn from the trait scales of the PRF and JPI, and the second set were drawn from the NEO-PI-R. Hierarchical regression analyses indicated that while the five PRF-JPI facet scales were unable to account for any significant variance in GPA over the Big Five factors, the five NEO-PI-R facet scales accounted for an additional 6.3% of the variance in GPA beyond that accounted for by the Big Five. Overall, research supports the incremental validity of personality facets over broad personality factors for predicting academic outcomes.

Self-Efficacy: Broad and Domain-Specific Measures

Bandura's (1977, 1986) construct of self-efficacy, defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance" (Bandura, 1986, pg 391), has become a central construct in vocational psychology since its introduction to the field by Hackett and Betz (1981) and its integration into Social Cognitive Career Theory by Lent, Brown, and Hackett (1994). Bandura (1986) proposed that self-efficacy mediates the relationship between knowledge and action, and influences a person's motivation and behavior, their interest in specific tasks, and the outcomes expected from certain behaviors. Self-efficacy influences an individual's intention to persevere or give up at a certain task, and hence influencing future behavior by increasing or decreasing exposure to new and challenging tasks. Self-efficacy beliefs were described as task or domain specific, and likely to vary drastically from task to task. For example, one might have high self-efficacy about their ability to play piano or play soccer, but have low self-efficacy about their ability to play the oboe or play basketball.

Social Cognitive Theory in Vocational Psychology

Betz and Hackett (1981) were the first researchers to examine the relationship between career self-efficacy and the nature and range of perceived occupational alternative for men and women. A sample of 134 female and 101 male undergraduate students were asked to rate their perceptions of their ability to successfully complete the educational requirements and job duties for 10 traditionally female and 10 traditionally male occupations. Participants also rated their interest in and consideration of each occupation, and ACT Math and English subtest scores were obtained. Betz and Hackett (1981) found significant and consistent sex differences in self-efficacy for gender traditional or non-traditional

occupations. Men reported equivalent self-efficacy for traditional and non-traditional occupations, whereas women reported lower self-efficacy for non-traditional occupations and higher self-efficacy for traditional occupation. Self-efficacy beliefs were also significantly related to the type and number of occupational considerations, and to expressed interest in traditional and non-traditional occupations. This research firmly established the relationship of self-efficacy to the career choice process, highlighting the possibility of low self-efficacy leading to the elimination of possible career options.

Lent, Brown, and Hackett (1994) applied the concept of self-efficacy to the career domain, expanding the social cognitive model to explain career and academic outcomes. Their theory, titled Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994) was intended to be a unifying framework for many important vocational constructs including self-efficacy to explain how people develop vocational interests, make occupational choices, and achieve career success and stability. SCCT is rooted in Bandura's (1986) social cognitive theory, also highlighting the importance of person variables (self-efficacy beliefs, outcome expectations, and personal goals). Lent (2005) proposed that by focusing on changeable and responsive factors, SCCT is complementary to trait-factor approaches and fills certain gaps those theories may have. Similarly, he suggests that developmental theories tend to focus on specific ages or specific stages of career development, whereas SCCT emphasizes factors which promote or hinder effective career behavior across developmental stages.

Domain Specificity of Self-Efficacy

Self-efficacy is a cognitive appraisal or judgment about future behavior, which is somewhat different from trait concept variables such as personality or interests. Self-efficacy is domain specific, and therefore must be measured against a specific type of behavior (Betz,

2008; Bandura, 2005). To study self-efficacy, one must first ask *self-efficacy for what?* A specific construct such as 'career self-efficacy' must be linked to particular behaviors as it serves merely as an umbrella term for self-efficacy beliefs about career-related behavioral criterion (Betz & Hackett, 2006). In a guide to assist in the measurement development process, Lent and Brown (2006) described a four-category system to organize self-efficacy measures: content or task-specific self-efficacy, coping self-efficacy, process self-efficacy, and self-regulatory self-efficacy. *Content or task-specific self-efficacy* is defined as beliefs about one's ability to perform specific tasks to success in a give domain under normative conditions. *Coping self-efficacy* is defined as beliefs about one's ability to negotiate domain-specific obstacles. *Process self-efficacy* is defined as beliefs about one's ability to manage generic tasks necessary for career preparation, entry, adjustment, or change across various occupational paths. Finally, *self-regulatory self-efficacy*, is perceived ability to perform self-enhancing behaviors despite deterring conditions, such as study or manage time.

Various types of self-efficacy are at differing levels of specificity residing along a continuum (Lent & Brown, 2006a). From global to specific, self-efficacy can be studied in relation to global occupational functioning, broad occupational clusters, a given occupational/educational field, subfields of subspecialties within a larger field (e.g. surgeon, special education teacher), or to more specific activities or skills required for an occupation. Lent and Brown (2006) argued that at the most global level self-efficacy may overlap with trait-like variables such as locus of control or generalized self-efficacy, and therefore may not be the most useful. Yet at the most specific level, the construct may lack relevance to practical applications. Much research has been conducted with the math/science or engineering domains, both of which fall towards the upper end of the continuum without

being at the most global level (Betz & Hackett, 2006). Research has recently expanded to other domains, including social science, English, Art, and math. A good portion of career self-efficacy research has also focused on measures based on the RIASEC typology.

Concurrent Validity of Self-Efficacy

Major Choice. Several researchers have focused on testing the SCCT postulates regarding self-efficacy and choice of academic major. In particular, SCCT hypothesizes that self-efficacy will be both directly and indirectly predictive of choices. A study by Lent, Brown, Brenner, Chopra, Davis, Talleyrand, and Suthakaran (2001) examined math self-efficacy and future enrollment intentions in a sample of 111 college students taking a psychology class. Using a hierarchical regression analysis, Lent et al. (2001) found that the relationship between self-efficacy and major choice was fully mediated by interests and outcome expectations.

Two other studies by Lent and colleagues assessed college students enrolled in an introductory engineering course, and assessed their self-efficacy for technical/scientific fields, technical interests, and intentions to pursue an engineering major. Lent, Brown, Schmidt, Brenner, Lyons, & Treistman (2003) found that self-efficacy was significantly related to choice goals directly, as well as indirectly through interests, which in turn related to choice goals. Similar results were found by Lent, Brown, Sheu, Schmidt, Brenner, Gloster, Wilkins, Schmidt, Lyons and Treistman (2005).

Nauta and Epperson (2003) conducted a four year longitudinal study to explore the ability of self-efficacy to predict major choice as well as the reciprocal nature of SCCT constructs. Through use of structural equation modeling, it was found that high school science, math, and engineering (SME) self-efficacy predicted interests, which predicted

choice of a SME major. All of these studies support the importance of self-efficacy in predicting major choice.

Another approach for establishing the concurrent validity of self-efficacy is to use efficacy-based measures to discriminate between educational majors. Larson, Wei, Wu, Borgen, and Bailey (2007) examined a sample of 312 Taiwanese college students in the majors of finance, counseling and guidance, mechanical and electrical engineering, and pharmacy. The authors examined how both self-efficacy and personality could be useful in discriminating between majors. Discriminant analysis indicated that self-efficacy was able to significantly discriminate among participants' college majors for both men ($p < .001$) and women ($p < .001$), with hit rates of 53.4% and 54.7% respectively (Larson et al., 2007).

Larson, Wu, Bailey, Gasser, et al. (2010) examined the extent to which personality, interests, and self-efficacy discriminated between students with different majors. Discriminant function analyses were conducted for four models, the first including participant sex, the second including sex and personality, the third including sex, personality, and self-efficacy, and the fourth and final including sex, personality, self-efficacy, and interests. Each model predicted major family at a rate greater than chance, with hit rates as follows: 13.6%, 28%, 42.7%, and 53.5% for models one through four respectively. The model including all study variables was the most predictive, correctly classifying over half of participants. For the combined model, the first discriminant function separated engineering majors from the humanities. The second function discriminated between computer science/accounting and business majors from the physical and biological science majors. The third function separated Architecture/design majors from elementary education majors. The fourth function differentiated between the computer science/accounting majors from the

business majors. The fifth and final function discriminated between elementary education majors and social science majors. The importance of personality, self-efficacy and interests in predicting choice goals and actions was supported in this study, as well as the SCCT tenets that self-efficacy and interests are more proximal determinants of choices than personality.

Occupational Consideration/Choice. Researchers have also examined the hypothesized relationships between self-efficacy and choice in the occupational realm, with varying results. Fouad, Smith, and Zao (2002) sought to test the SCCT tenets across academic domains since so much research has focused only on the math and science realms. Four subject areas were addressed, including math/science, art, social studies, and English, with scales developed to measure self-efficacy, outcome expectations, intentions and goals, and interest in each of the four subject matters (total of 16 scales). Through structural equation modeling, results indicated found that the SCCT model functioned similarly across subject areas and across gender. For the math/science, social studies, and art subject matters the relationship between self-efficacy and occupational intentions (choice goals) was fully mediated by interests. However, for the English area there was a partially mediating relationship with interests.

Lent, Brown, Nota, and Soresi (2003) conducted a study testing social cognitive constructs with a younger sample of 796 high school students from Italy representing five grade levels. Self-efficacy, outcome expectations, interests, social supports and barriers, and choice considerations of occupations were assessed, though only self-efficacy, interests, and choice considerations will be discussed here. Each of these variables was assessed via a set of 42 occupational titles, with the prompt varying from level of confidence in their ability to be a successful worker in that field, to how interested in the activities associated with the

occupation, to how seriously they would consider the occupation for themselves. Structural equation modeling analyses identified only two significant direct paths between self-efficacy and choice consideration for the Artistic and Investigative types. Interests fully mediated the relationship between self-efficacy and choice consideration for the other four types. The finding that the nature of the mediating effect of interests varies across Holland type may help explain conflicting results in the literature regarding interest-efficacy associations.

Larson et al. (2007) examined the usefulness of self-efficacy (and personality) in discriminating among groups using career aspirations. Discriminant analyses revealed that self-efficacy and sex were significantly predictive of participants' career aspirations, with a hit rate of 42.6%, a rate almost three times greater than chance. Two main functions were found, with the first discriminating engineering aspirations from guidance, accounting, and teaching aspirations. The second function separated those with entrepreneurial and finance/investing aspirations from teaching and guidance aspirations.

Donnay and Borgen (1999) examined the incremental validity of self-efficacy beyond the concurrent validity of interests in identifying satisfied membership in 21 occupational groups. Their results indicated that all six SCI and all six GOT scales made significant contributions in separating occupational groups. Discriminant function analysis showed that both interests (hit rate = 25.7%) and self-efficacy (hit rate = 30.3%) were valid discriminators of occupational membership, also established the incremental concurrent validity of self-efficacy over interests, illustrating importance of assessing both constructs.

Basic Self-Efficacy

Self-efficacy is a domain specific construct, and can be assessed for domains of varying levels of specificity. Much research in this field has focused on self-efficacy

measures designed to represent the Holland RIASEC types. However, parallel to the debate in the interest literature regarding the relative merits of RIASEC interest measures versus basic interests, it has been proposed that using a set of narrowly focused basic self-efficacy measures would be preferable to broad Holland-based measures. For example, Betz et al. (2003) developed a set of 17 basic self-efficacy scales, referred to as the Expanded Skills Confidence Inventory (ECSI). See Table 4 for a brief description of each scale.

Concurrent Validity of Basic Self-Efficacy

Major Choice. The concurrent validity of basic self-efficacy with and beyond interests in predicting student's choice of college majors was addressed by both Rottinghaus et al. (2003) and Larson, Wu, Bailey, Borgen, et al. (2010). These appear to be the only two studies in the literature to have addressed this issue with college major to date.

Rottinghaus et al. (2003) used discriminant function analyses to answer the question about the incremental concurrent validity of basic self-efficacy. Six functions were conducted for the criteria of college major clusters. The six General Confidence Themes of the SCI, the 17 Basic Confidence Scales of the ESCI, the six General Occupational Themes and 25 Basic Interest Scales of the SII were each run separately as a predictor set.

As a single predictor set, the 25 BISs contributed the most as a predictor, correctly classifying 53.7% of participants, and explaining 84.8% of the variance in college major cluster. The 17 BCSs were also a significant predictor set, correctly classifying 40.4% of participants and explaining 70.9% of the of the variance. The BCSs provided incremental validity beyond BISs, increasing the hit rate from 53.7% to 61.6%, and the variance explained from 84.8% to 90.9%. The BCSs also provided incremental concurrent validity

beyond the GCTs, increasing the hit rate from 29.9% to 30.8%, and the variance explained from 49.4% to 74.6%.

Analyses yielded seven significant discriminant functions. The first function separated the biological/physical science and social science majors from the financial management, engineering/computer science, and enterprising majors. The second discriminant function separated engineering/computer science and biological/physical science majors from media, applied arts, and teaching majors. Rottinghaus et al. (2003) reported that the remaining five functions contained content which distinguished the remaining college major groups from each other, but did not describe those functions in detail. However, it is apparent that basic self-efficacy is a strong predictor of college major choice, even above and beyond them impact of broad efficacy and basic interests.

Larson, Wu, Bailey, Borgen et al. (2010) examined both basic self-efficacy and basic interests in predicting college students' majors, with the added emphasis on whether basic self-efficacy and interests would function differentially in discriminating among majors. The hypothesis that basic self-efficacy would significantly discriminate among majors was supported. BCSs were significant in differentiating between college majors for both men and women with a hit rate of 48% for men and 50.08% for women, both at a rate four times greater than chance.

For men, four significant discriminant functions were identified by Larson, Wu, Bailey, Borgen et al. (2010). The first function separated engineering majors from humanities majors. The second function discriminated between humanities majors and business majors. Physical and biological science majors were separated from the architecture/design majors in

the third function. The final discriminant function separated architecture/design majors from computer science/accounting majors.

For women, five significant discriminant functions were found. The first function separated architecture/design majors from physical and biological science majors. The second function discriminated between engineering and SEP majors from the humanities, while the third function separated engineering majors from computer science/accounting majors. Business majors were separated from computer science/accounting majors in the fourth function, the only function to have a basic self-efficacy contributor for women. The final function discriminated between engineering majors and science majors. The results of Larson, Wu, Bailey, Borgen et al. (2010) clearly demonstrates the power in examining gender and major, and the authors encouraged researchers to examine their hypotheses separately by gender in the future.

Occupational Choice. Several authors also addressed this concurrent validity question with the criterion of occupational choice. In the original development article, Betz et al. (2003) examined the BCS scores of eight occupational groups. Discriminant analyses revealed large differences across the occupational groups in BSC scores, and for each occupational group, correct classification (hit rates) occurred at a rate significantly greater than chance.

Four discriminant functions were found, with the first labeled a technology/mathematics function and accounting for 39% of the variance. This function was characterized by strong positive loadings by using technology, mathematics, data management, mechanical, and science, with negative loading for helping and cultural sensitivity. The second function accounted for 28% of the variance, and was defined by sales

and helping others, with a large negative loading for writing. The third function, defined by positive loadings on science, teaching/training, and cultural sensitivity, accounted for 17% of the variance. The fourth and final function accounted for 5% of the variance, and was characterized by positive loadings of public speaking, leadership, teamwork, office services, and organizational and data management.

Rottinghaus et al. (2003) examined the use of basic interests and basic self-efficacy to predict expressed career choices. As a single predictor set, the 25 BISs contributed the most as a predictor, correctly classifying 51.0% of participants, and explaining 91.4% of the variance in career plan clusters. The 17 BCSs were also a significant predictor set, correctly classifying 38.6% of participants and explaining 78.5% of the of the variance. The BCSs, when combined with the BISs, provided incremental validity, increasing the hit rate from 51.0% to 62.0%, and the variance explained from 91.4% to 95.7%. The BCSs also provided incremental concurrent validity beyond the GCTs, increasing the hit rate from 30.5% to 43.4.8%, and the variance explained from 60.0% to 83.0%.

Analyses yielded eight significant discriminant functions for career plan clusters. The first discriminant function separated those interested in biomedical science and allied health professions from those interested in financial management, engineering/computer sciences, or enterprising fields. The helping BCS was the only BCS with a positive loading on this function, and using technology was the only BCS with a negative loading. The second function discriminated engineering/computer science plans from teaching and media career plans. Science BCS and mathematics BCS both loaded positively on this function, while no BCSs loaded negatively. Rottinghaus et al. (2003) reported that the remaining six functions contained content which distinguished the remaining career plan clusters from each other, but

did not describe those functions in detail. However, it is apparent that basic self-efficacy is a strong predictor of career plans, even above and beyond them impact of broad efficacy and basic interests.

Betz, Borgen, and Harmon (2006) examined the extent to which basic confidence measures have incremental validity over RIASEC based confidence for the prediction of occupational group membership. In this study both RIASEC-based and basic self-efficacy measures were significant predictors of occupational group. The GCTs correctly classified 26.8% of participants, explaining 79.6% of the variance. The BCFs were an even stronger predictor set, with a hit rate of 42% and accounting for 92.2% of the variance. Additionally, it should be noted that the hit rate of the BCFs varied greatly across occupations. It was high for occupations such as life insurance agent and business education teacher, but very low for occupations like recreation leader and gardener/groundskeeper. Misclassifications did tend to be within the same Holland theme area. For example, chemists and physicists, both Investigative occupations, were often misclassified as each other. Also evident from these results is the incremental predictive power of basic self-efficacy over broad self-efficacy.

Links between Personality, Interests, and Self-efficacy

Relationship between Interests and Self-Efficacy

Interests and self-efficacy are two non-cognitive individual difference variables that have featured prominently in vocational research over the year, both having been found to be significant predictors of career related outcomes such as career choice, performance, and satisfaction. In their seminal article on Social Cognitive Career Theory (SCCT), Lent, Brown, and Hackett (1994) included a brief meta-analytic review of research reporting

interest-efficacy correlations finding a mean correlation of r = .53 for the relationship between self-efficacy and interests.

Rottinghaus, Larson, and Borgen (2003) conducted a more comprehensive meta-analysis of the interest-efficacy correlation, including data from 60 independent samples (N = 39,154), 53 of which involved parallel measures of interests and self-efficacy. Many of the studies included utilized the Strong Interest Inventory in conjunction with the Skills Confidence Inventory (parallel measures), while others used the Campbell Interest and Skills Survey. An average weighted effect size of .59 was found for the relationship between interests and self-efficacy, accounting for 35% of the variance between variables (Rottinghaus et al., 2003). An effect size of this magnitude suggests that self-efficacy and interests can be viewed as independent constructs with ample opportunity to be incrementally predictive of vocational constructs and outcomes (Betz & Rottinghaus, 2006).

Rottinghaus et al. (2003) also reported results by Holland theme, basic domains, traditionally male/female occupational domains, sex, age group, and measure used. The linkage of self-efficacy and interests appears stronger when the domain they are measured in relation to is more narrowly defined. Among the RIASEC themes, the strongest relationships were found for Investigative (r = .68), Realistic (r = .67), and Artistic (r = .64), and more moderate effects for Social (r = .54), Conventional (r = .53), and Enterprising (r = .50). Among the basic domains included, strongest effects were noted for math (r = .73), science (r = .69), and art (r = .62). In comparison, the broader basic domain of math/science yielded a weaker effect (r = .51), as did the traditionally female (r = .40) and traditionally male occupational domains.

While many studies have reported on the size of the relationship between broad interests and broad self-efficacy, only one study was found which reported on the relationship between basic interests and basic self-efficacy. Rottinghaus, Betz, and Borgen (2003) reported that the strongest relationships were for the basic themes of science (r = .71), mathematics (r = .68), and mechanical (r = .66), whereas it was lower for the other themes, though specific correlations were not reported for all basic themes.

As the magnitude of the interest and self-efficacy relationship has become well established, many researchers have turned to examining the nature of the relationship between these two constructs. SCCT acknowledges the possibility of a reciprocal relationship between self-efficacy and interests, yet places self-efficacy before interests in each of their models (Lent et al., 1994). Most studies of the relationship between self-efficacy and interests have correlated a measure of each construct taken at the same point in time, not allowing for the examination of the causal nature of the relationship. Researchers tacking this question have taken two approaches, use of longitudinal studies and use of experimental manipulation studies.

Longitudinal Research. Using a one year longitudinal design with 347 elementary and middle school students, Tracey (2002) found support for a reciprocal relationship between self-efficacy and interests, with the magnitude of this influence equal across RIASEC types. Tracey's findings support the notion that self-efficacy beliefs lead to interest development and that interests lead to self-efficacy development, with each of these paths of equal magnitude. Lent, Tracey, Brown, Soresi and Nota (2008) conducted a similar study with Italian middle and high school students (N = 498), also finding good support for a fully bidirectional (reciprocal) model across gender and RIASEC types. Similarly, Nauta, Kahn,

Angell, and Cantarelli (2002) measured interests and self-efficacy for the RIASEC types with a college student sample (N = 104), utilizing a cross-lagged panel design with measurements at three time intervals (3, 4, and 7 months) which found support for a reciprocal model of interest-efficacy influence for all three time intervals.

Slightly different results have been reported by Lent, Sheu, Singley, Schmidt, Schmidt, and Gloster (2008) in a longitudinal examination of interests and self-efficacy with engineering students. After testing multiple models, a model with self-efficacy as the antecedent of interests was determined to be the most parsimonious model which fit the data well. In discussing this result, Lent et al. (2008) suggest that the nature of the self-efficacy/interest relationship may be a function of developmental considerations such as choice of major status. The sample consisted of engineering students (possibly more decided about major) than a general college sample, and therefore bidirectionality may be more likely before interests and choices stabilize. Lent et al. hypothesized that a unidirectional path from self-efficacy to interest may be more likely when the maintenance of interests requires robust self-efficacy for challenging academic requirements.

Experimental Research. While longitudinal studies go a long way in addressing the causal nature of the interest and self-efficacy relationship, experimental manipulation studies adds significantly to this body of literature. Several studies have focused on the manipulation of self-efficacy and its impact on level of interest, with recent efforts focused on providing mastery and vicarious learning experiences as an intervention for increasing self-efficacy in a specific domain. Luzzo, Hasper, Albert, Bibby, and Martinelli (1999) investigated the impact of efficacy enhancing interventions with a group of undecided college students. Conditions were performance accomplishment only, vicarious learning only, combined treatment, or

control group. A four week post-intervention follow-up found that performance accomplishment and combined treatments led to increases in math/science self-efficacy and subsequently interests in the participants of those groups.

A similar study conducted by Betz and Schifano (2000) aimed to increase the Realistic self-efficacy and interests of a sample of 54 college women. At follow-up, participants in the treatment condition showed higher self-efficacy and an increase in interest in Realistic activities. Results of these two studies supports the causal impact of self-efficacy on the development of interests, as predicted by SCCT.

Conversely, a study conducted by Bonitz, Larson, and Armstrong (2010) examined the relationship from the interests impacting self-efficacy development perspective. Participants were 180 college students who completed a questionnaire consisting of 10 short job descriptions for each of three areas (information technology, sales, and teaching). The experimental manipulation consisted of developing five job descriptions with congruent values and five with incongruent values. Interest and confidence (self-efficacy) were assessed for each of the job descriptions. Manipulation checks were positive, revealing that participants expressed significantly more interest in job descriptions which contained desirable work value information.

This manipulation was found to have a direct effect on self-efficacy ratings, as well as an indirect effect on self-efficacy through choice goals. Results of this study support a pathway in which someone who is interested in an activity will chose to engage in it, and through repeated exposure gain (or not) a sense of mastery which leads to the development of a sense of self-efficacy. A direct effect was also found, indicating the presence of a mechanism which does not require repeated exposure to the domain. Bonitz et al. (2010)

hypothesized that an affective mediating factor may exist which leads to the development of self-efficacy, though this possibility will need to be addressed in future research.

Relationship of Interests and Personality

Link between interests and personality have been hypothesized for over 60 years, and two recent meta-analyses have examined links between the Big Five personality factors and the RIASEC interest types (Larson, Rottinghaus, & Borgen, 2002; Barrick, Mount, & Gupta, 2003). The Larson et al. meta-analysis examined 24 samples from 12 studies (total N = 4,923). Across the studies interests were assessed via the Self Directed Search (SDS), Strong Interest Inventory (SII), and the Vocational Preference Inventory (VPI). Personality was most commonly assessed with the NEO-PI-FFI, followed by the NEO-PI-R, the NEO-PI, and the NEO. In comparison, the Barrick et al. study was somewhat more broad in nature, including 41 samples from 21 studies (total N = 11,559) that utilized a wider range of interest and personality measures.

Despite inclusion of different samples and measures, Larson et al. (2002) and Barrick et al. (2003) found remarkably similar results. Both Barrick et al. (2003) and Larson et al. (2002) found four of the 30 possible pairs had correlations greater than or equal to .25: Investigative-Openness, Artistic-Openness, Social-Extraversion, and Enterprising-Extraversion. Larson et al. (2002) also found the pair of Conventional-Conscientiousness to have a correlation of $r = .25$, but this value was only.19 in the Barrick et al. study. While some meaningful relationships were identified in these two meta-analyses, it is also clear that interests and personality are still distinct constructs. In the Larson et al. (2002) meta-analysis no correlations were higher than .58, not explaining more than 34% of the variance. In addition, 21 of the 30 possible pairs overlapped less than 4%. It is notable that no substantial

correlations were found for the Agreeableness or Neuroticism personality factors, nor for the Realistic interest type.

Despite research regarding the usefulness of facet measures, few studies have examined the facet-level relationship between RIASEC interests and personality. De Fruyt and Mervielde (1997) reported the relationship of the NEO-PI-R facet scales (Dutch/Flemish adaptation) with the RIASEC types (adaptation of Self-Directed Search) for a sample of 934 Belgium students. All NEO-PI-R facets (except for N2: angry hostility and A4: compliance) correlated .20 or higher with one or more RIASEC interest scales.

The Realistic and Investigative interest types were only related to one facet each (Realistic and N1: anxiety, r = -.23; Investigative and O5: openness to ideas, r = .26). The Artistic interest type was related positively to all Openness facets and negatively with many facets of Conscientiousness. The Social type was correlated positively with almost all facets of Openness and Extraversion, except for E5: excitement seeking. Three of the six facets of Agreeableness correlated with the Social scale.

Enterprising was negatively related to facets of Neuroticism, positively correlated with all facets of Extraversion, positively correlated with openness to actions and ideas, negatively related with some facets of Agreeableness, and strongly positively related to three facets of Conscientiousness. The Conventional type correlated positively with all Conscientiousness facets, but was unrelated to facets of Agreeableness and Extraversion. A moderate negative correlation with Neuroticism and Openness (except O5 and O4) facets were found.

Armstrong and Anthoney (2009) sought to evaluate the links between personality facets and interests through the use of property vector fitting. This technique placed

personality facets into the multidimensional space of the RIASEC interest structure. Two samples were included, 934 Dutch-speaking students from the De Fruyt and Mervielde (1997) study, and 1,186 undergraduate students at two large Midwestern universities. Measures used for the second sample were the Interest Profiler (Lewis & Rivkin, 1999), which measures the six RIASEC types, and the five factor model facet scales for the International Personality Item Pool (Goldberg et al., 2006).

For the De Fruyt and Mervielde (1997) data, two of the six Agreeableness facets reached the R^2 cutoff of .50. A3: altruism (.50) was oriented towards the S region, while A6: tender-mindedness (.77) was oriented towards the A-S region of the circumplex. For conscientiousness, all six facets reached the cutoff with a range from .71 to .92. A angle range of 28 degrees was covered, with all facets oriented towards the C and E-C regions. All six Extraversion facets also reached the cutoff, with a range of .50 to .93 and covering an 85 degree range. E5: excitement seeking was oriented towards the E-C region and overlapped with Conscientiousness facets, whereas E1: warmth oriented towards the S type. All six Neuroticism facets reached the cutoff, covering a 47 degree angle range and oriented toward the A region. The final set, Openness facets, all reached the cutoff, encompassing a 43 degree range towards the A and A-S regions of the circumplex. It is notable that none of the facets for this sample were oriented towards the R and I types.

Twenty six of the thirty facet scales from the Midwestern college sample had significant correlations with the RIASEC scales, excluding C1: self-efficacy, C5: self-discipline, N2: anger, and N3: depression. Property vector fitting resulted in five of the six Agreeableness facets reaching the inclusion cutoff, encompassing a 16 degree range in the A-S region. For Conscientiousness, three of the four facets with significant correlations reached

the inclusion cutoff of R^2 value of .50. C2: orderliness was oriented towards the E type, while C3: dutifulness and C4: achievement were oriented towards the S region of the circumplex. Five of the six Extraversion facets met the inclusion cutoff, encompassing a 29 degree range in the S region. For Neuroticism, three of the four facets with significant correlations met cutoff criteria, covering a range of 19 degrees in the S region. And finally, all six of the Openness facets reached the cutoff. A 93 degree range of the circumplex was covered, from O3: emotionality oriented towards the S type to the remaining five facets oriented towards the A and I-A regions. No facets were oriented towards the Conventional, Realistic, or Investigative domains.

Relationship of Personality and Self-Efficacy

When compared to interest-personality and interest-efficacy research, the relationship between personality factors and self-efficacy for the RIASEC types is the least researched of the construct pairs reviewed here. Rottinghaus, Lindley, Green and Borgen (2002) reported the correlations between self-efficacy as measured by the SCI and personality as measured by the Adjective Check List (ACL; John, 1990) as part of a larger study. Participants were 365 college students a large Midwestern university.

Results indicated that Neuroticism was significantly related to Investigative and Enterprising confidence. Agreeableness was related significantly with Social (r = .39) and Enterprising. Extraversion and Conscientiousness were significantly related to three or four self-efficacy themes, with Extraversion related to Artistic, Social, and Enterprising, while Conscientiousness was related to Investigative, Enterprising, Conventional, and Social On the other hand, Openness to Experience was significantly related to all six RIASEC confidence themes, with correlations ranging from .16 to .41 (Rottinghaus et al., 2002).

These results were very closely replicated by Nauta (2004). This study also utilized the SCI and ACL, as well as a college student sample (N = 147). For the majority of interest-confidence pairs, Nauta (2004) found the same relationships with correlations of similar magnitude with a few exceptions. Nauta (2004) did not find the significant Conscientiousness-Investigative relationship nor the Agreeableness-Enterprising relationship found in Rottinghaus et al. (2002), though magnitude of these relationships was similar. Additionally, significant results that were not found by Rottinghaus et al. Neuroticism was found to be negatively associated with Realistic, Social, and Conventional. These differences may be due to the smaller sample size in Nauta (2004).

Schaub and Tokar (2005) were primarily investigating the role of personality on interests, but the relationships to learning experiences and self-efficacy were also reported. Utilizing a sample of 327 undergraduate students enrolled at a private university, participants were administered the NEO-FFI, Learning Experiences Questionnaire (LEQ; Schaub, 2004), and the SCI, in addition to other measures. Though not the direct aim of this study, results reveal an indirect relationship from personality to self-efficacy that was mediated by the role of learning experiences. The path from personality to learning experiences was significant for four of the six types, including Artistic with Openness, Social with Extraversion and Agreeableness, Enterprising with Extraversion, and Conventional with Conscientiousness.

A final look at the relationship between RIASEC self-efficacy and Big Five personality factors comes from Hartman and Betz (2007). With their sample of 292 college students and use of the NEO-FFI and ESCI, Hartman and Betz (2007) found results that somewhat resembled those of Nauta (2004), somewhat resembles Rottinghaus et al.'s (2002) results, and some results that were unique to their study. Like Nauta (2004), this study found

that Neuroticism was negatively associated with all but the Artistic confidence scale, and that Extraversion was positively related to Artistic, Social, and Enterprising self-efficacy. Similar to Rottinghaus et al. (2002), Hartman and Betz found that Conscientiousness was positively associated with four of the six self-efficacy areas (Social, Enterprising, Conventional, and Investigative). Unique results included that Agreeableness was not significantly related to any self-efficacy domains, and that Openness to Experience was only significantly related to four of the six domains (excluded Enterprising and Conventional).

Hartman and Betz (2007) investigated the possibility that personality could have two kinds of effects on self-efficacy, a generalized effect and a domain-specific effect. Hartman and Betz (2007) also basic self-efficacy via the ESCI, and reported the relationship of basic self-efficacy to broad personality (measured with the NEO-FFI). The pattern of correlations found between the basic self-efficacy scales and the Big Five personality factors paralleled the FFM-RIASEC efficacy relationship reported above. Conscientiousness displayed strong, positive relationships with 12 of the 17 basic self-efficacy scales, eight of which were correlations greater than .25. Neuroticism showed a global negative relationship with basic self-efficacy, with 15 of 17 correlations significantly negative. Eleven of 17 basic self-efficacy scales were significantly and positively related to Extraversion, eight of which were greater than .30. Openness to Experience was related positively to five of 17 scales, Agreeableness did not relate significantly to any of the basic self-efficacy scales, though its largest correlation was with teamwork and approached significance (r = .14).

Hartman and Betz (2007) concluded that Conscientiousness and Extraversion have a generalized effect of self-efficacy as they both correlated positively with a broad range of self-efficacy domains across specificity levels. The same is true for Neuroticism, though it

correlated negatively with nearly all forms of career self-efficacy assessed in this study. Domain specific relationships were found with Openness to Experience for Artistic and Investigative efficacy, as well as for cultural sensitivity. Extraversion had its' strongest relationships with sales and public-speaking efficacies and with the Enterprising domain. Agreeableness was expected to related to Social domain efficacy, but it did not. The results of this study provide evidence for varying types of relationships between personality and self-efficacy at different levels of specificity, underscoring the need to assess at varying levels of specificity.

The Present Study

In the present study, the incremental validity of basic interests, personality facets, and basic self-efficacy for discriminating among college major and occupational aspirations will be examined. While a few studies have begun to examine these three variables concurrently at the broad level (Larson, et al., 2010), none have examined all three at the basic or facet level to date. Assessing all three at this level will allow the incremental concurrent validity of basic/facet level variables beyond each other to be examined. Additionally, the measures used in the present study assess personality, interests, and self-efficacy at both the broad and basic levels. This allows for an evaluation of the relative levels of concurrent validity for broad and basic levels of measurement across the three domains of individual differences measures. Both students' current college majors and expressed future occupational aspirations will be used as criterion variables. Studies often focus on only one of the other, with fewer utilizing occupational aspirations. Assessing both outcomes will allow for direct comparison between the two, providing the opportunity to determine whether basic interests, personality facets, or basic self-efficacy discriminate better for one of these outcomes. A

final contribution of the present study is the utilization of public domain measures for interests and personality, allowing for the replication of previous findings obtained with published inventories, thereby providing additional validity evidence for these measures.

Hypotheses

The first set of hypothesis concern the concurrent validity of personality, interests, and self-efficacy at the general factor level. It is predicted that broad personality, as a set, will discriminate student's college major significantly better than chance (Hypothesis 1a). It is also expected that broad personality combined with broad interests, and broad personality combined with broad self-efficacy, will both discriminate among college majors significantly better than chance as well as significantly better than broad personality alone (Hypothesis 1b and 1c). It is also predicted that broad personality, broad interests, and broad self-efficacy combined will both discriminate college majors better than chance as well as better than either personality plus interests or personality plus self-efficacy (Hypothesis 1d). This set of hypotheses will serve as a replication of previous findings by Larson, Wu, et al. (2010) with the measures utilized in the present study.

The second set of hypotheses concern the concurrent validity of personality, interests, and self-efficacy at the basic level. It is predicted that personality facets, as a set, will discriminate student's college major significantly better than chance (Hypothesis 2a). It is also expected that personality facets combined with basic interests, and personality facets combined with basic self-efficacy, will both discriminate among college majors significantly better than chance as well as significantly better than personality facets alone (Hypotheses 2b and 2c). It is also predicted that personality facets, basic interests, and basic self-efficacy

combined will both discriminate college majors better than chance as well as better than either personality plus interests or personality plus self-efficacy (Hypothesis 2d).

The third and fourth sets of hypotheses replicate the predictions made in sets one and two, substituting occupational aspirations for college major as the criterion variable. It is predicted that broad personality, as a set, will discriminate student's occupational aspiration significantly better than chance (Hypothesis 3a). It is also expected that broad personality combined with broad interests, and broad personality combined with broad self-efficacy, will both discriminate among occupational aspirations significantly better than chance as well as significantly better than broad personality alone (Hypotheses 3b and 3c). It is also predicted that broad personality, broad interests, and broad self-efficacy combined will both discriminate occupational aspirations better than chance as well as better than either personality plus interests or personality plus self-efficacy (Hypothesis 3d). This set of hypotheses will serve as a replication of previous findings by Larson, Wu, et al. (2010) with the differing measures utilized in the present study.

The fourth set of hypotheses concern the concurrent validity of personality, interests, and self-efficacy at the basic level. It is predicted that personality facets, as a set, will discriminate student's occupational aspirations significantly better than chance (Hypothesis 4a). It is also expected that personality facets combined with basic interests, and personality facets combined with basic self-efficacy, will both discriminate among occupational aspiration significantly better than chance as well as significantly better than personality facets alone (Hypotheses 4b and 4c). It is also predicted that personality facets, basic interests, and basic self-efficacy combined will both discriminate occupational aspiration

better than chance as well as better than either personality plus interests or personality plus self-efficacy (Hypothesis 4d).

The fifth set of hypotheses is in regards to the incremental validity of basic level variables beyond broad level variables for discriminating among college majors and occupational aspirations. It is predicted that personality facets, basic interests, and basic self-efficacy combined as a set will discriminate among college majors significantly better than broad personality, broad interests, and broad self-efficacy combined as a set (Hypothesis 5a). It is also predicted that personality facets, basic interests, and basic self-efficacy combined as a set will discriminate among occupational aspirations significantly better than broad personality, broad interests, and broad self-efficacy combined as a set (Hypothesis 5b).

The sixth and final set of hypotheses concern the differential discrimination for college majors as compared to occupational aspiration. It is predicted that the broad level constructs combined will discriminate significantly better for college majors than for occupational aspirations (Hypothesis 6a). It is also predicted that the basic level constructs combined will discriminate significantly better for college majors than occupational aspirations (Hypothesis 6b).

Chapter 3: Method

Participants

Participants included 948 undergraduate students at a large, Midwestern university. Students were recruited from psychology classes and participated in exchange for course credit. Data were collected over four semesters. Of the 948 participants, 668 (70.5%) were women and 280 (29.5%) were men. The majority of the sample identified as Caucasian (87.3%), 2.5% identified as African American, 4.4% as Asian American, 2.5% as Hispanic American, 0.1% as Native American, 2.5% as other, and 0.5% did not indicate their racial/ethnic identity. The mean age of the sample was 19.44 years (SD = 2.43). The majority of students were freshman (52.5%), while 27.6% were sophomores, 11.8% were juniors, 7.7% were seniors, 0.1% were graduate students, and 0.2% did not indicate their standing.

Measures

Demographic variables. A demographic questionnaire was included with each survey packet. Students were asked to complete information about their age, gender, race/ethnicity, year in school, current GPA, current major. Occupational aspirations were measured using the format developed by Farmer (1983). Participants were asked to list three occupations they are considering as future career choices, and to then select one of these three occupations as the career they are most interested in pursuing at the point of survey administration.

Interest Profiler. The Interest Profiler (Lewis & Rivkin, 1999) is a 180 item measure originally designed for career exploration as an interest self-assessment to measure the six RIASEC Holland types as one of the U.S. Department of Labor's (DOL) O*NET Career Exploration Tools . Items describe work activities that represent a wide variety of occupations as well as a broad range of training levels. Respondents were asked to rate on a

Likert-type scale from 1 (*strongly dislike*) to 5 (*strongly like*) how much they like a particular interest. Scores are computed based on the mean for each of the six Holland types. Lewis and Rivkin (1999) report coefficient alphas ranging from .95 to .97 for each of the six scales. In the present study, coefficient alphas ranged from .84 to .90 for each of the six scales.

Evidence for convergent and discriminant validity was supported by comparing the Interest Profiler with the Interest-Finder, another O*NET interest assessment, with a median correlation of .82 for similar scales, and a median correlation of .46 for dissimilar scales (Lewis & Rivkin, 1999). Cross-cultural validity was also found, with median overlap of 81.5% between White Non-Hispanics and African Americans and 89% between White Non-Hispanics and Hispanics (similarity criterion of 75-80% overlap; Dunnette, 1966). The Interest Profiler has a median overlap of RIASEC interest score distributions between males and females of 89.5%. However, the distribution overlap for the Realistic Scale was below 75%, with males more likely to endorse items within the Realistic Scale. This imbalance is interpreted as consistent with gender differences found on other RIASEC interest measures.

Public Domain Basic Interest Markers. The Basic Interest Markers (BIMs; Liao, Armstrong, & Rounds, 2008) were developed as a public-domain measure of domain-specific vocational interests at the basic level. The measure consists of 343 items assessing short, contextualized interest activity phrases such as "negotiate a business deal". Respondents indicate how much they would like to do each activity on a 5-point Likert-type scale from a (*strongly dislike*) to 5 (*strongly like*), with higher scores indicating more interest in the activity. Items are grouped into 31 BIM scales that represent a specific occupational domain. Liao et al. (2008) report good internal reliabilities with coefficient alphas ranging

from .85 to .95 for the 31 BIM scales. In the present study, reliabilities ranged from .83 to .95, comparable to those from previous studies.

Significant correlations between content-similar Basic Interest Scales (BISs) from the Strong Interest Inventory (Harmon et al., 1994) provides evidence for the convergent validity of the BIM scales. Correlations ranged from the .70s for scales that were more consistent in item content (ex. BIM Law), to the .50s for scales where item content was not entirely similar (ex. BIM Engineering), and lowest for scales that were assessed slightly different domains (ex. .42 for BIM Life Science with 1994 BIS Science). Concurrent validity was demonstrated through the use of discriminant function analyses to predict membership in 12 academic major areas using the BIMs (Liao et al., 2008). The 31 BIM scales were found to account for 95.1% of the variance in academic major areas, correctly predicting major field membership 63.4% of the time.

International Personality Item Pool NEO-PI-R Facet Scales. The International Personality Item Pool (IPIP; Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger, & Gough, 2006) is a set of public-domain personality items that can be constructed and scored for approximately 300 scales. IPIP proxies are available for many of the broad-bandwidth personality inventories, including the NEO-PI-R (Costa & McCrae, 1992c). The IPIP NEO-PI-R Facet Scales are a 300 item scale, with 10 items for each of the 30 facet scales. Respondents rate the items on a Likert-type scale from 1 (*very inaccurate*) to 5 (*very accurate*) how much each statement describes them, with higher scores indicating higher accuracy. The thirty scales are highly reliable, with internal consistency reliabilities ranging from .71 to .88, with a mean of .80. In the present study, reliabilities ranged from .66 to .87. Convergent validity is evidenced by significant correlations with the NEO-PI-R facets scales

ranging from .60 to .81, with a mean of .73. When corrected for the unreliability of each scale (IPIP and NEO), the correlations range from .87 to .99, with a mean correlation of .94, indicating that the IPIP facet scales are highly consistent with the NEO facet scales.

Scales representing the NEO-PI-R domain scales can also be constructed from the IPIP, though the actual scales were not utilized in this study. However, 10 item scales for the five domains can be calculated from the 300 items administered to assess for the facet scales. These scales will be constructed in order to assess broad personality domains in the present study. Reliability information will be calculated and compared to those of both the IPIP NEO domain scales as well as the NEO-PI-R domain scales in order to validate their use in this study. Coefficient alphas for the 10 item IPIP domain scales range from .77 to .86, with a mean of .82. In the present study, the scale reliabilities varied from .76 to .84, which is relatively comparable to those from previous studies despite the untraditional item construction of each scale.

Career Confidence Inventory. The Career Confidence Inventory (CCI; Betz & Borgen, 2006; Borgen & Betz, 2008) is a 190 item inventory designed to measure self-efficacy beliefs with respect to the six Holland RIASEC types, 27 basic dimensions of vocational activity, and six life engagement styles. Respondents rate items on a five point Likert-type scale from 1 (*no confidence at all*) to 5 (*complete confidence*), with higher scores indicating greater confidence.

The CCI measures broad self-efficacy for the six RIASEC type. Each scale is composed of 18 to 35 items each, with coefficient alphas ranging from .91 to .94 (mean of .92). In the present study, coefficient alphas ranged from .90 to .94. Basic self-efficacy for vocational activity and performance is also measured via 27 scales, with item ranges from 4

to 12, with a median of 7 items. Coefficient alphas range from .77 to .91, with a median of .88 (Borgen & Betz, 2008). Coefficient alphas in the present study ranged from .76 to .89 for the basic self-efficacy scales.

Procedures

Participants were recruited through psychology classes over the course of four semesters beginning in Spring 2006. The study was posted on the Psychology Department's web-based Sona System that students use to register for experiments. Participants who selected the present study were scheduled to come into the research lab, where they received an introduction to the study and completed an informed consent document. The survey packets completed by the participants consisted of a series of 9 questionnaires, administered in three sets of three booklets each. Each booklet took approximately 15-20 minutes to complete, and participants received three hours of research credit for completing the entire three sets of booklets. Measures included in the survey packets utilized in the present study were: The Interest Profiler (Lewis & Rivkin, 1999), the Public Domain Basic Interest Markers (Liao, Armstrong, & Rounds, 2008), the International Personality Item Pool NEO-PIR facet scales (Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger, & Gough, 2006), and the Career Confidence Inventory (Betz & Borgen, 2006; Borgen & Betz, 2008). Items from the Public Domain Basic Interest Markers, International Personality Item Pool NEO-PI-R facets, and the Career Confidence Inventory are provided in appendices A, B, and C respectively. The order the survey packets were given to participants was randomized to control for order effects. Participants received a debriefing document after completion of all three survey packets and were assigned course credit. The informed consent, demographic information, and debriefing documents are provided in appendices D, E, and F respectively.

Data Preparation. Data were screened and cleaned according to procedures recommended by Tabachnick and Fidell (2007). This included removal of cases with an incomplete data set, detecting outliers, and examining data for adherence to assumptions of the analyses. Of the 1,343 students who initially responded to the survey, 386 (28.7%) were cut due to substantial missing data. This included participants who did not complete an entire packet or measure of the study materials, participants who did not complete one or two pages of a measure, and participants who had more than 10 missing data points. Two participants were cut after being identified as a univariate. An additional 7 participants were cut from the data set after being identified as outliers through calculation of Mahalanobis distance, resulting in a sample of 948 participants. Of these 948 participants, 947 reported a classifiable college major and 939 reported a classifiable future occupational aspiration. Normality, linearity, and multicollinearity were assessed with both graphical and statistical methods, and were determined to fall within an appropriate range.

Major Classification. Participants' reported major was coded based on the Classification of Institutional Program (CIP; NCES, 2002) system. This system designates a six-digit code, with the first two digits indicating the broad major category (i.e., 45. Social Sciences), and the last four digits indicating the specific program of study (i.e., 45.0201 Anthropology, 45.1101 Sociology). CIP codes were then examined and used to create groups of majors with sample sizes sufficient for the analyses to be run. Tabachnick and Fidell (2007) state that the sample size of the smallest group should exceed the number of predictor variables used in order to avoid overfitting of the data. The most predictors included in a single analysis equaled 88, therefore groups were formed in an attempt to exceed this number. This resulted in the creation of eight major groups, ranging in size from 69 to 166

participants. Major groups and sample sizes are as follows: Arts (n=135), Business (n=166), Community Services (n=100), Education (n=88), Engineering & Technology (n=121), Science & Math (n=113), Social Sciences (n=155), and Open Option/Undecided (n=69). The Open Option/Undecided group only included 69 participants which was below the recommended number, however this group was not included in the analyses due to the inherently undecided nature of this group.

Occupational Aspiration Classification. Participants reported an occupational aspiration which was coded based on the O*NET-SOC system (USDOL, 2004). Each occupational aspiration was assigned an O*NET-SOC code. For example, the O*NET-SOC code for accountant is 13-2011.01.Occupations are classified at four levels, major group, minor group, broad occupation, and detailed occupation. There are 23 major groups, 96 minor groups, 449 broad occupations, and 821 detailed occupations (USDOL, 2004). Accountant, SOC code 13-2011.01, will be used here for demonstration of the classification system. The first number in the athlete code, 13, indicates that this occupation is in the major group of Business and Financial Operations Occupations. The first part of the second number, 20 of 2011, indicates the minor group of this occupation which is Financial Specialists. The second part of the second number, 11 of 2011, indicates the broad occupation which for accountant is Accountants and Auditors. The number following the decimal point, .0, indicates that the detailed occupation is Accountant.

O*NET-SOC codes were examined and utilized in determining occupational groups. Groups with small sample sizes were combined based on their code in order to create groups with the largest sample size possible without over-broadening the group. This process resulted in the creation of twelve occupational groups, ranging from 39 to 144 participants.

The occupational groups are as follows: Management/Finance (n=98), Advertising/Marketing/Legal (n=48), Business (n=61), Engineering/Architecture (n=84), Math/Sciences (n=51), Social Sciences (n=74), Community/Social Services (n=60), Education (n=144), Arts (n=99), Doctors (n=107), Other Healthcare (n=74), and Technical/Protective (n=39). While the recommendation from Tabachnick and Fidell is to have group sample sizes exceeding the number of predictors (88 predictors), this was not possible within occupational aspirations without compromising group composition. The risks associated with inadequate group size are reduced power of the analysis and possible violation of the assumption of homogeneity of variance-covariance matrices. These could lead to reduced ability to detect meaningful differences within the sample, or the chance of overfitting the data and leading to results which don't generalize to other samples. However, discriminant function analysis is robust to violation of the assumption of equality of within-group variance-covariance when the sample size is large. The present study included nearly 900 participants, therefore it is likely robust to violation of this assumption.

Data Analysis

Discriminant analysis (Betz, 1987; Sherry, 2006) was utilized to test the concurrent validity of broad and basic level variables in the prediction of college major and occupational aspirations. Discriminant analysis is a multivariate technique which predicts nominal categories as college major and occupational groups with sets of continuous variables (basic interests, personality facets, basic self-efficacy). This analysis will provide a hit rate indicating the number of participants correctly classified as belonging to the major or occupational group they reported. For each discriminant analysis, a priori expectations were set as all groups equal, to balance out the effects of different numbers in each major and

occupational group. A jack knife procedure will be conducted in which a new hit rate is generated by rerunning each analysis multiple times, each new run omitting one participant's data that is reentered in the subsequent run. This procedure will provide a cross-validated estimate of the model parameters and is an attempt to correct for inflated hit rates due to over-weighting sample specific error (Efron, 1983).

To assess the significance of functions resulting from discriminant analysis, squared canonical correlations, Wilks's lambda, and 1- Wilks's lambda will be reported and examined. Squared canonical correlations represent the proportion of variance of the unstandardized first discriminant function scores that is explained by the differences in groups (i.e. major families and occupational groups). Wilks's lambda is a statistic of the ratio of within-groups variance to total variance, with smaller lambda values indicating which variables differentiate between groups better. One minus Wilks's lambda is also reported, which is an indicator of effect size and the amount of variance explained by the functions derived from the discriminant analysis. The above statistics were utilized to determine statistical significance of each function with the number of significant discriminant functions being reported, and only data for significant functions was reported.

To examine each significant discriminant function, discriminant structure matrices, standardized canonical function coefficients, and group centroids are reported. These statistics provide useful information regarding how specific predictors differentiate between groups (Betz, 1987). To describe each significant discriminate function, discriminant structure matrices and standardized canonical function coefficients were utilized to determine which predictors are most related with a specific discriminant function. The discriminant structure matrix provides correlation coefficients between each predictor and each

discriminant function, allowing for determination of which predictors are most highly correlated with each function. Correlations of .33 and above will be interpreted, following recommendations presented in Tabachnick and Fidell (2007). In contrast, the standardized canonical function coefficients maximize the correlation between the grouping variable and the discriminant function and considers the simultaneous contributions of all variables. When interpreting results, it is important to examine both sets of statistics. Group centroids indicate which group separates and differs from other groups the most. In each discriminant function, the group with the highest group centroids values is separated and different the most from the group with the lowest group centroids value.

All discriminant analyses will be run separately for the criterions of college major and occupational aspiration. To examine the first set of hypotheses, the sequence of analyses will be as follows: broad personality alone; broad personality plus broad interests; broad personality plus broad self-efficacy; broad personality plus broad interests plus broad self-efficacy. The same procedure will be used to examine the second set of hypotheses regarding the incremental validity of basic level personality, interests, and self-efficacy (See Table 6), as well as the third and fourth sets of hypotheses for occupational aspirations. Analyses for college major were run without the Open Option/Undecided group due to the inherent lack of decidedness of these students, resulting in a sample size of 878 for these analyses (Open Option/Undecided, N = 69). Analyses for occupational aspirations included the 939 participants whom provided a classifiable occupational aspiration, while analyses comparing results for college major versus occupational aspirations included 871 participants who reported both a classifiable major and a classifiable occupational aspiration.

To examine the fifth set of hypotheses, regarding the incremental validity of basic level variables beyond broad level variables, and the sixth set of hypotheses, regarding differential discrimination for college major and occupational aspirations, a McNemar's Test will be used to test for the significance of difference in hit rates. McNemar's Test assesses for the significance of the difference between two correlated proportions, such as when the two proportions are based on the same sample of subjects, and accounts for the lack of independence between the proportions. The proportion of correct and incorrect classification of each of the two analyses to be compared are used in the analysis, resulting in a McNemar symmetry chi-square value and a significance value which will used to interpret differences in classification. A Bonferroni adjustment was calculated to account for the use of twenty separate McNemar's tests ($p = .01/20 = .0005$), resulting in a critical chi-square value (one degree of freedom) of 12.12. A significant result indicates that there was a significant difference between the hit rates of the two analyses, and an examination of the hit rates will provide the direction of this significant difference.

Chapter 4: Results

Discriminant Function Analyses For College Major

Broad Personality Traits Predicting College Major (Hypothesis 1a). A discriminant analysis was conducted for college major with the five NEO-PI-R broad personality domains as predictors. Results indicated that the five NEO-PI-R scales, as a set, significantly differentiated college majors ($\lambda = .859$, $p < .001$), with group membership explaining 14.1% of the variance in discriminant scores. Use of broad personality as a set resulted in a hit rate (correct classification) of 23.2% and a jack knife hit rate of 21.8% (Table 32). Because the chance hit rate for seven major groups is 1/7 = 14.29%, the jack knife hit rate for the set of broad personality traits was one and one half times greater than chance and provides support for hypothesis 1a. The analysis produced two functions which significantly differentiated between academic major groups. The structure matrix and group centroids associated with this set of functions are presented in Table 34 and Table 35, and the means and standard deviations are presented in Table 20.

The first significant function separated the Arts major group from the Business and Education major groups. Openness (positive loading) had the highest correlation with this function. The Arts major group had the highest Openness mean scores among the seven major groups, while the Business and Education major groups had the lowest mean scores.

The second significant discriminant function separated the Education majors from the Engineering/Technology majors. Agreeableness and Extraversion (positive loading) were the most highly correlated with the function. The Education majors had one of the highest Agreeableness and the highest Extraversion mean scores, while the Engineering/Technology majors had the lowest Agreeableness and Extraversion mean scores.

Broad Personality Traits and Interests Predicting Academic Major (Hypothesis 1b). The next discriminant analysis conducted for college major included the five NEO-PI-R broad personality domains and the six Interest Profiler broad interest domains as predictors. Broad personality traits and interest domains combined successfully differentiated college major groups ($\lambda = .414$, $p < .001$), with group membership explaining 58.6% of the variance in discriminant scores. Use of broad personality and broad interests combined allowed for correct classification of 41.8% of cases by normal procedures and 39.3% by the more conservative jackknife procedures. Correct classification was 2.75 times greater than chance for the broad personality and interest domains combined when using the jackknife procedure. The results indicated the five broad personality domains and six broad interest domains contributed to additional variance beyond broad personality alone (χ^2 (1) = 80.27, $p < .001$), providing support for hypothesis 1b.The analysis produced four functions which significantly differentiated between academic groups. The structure matrix and group centroids associated with this set of functions are presented in Table 34 and Table 35, and the means and standard deviations are presented in Table 20 and Table 21.

The first discriminant function maximally separates the Business major group from the Science/Math major group. The structure (loading) matrix of correlations between predictors and discriminants indicates the best predictors for distinguishing between these groups are Enterprising and Conventional interest (positive loading) and Investigative and Social interest (negative loading). Business majors expressed the most Enterprising and Conventional interest and least Investigative and Social interest, while the Science/Math majors expressed the least Enterprising and Conventional interest and the most Investigative and Social interest of all the major groups.

The second significant function differentiates the Engineering/Technology and Science/Math major groups from the Education major group. The most highly loading predictors are Realistic and Investigative interest (positive loading) and Social interest (negative loading). Engineering/Technology and Science/Math majors expressed the highest mean Realistic and Investigative interests and the lowest mean Social interest whereas the education majors expressed the lowest mean Realistic and Investigative interests and the highest mean Social interest.

The third significant function separates the Arts major group from the Business and Community Services major group. The highest correlations with this function in the structure matrix are Openness and Artistic interest (positive loading). Arts majors had the highest mean Openness and Artistic interest scores, while the Business and Community Services majors had the lowest mean Openness and Artistic interest scores.

The fourth significant function maximally separated the Science/Math major group from the Engineering/Technology major group. The predictors which loaded highest on this function were Openness and Enterprising interest (positive loading) and Realistic interest (negative loading). The Science/Math majors expressed more Openness and Enterprising interest and less Realistic interest than the Engineering/Technology majors.

Broad Personality Traits and Self-Efficacy Predicting Academic Major (Hypothesis 1c). The third discriminant analysis conducted with college major included the five NEO-PI-R broad personality domains and the six CCI broad self-efficacy domains as predictors. Results indicated that the five personality domains and six self-efficacy domains significantly separated college majors ($\lambda = .404$, $p < .001$), with group membership accounting for 59.6% of the variance in discriminant scores. Broad personality and broad self-efficacy combined

resulted in correct classification of 43.3% of cases through normal procedures and 40.0% of cases through jackknife procedures. The jackknife hit rate was nearly three times (2.8) greater than chance. The results indicated the five broad personality domains and six broad self-efficacy domains contributed to additional variance beyond broad personality alone in discriminating among the seven college majors (χ^2 (1) = 91.11, $p < .001$), providing support for hypothesis 1c. The analysis produced four functions which significantly differentiated between academic groups. The structure matrix and group centroids associated with this set of functions are presented in Table 38 and 39, and the means and standard deviations are presented in Table 20 and Table 22.

The Science/Math major group was maximally separated from the Business major group by the first function, with the highest loading predictor being Investigative self-efficacy (positively loaded). Science/Math majors had the highest mean Investigative self-efficacy whereas the Business majors had the one of the lowest mean Investigative self-efficacy of all the major groups.

The second significant function differentiated the Business major group from the Education group. The most highly correlated predictors for this function were Investigative and Conventional self-efficacy (positive loading). Business majors expressed higher mean Investigative and Conventional self-efficacy than the Education majors.

The third significant function effectively separated the Arts major group from the Education group. The highest loading predictors were Artistic self-efficacy, Openness, and Realistic self-efficacy, all positively loading, as well as Extraversion which loaded negatively on the function. Arts majors had higher mean scores on Artistic and Realistic self-efficacy

than Education majors. In terms of personality, art majors had higher mean scores on Openness and lower mean scores on Extraversion than did Education majors.

The fourth significant function for this discriminant analysis maximally separated the Science/Math major group from the Engineering/Technology group. The predictors most highly correlated with this function were Openness (positively loaded) and Realistic self-efficacy (negatively loaded). The Science/Math majors had higher mean scores on Openness than Engineering/Technology majors, but lower mean scores on Realistic self-efficacy.

Broad Personality Traits, Interests, and Self-Efficacy Predicting College Major (Hypothesis 1d). The final discriminant analysis assessing broad level traits included the five NEO-PI-R personality domains, the six Interest Profiler interest domains, and the six CCI self-efficacy domains simultaneously. Results showed that these three sets of predictors combined significantly differentiated among the seven major groups ($\lambda = .321$, $p < .001$), with major group accounting for 67.9% of the variance in discriminant scores. Broad personality, interests, and self-efficacy combined correctly classified 48.2% of participants through normal procedures and 43.6% by jackknife procedure. The number of cases classified correctly using the more conservative jackknife procedure was just over three times greater than classification by chance. The results indicated the five broad personality domains, six broad interest domains, and six broad self-efficacy domains contributed to additional variance beyond broad personality plus broad interests (χ^2 (1) = 21.19, $p < .001$). Results also indicated that all three broad constructs combined contributed to additional variance beyond broad personality plus broad self-efficacy (χ^2 (1) = 12.25, $p < .001$). Hypothesis 1d is clearly supported by these results. The analysis produced four functions which significantly differentiated between academic groups. The structure matrix and group

centroids are reported in Tables 40 and 41, and the means and standard deviations are presented in Tables 20, 21, and 22.

The first significant function maximally separates the Science/Math major group from the Business major group. The highest positively loading predictors were Investigative self-efficacy and interest, and the highest negatively loading predictor was Enterprising interest. Science/Math majors had the highest mean scores for Investigative interest and self-efficacy out of all seven major groups, whereas Business majors had one of the lowest mean scores on each of these. In contrast, Business majors had the highest Enterprising interest mean score, whereas Science/Math majors had one of the lowest mean scores for Enterprising interest.

The Engineering/Technology major group was separated from the Education major group in the second significant function. The most highly correlated predictors with this function were Realistic interest, Conventional interest, Investigative self-efficacy, and Conventional self-efficacy (positively loading), as well as Social interest which loaded negatively. Engineering/Technology majors had the highest or one of the highest mean scores for Realistic and Conventional interest and for Investigative and Conventional confidence; whereas the Education majors had the lowest mean scores for these predictors out of all seven major groups. In contrast, Education majors had the highest mean Social interest score, whereas Engineering/Technology majors had the lowest mean Social interest score of all groups.

The third significant function contrasted the Arts major group from the Community Services and Business major groups. The highest positively loading predictors were Openness, Realistic interest, Artistic interest, and Artistic self-efficacy, while the highest negatively loading predictor was Social interest. Arts majors had the highest mean scores for

Openness, Artistic Interest, and Artistic self-efficacy, while Business and Community Services majors had some of the lowest mean scores for these predictors. Arts majors also expressed more Realistic interest than the other two groups, but Community Services majors expressed more Social interest than arts majors.

The Science/Math major group was separated from the Engineering/Technology major group by the fourth significant function. Most highly correlated with this function were Openness, Investigative interest, Enterprising interest (positively loading) and Realistic interest (negatively loading). Science/Math majors expressed more Openness, Investigative interest, and Enterprising interest than did Engineering/Technology majors, but they also expressed less Realistic interest.

Personality Facets Predicting College Major (Hypothesis 2a). A discriminant analysis was conducted for the criterion of college major with the thirty NEO-PI-R personality facets as predictors. Results indicated that the 30 facet scales, as a set, significantly differentiated college majors ($\lambda = .625$, $p < .001$), with group membership accounting for 37.5% of the variance in discriminant scores. This analysis correctly classified 33.6% of participants with normal procedures and 23.9% through jackknife procedure (Table 42). The jackknife hit rate for the set of personality facets was 1.67 times greater than the chance hit rate (1/7 = 14.29%), providing support for hypothesis 2a. The analysis produced three functions which significantly differentiated between academic groups. The structure matrix and group centroids associated with this set of functions are presented in Table 44 and Table 45, and the means and standard deviations are presented in Table 23.

The first function separated the Education major group from the Engineering/Technology major group and accounted for 13.76% of the total relationship

between predictors and groups. The highest loading predictors were E1-Friendliness and A3-Altruisim (positive loading) as well as O5-Ideas (negative loading). Education majors expressed the highest levels of Friendliness and Altruism of all seven major groups, whereas the Engineering/Technology majors expressed the lowest levels of Friendliness and Altruism. For O5-Ideas, Education majors expressed the lowest amount out of all the major groups while Engineering/Technology majors expressed one of the highest amounts of Openness to Ideas.

The second significant function best differentiated the Social Science and Science/Math majors from the Business majors, accounting for 10.69% of the total relationship between predictors and groups. The highest loading predictors on this function (all positively) were O2-Artistic Interests, O3-Emotionality, O5-Ideas, O6-Values, A2-Morality, A3-Altruism, and A6-Sympathy. For four out of six Openness facets, artistic interest, emotionality, ideas, and values, the Social Science majors and Science/Math majors had the highest (or close to the highest) mean scores out of all the major groups, whereas the Business majors had much lower mean scores on these four Openness facets. In terms of the three Agreeableness facets, Morality, Altruism, and Sympathy, the same pattern was found. The Science/Math and Social Science majors had high mean scores on these facets while the Business majors had low mean scores.

For the third significant function the groups that were separated were the Arts major group from the Engineering/Technology and Education major groups, accounting for 7.4% of the variance between predictors and groups. Two personality facets loaded positively on the function, N5-Immoderation and O2-Artistic interests, while one facet loaded negatively, C6-

Cautiousness. The Arts majors expressed more Immoderation and Artistic interests and less cautiousness than did the Engineering/Technology and the Education majors.

Personality Facets and Interests Predicting College Major (Hypothesis 2b). A discriminant analysis was conducted for the criterion of college major with the 30 NEO-PI-R personality facets and the 31 Public Domain Basic Interest Markers as predictors. Results indicated that the 30 personality facet scales and the 31 basic interest markers combined significantly differentiated college majors ($\lambda = .122$, $p < .001$), with group membership accounting for 87.8% of the variance in discriminant scores. Prediction with personality facets and basic interests resulted in a hit rate of 63.0% and a jackknife hit rate of 51.3% (Table 42). Correct classification using the jackknife procedure was 3.6 times the rate by chance alone. The results indicated the 30 personality facets and 31 basic interest markers contributed to additional variance beyond personality facets (χ^2 (1) = 173.34, $p < .001$), providing support for hypothesis 2b.The analysis produced six functions which significantly differentiated between academic groups. The structure matrix and group centroids associated with this set of functions are presented in Table 46 and 47, and the means and standard deviations are presented in Table 23 and Table 24.

Business majors were separated from the Education majors in the first significant function, which accounted for 45.56% of the total relationship between predictors and groups. Six basic interest markers loaded highly on this function including Business BIM, Finance BIM, Management BIM, Sales BIM (positively loaded) and Medical Service BIM (negatively loaded). Business majors had the highest mean scores for Business, Finance, Management, and Sales BIM while Education majors had the lowest means scores for those

scales. Education majors had a higher mean score for Medical Service BIM than did Business majors.

The second significant function accounted for 38.56% of the total relationship between predictors and groups, and discriminated between the Engineering/Technology and Science/Math majors from the Education majors. Engineering, Mathematics, Medical Service, Physical Science, and Skilled Trades BIM all loaded highly and positively on this function. Engineering/Technology and Science/Math majors expressed more interest in Engineering, Mathematics, Medical Service, Physical Science, and Skilled Trades than the Education majors.

The third function discriminated between the Science/Math major group and the Engineering/Technology major group, accounting for 27.67% of the total relationship between predictors and groups. The most highly loading predictors were Engineering and Skilled Trades BIM (negatively loaded). The Engineering/Technology majors expressed more interest in Engineering and Skilled Trades than the Science/Math majors.

The Education major group was separated from the Social Sciences major group in the fourth function, accounting for 24.50% of the total relationship between predictors and groups. Medical Service BIM and Social Science BIM loaded negatively on this function, with Social science majors reporting more interest in Medical Service and Social Science than the Education majors.

The fifth function separated the Arts major group from the Education major group, accounting for 20.70% of the total relationship between predictors and groups. On this function, Creative Arts BIM loading highly positively and Finance BIM loading highly

negatively. Arts majors expressed more interest in Creative Arts and less interest in Finance than the Education majors.

The sixth and final function discriminated between the Science/Math major group and the Community Services major group, accounting for 15.92% of the total relationship between predictors and group membership. Creative Arts BIM and Life Science BIM both loaded positively on this function, with Science/Math majors expressing more interest in both of these areas than the Community Services majors.

Personality Facets and Self-Efficacy Predicting College Major (Hypothesis 2c). A discriminant analysis was conducted for the criterion of college major with the 30 NEO-PI-R personality facets and the 27 Career Confidence Inventory basic confidence scales (BCSs) as predictors. Results indicated that the 30 personality facet scales and the 27 basic self-efficacy scales combined significantly differentiated college majors ($\lambda = .173$, $p < .001$), with group membership accounting for 82.7% of the variance in discriminant scores. Prediction with personality facets and basic self-efficacy resulted in a hit rate of 58.1% and a jackknife hit rate of 46.1% (Table 42). Correct classification using the jackknife procedure was 3.23 times the rate by chance alone. The results indicated the 30 personality facets and 27 basic self-efficacy scales contributed to additional variance beyond personality facets (χ^2 (1) = 128.76, $p < .001$), providing support for hypothesis 2c.The analysis produced six functions which significantly differentiated between academic groups. The structure matrix and group centroids associated with this set of functions are presented in Table 48 and 49, and the means and standard deviations are presented in Table 23 and Table 25.

The first function discriminated between the Science/Math major group and the Business major group, accounting for 43.56% of the relationship between predictors and

groups. The most highly loading predictors for this function were Science BCS, Medical Science BCS, Medical Service BCS (positive loading) and Marketing/Advertising BCS (negative loading). Science/Math majors had higher mean scores on Science, Medical Science and Medical Service basic confidence, but lower mean scores on Marketing/Advertising basic confidence than the Business majors.

The Engineering/Technology major group was separated from the Education major group in the second function, which accounted for 36.60% of the relationship between predictors and groups. The highest loading predictors were Science BCS, Math BCS, and Accounting/Finance BCS, all loading positively. Engineering/Technology majors expressed more self-efficacy for Science, Math, and Accounting/Finance than the Education majors.

The third function separated the Engineering/Technology major group from the Business major group, accounting for 23.04% of the relationship between predictors and groups. Mechanical Activities BCS and Information Technology BCS were the two highest loading predictors for this facet. Engineering/Technology majors had higher mean scores on Mechanical Activities BCS and Information Technology BCS.

The fourth function discriminated between the Arts major group and the Education major group, accounting for 17.22% of the relationship between predictors and groups. The most highly loading predictors were O2-Artistic Interests, O5-Ideas, Visual Arts/Design BCS, and Artistic Creativity BCS (positive loading), with Arts majors having higher mean scores on these scales than the Education majors.

The Social Science major group was separated from the Community Services major group in the fifth function, which accounted for 13.32% of the relationship between

predictors and groups. Law BCS was the only highly loading predictor, with Social Science majors expressing more confidence in Law than Community Services majors.

The sixth and final function discriminated between the Science/Math major group and the Community Services group, accounting for 12.18% of the relationship between predictors and groups. Dramatic Arts BCS loaded highly, with Science/Math majors reporting more confidence on the Dramatic Arts basic scale than the Community Services major.

Personality Facets, Interests, and Self-Efficacy Predicting College Major (Hypothesis 2d). The final discriminant analysis assessing the basic level included the 30 NEO-PI-R personality facets, the 31 Public Domain Basic Interest Markers (BIMs), and the 27 CCI basic confidence scales (BCSs) simultaneously. Results showed that these three sets of predictors combined significantly differentiated among the seven major groups ($\lambda = .078$, $p < .001$), with major group accounting for 92.2% of the variance in discriminant scores. Personality facets, basic interests, and basic self-efficacy combined correctly classified 68.9% of participants through normal procedures and 51.7% by jackknife procedure. The number of cases classified correctly using the more conservative jackknife procedure was 3.62 times greater than classification by chance (1/7=14.29%). The results indicated the 30 personality facets, 31 basic interest markers, and 27 basic self-efficacy scales contributed to additional variance beyond personality facets plus basic interest markers (χ^2 (1) = 18.78, $p < .001$). Results also indicated the 30 personality facets, 31 basic interest markers, and 27 basic self-efficacy scales contributed to additional variance beyond personality facets plus basic self-efficacy scales (χ^2 (1) = 44.56, $p < .001$), with these two results clearly providing support for hypothesis 2d. The analysis produced six functions which significantly differentiated between academic groups. The structure matrix and group centroids associated with this set

of functions are presented in Table 50 and 51, and the means and standard deviations are presented in Table 23, 24, and 25.

The first significant function maximally separated the Science/Math major group from the Business major group, accounting for 49.7% of the relationship between predictors and groups. Highly loading predictors for this function were Life Science BIM, Medical Service BIM, Medical Science BCS (positive loading) and Business BIM, Finance BIM, Management BIM, Sales BIM, and Marketing/Advertising BCS (negative loading). The Science/Math majors reported the highest mean scores for Life Science BIM, Medical Service BIM, and Medical Science BCS of all seven major groups, while Business majors reported the lowest means scores for these scales. For Business BIM, Finance BIM, Management BIM, Sales BIM, and Marketing/Advertising BCS the Business majors had the highest mean scores of all seven groups, which was higher than the mean scores of the Science/Math majors.

The Engineering/Technology and Science/Math major groups were discriminated from the Education major group in the second function, which accounted for 45.43% of the relationship between predictors and groups. Loading highly on this function were Engineering BIM, Life Science BIM, Math BIM, Physical Science BIM, Science BCS, and Math BCS. For each of these scales, either the Engineering/Technology or the Science/Math major group had the highest mean score while the Education major group had the lowest mean scores.

For the third function, the Engineering/Technology major group was discriminated from the Community Services major group, accounting for 32.04% of the relationship between predictors and groups. All highly loading factors loaded positively, and included

Engineering BIM, Skilled Trades BIM, and Information Technology BCS. The Engineering/Technology majors express more interest in Engineering and Skilled trades and more self-efficacy for Information Technology than did the Community Services majors.

The fourth function separated the Education major group from the Social Sciences major group, accounting for 28.09% of the relationship between predictors and groups. Social Sciences BIM was the only highly loading predictor, with Social Science majors expressing more interest in Social Sciences than the Education majors.

The Arts and Community Services major groups were separated from the Social Sciences major group in the fifth function, accounting for 26.52% of the relationship between predictors and groups. Social Science BIM and Teaching BIM loaded highly on this function, with Social Science majors having higher mean interest scores for Social Science and Teaching than the Arts majors and the Community Services majors.

The sixth and final function separated the Science/Math major group from the Community Services major group, accounting for 20.88% of the relationship between predictors and groups. Several scales loaded highly on this function, including Creative Arts BIM, Life Science BIM, Visual Arts and Design BCS, Dramatic Arts BCS, and Artistic Creativity BCS. The Science/Math major group had higher mean scores for each of these scales than the Community Services major group.

Discriminant Function Analyses – Occupational Aspirations

Broad Personality Traits Predicting Occupational Aspirations (Hypothesis 3a). A discriminant analysis was conducted for occupational aspirations with the five NEO-PI-R broad personality domains as predictors. Results indicated that the five NEO-PI-R scales, as a set, significantly differentiated college majors ($\lambda = .821$, $p < .001$), with group membership

explaining 17.9% of the variance in discriminant scores. Use of broad personality as a set resulted in a hit rate (correct classification) of 16.9% and a jack knife hit rate of 14.1% (Table 52). Because the chance hit rate for twelve occupational groups is 1/12 = 8.30%, the jack knife hit rate for the set of broad personality traits was 1.7 times greater than chance, providing support for hypothesis 3a. The analysis produced three functions which significantly differentiated between occupational groups. The structure matrix and group centroids associated with this analysis are presented in Table 54 and 55, and the means and standard deviations by occupational group are presented in Table 26.

The first significant function separated the Math/Science and Arts occupational group from the Management/Finance and Other Healthcare occupational groups, accounting for 8.12% of the relationship between predictors and groups. Neuroticism and Openness (positive loading) had the highest correlations with this function. An examination of the means in Table 26 reveals that the Math/Science and Arts major group had higher mean scores for Neuroticism and Openness than did the Math/Science and Arts occupational groups.

The second significant discriminant function separated the General Business group from the Engineering/Architecture and Math/Science group, accounting for 4.8% of the relationship between predictors and groups. Agreeableness and Extraversion (positive loading) were the most highly correlated with the function. The General Business group had higher mean scores for Agreeableness and Extraversion than the Engineering/Architecture and the Math/Science groups.

The third and final significant function discriminated between the Community/Social Services, Social Sciences, and Math/Sciences occupational groups from the

Advertising/Marketing/Legal and General Business occupational groups, accounting for only 3.88% of the relationship between predictors and groups. Agreeableness was the highest loading predictor, with the Community/Social Services, Social Sciences, and Math/Sciences groups having higher mean scores than the Advertising/Marketing/Legal and General Business groups.

Broad Personality Traits and Interests Predicting Occupational Aspirations (Hypothesis 3b). The next discriminant analysis conducted for occupational aspirations included the five NEO-PI-R broad personality domains and the six Interest Profiler broad interest domains as predictors. Results indicated that broad personality and interest domains combined successfully differentiated occupational groups ($\lambda = .351$, $p < .001$), with group membership explaining 64.9% of the variance in discriminant scores. Use of broad personality and broad interests combined allowed for correct classification of 32.7% of cases by normal procedures and 26.8% by the more conservative jackknife procedures. Correct classification was 3.23 times greater than chance for the broad personality and interest domains combined when using the jackknife procedure. Results indicated that the five broad personality domains combined with the six broad interests domains contributed to additional variance beyond broad personality (χ^2 (1) = 81.13, $p < .001$), providing support for hypothesis 4b. The analysis produced five functions which significantly differentiated between occupational groups. The structure matrix and group centroids associated with this set of functions are presented in Table 56 and Table 57, and the means and standard deviations by occupational group are presented in Table 26 and Table 27.

The first significant discriminant function maximally separated the Engineering/Architecture occupational group from the Other Healthcare group, accounting

for 35.05% of the relationship between predictors and groups. The structure (loading) matrix of correlations between predictors and discriminants indicates the best predictors for distinguishing between these groups are Realistic and Conventional interest (positive loading) and Social interest (negative loading). The Engineering/Architecture group expressed more Realistic and Conventional interest than the Other Healthcare group. The Other Healthcare group had the highest mean score for Social Interest while the Engineering/Architecture group had the lowest mean score for Social Interest of all twelve occupational groups.

The second significant function differentiated the Math/Sciences group from the General Business group, accounting for 24.12% of the relationship between predictors and groups. The most highly loading predictors were Realistic and Investigative interest (positive loading) and Enterprising interest (negative loading). The Math/Sciences group expressed more Realistic and Investigative interest but less Enterprising interest than the General Business group.

The third significant function separated the Arts group from the Management/Finance group, accounting for 11.63% of the relationship between predictors and groups. The highest correlations with this function in the structure matrix were Neuroticism, Openness and Artistic interest (positive loading). The Arts group had the highest mean Neuroticism, Openness and Artistic interest scores, which was higher than the mean scores for the Management/Finance group.

The fourth significant function separated the Doctors occupational group from the Education group. The predictors which loaded highest on this function were Investigative

and Enterprising interest (positive loading). The Doctors group expressed more Investigative and Enterprising interest than the Education group.

The Technical/Protective group was differentiated from the Math/Sciences group in the fifth function, accounting for only 4.8% of the relationship between predictors and groups. The most highly loading predictors on this function were Realistic interest (positive loading) and Conventional interest (negative loading). The Doctor group reported more Realistic interest and less Conventional Interest than the Education group.

Broad Personality Traits and Self-Efficacy Predicting Occupational Aspirations(Hypothesis 3c). The third discriminant analysis conducted with occupational aspirations included the five NEO-PI-R broad personality domains and the six CCI broad self-efficacy domains as predictors. Results indicated that the five personality domains and six self-efficacy domains significantly separated occupational groups ($\lambda = .351$, $p < .001$), with group membership accounting for 64.9% of the variance in discriminant scores. Broad personality and broad self-efficacy combined resulted in correct classification of 30.7% of cases through normal procedures and 26.1% of cases through jackknife procedures. The jackknife hit rate was 3.14 times greater than the chance hit rate (1/12 = 8.3%). Results indicated that the five broad personality domains combined with the six broad self-efficacy domains contributed to additional variance beyond broad personality (χ^2 (1) = 61.86, $p <$ .001), providing support for hypothesis 4c. The analysis produced five significant functions. The structure matrix and group centroids associated with this set of functions are presented in Table 58 and 59, and the means and standard deviations by occupational group are presented in Table 26 and Table 28.

The Math/Sciences group was maximally separated from the General Business and Advertising/Marketing/Legal groups by the first function, accounting for 29.59% of the relationship between predictors and groups. The highest loading predictors for this function were Investigative self-efficacy (positive loading) and Enterprising self-efficacy (negative loading). The Math/Sciences group had a higher mean Investigative self-efficacy score than the General Business and Advertising/Marketing/Legal groups. In contrast, the General Business and Advertising/Marketing/Legal groups had the highest mean scores on Enterprising self-efficacy whereas the Math/Sciences group had the lowest mean score out of all twelve groups.

The second significant function differentiated the Management/Finance group from the Community/Social Services group, accounting for 26.52% of the relationship between predictors and groups. The most highly correlated predictors for this function were Realistic and Conventional self-efficacy (positive loading) and Social self-efficacy (negative loading). The Management/Finance group expressed more Realistic and Conventional self-efficacy and less Social self-efficacy than the Community/Social Services group.

The third significant function effectively separated the Technical/Protective group from the Advertising/Marketing/Legal and Other Healthcare groups, accounting for 13.69% of the relationship between predictors and groups. Realistic self-efficacy (positive loading) and Enterprising self-efficacy (negative loading) were the two most highly correlated predictors with this function. The Technical/Protective group had a higher mean score on Realistic self-efficacy and a lower mean score on Enterprising self-efficacy than the Advertising/Marketing/Legal and Other Healthcare groups.

The fourth function for this analysis separated the Arts occupational group from the Management/Finance group, accounting for 10.69% of the relationship between predictors and groups. The predictors most highly correlated with this function were Openness and Artistic self-efficacy (positively loaded). The Arts group had the highest mean scores on Openness and Artistic self-efficacy, whereas the Management/Finance group had the lowest or close to lowest mean scores on these scales.

The Technical/Protective occupational group was separated from the Management/Finance group in the fifth function, accounting for 4.71% of the relationship between predictors and groups. Extraversion loaded highly (positive loading) on this function, with the Technical/Protective group reporting more Extraversion than the Management/Finance group.

Broad Personality Traits, Interests, and Self-Efficacy Predicting Occupational Aspirations (Hypothesis 3d). The final discriminant analysis assessing broad level traits included the five NEO-PI-R personality domains, the six Interest Profiler interest domains, and the six CCI self-efficacy domains simultaneously. Results showed that these three sets of predictors combined significantly differentiated among the twelve occupational groups (λ = .262, $p < .001$), with occupational group accounting for 73.8% of the variance in discriminant scores. Broad personality, interests, and self-efficacy combined correctly classified 35.7% of participants through normal procedures and 28.8% by jackknife procedure. The number of cases classified correctly using the more conservative jackknife procedure was 3.47 times greater than correct classification by chance. Results indicated that the five broad personality domains, six broad interest domains, and six broad self-efficacy domains did not contribute to additional variance beyond broad personality plus broad interests (χ^2 (1) = 5.16, p = .02).

However, results indicated that the sets of broad domains combined did contribute to additional variance beyond broad personality plus broad self-efficacy (χ^2 (1) = 13.39, p < .001), providing partial support for hypothesis 4d. The analysis produced five functions which significantly differentiated between occupational groups. The structure matrix and group centroids associated with this set of functions are presented in Table 60 and 61, and the means and standard deviations are presented in Table 26, 27, and 28.

The first significant function maximally separated the Engineering/Architecture occupational group from the Other Healthcare occupational group, accounting for 37.21% of the relationship between predictors and groups. The highest positively loading predictors were Realistic and Conventional interest, and the highest negatively loading predictor was Social interest. The Engineering/Architecture group expressed more Realistic and Conventional interest and less Social interest than the Other Healthcare group.

The Math/Science occupational group was differentiated from the Advertising/Marketing/Legal and General Business occupational group in the second significant function, accounting for 31.47% of the relationship between predictors and groups. The most highly correlated predictors with this function were Realistic interest, Investigative interest, and Realistic self-efficacy (positively loading), as well as Enterprising interest which loaded negatively. The Math/Sciences group expressed more Realistic interest and self-efficacy, as well as more Investigative interest than the Advertising/Marketing/Legal and General Business group.

The third significant function contrasted the Technical/Protective occupational group from the General Business and Doctors occupational groups, accounting for 17.64% of the relationship between predictors and groups. The highest positively loading predictor was

Realistic interest, while the highest negatively loading predictors were Enterprising interest and self-efficacy, Investigative self-efficacy, and Conventional self-efficacy. The Technical/Protective group reported more Realistic interest and less Enterprising interest and self-efficacy, Investigative self-efficacy, and Conventional self-efficacy than both the General Business and Doctor group.

The Arts occupational group was separated from the Management/Finance occupational group by the fourth significant function. Most highly correlated with this function were Openness, Investigative interest, Artistic interest, and Artistic self-efficacy (positively loading). The Arts group expressed more Investigative interest, Artistic interest, and Artistic self-efficacy than the Management/Finance group. The Arts group also had the highest mean score on Openness whereas the Management/Finance group had the lowest mean score for Openness out of all twelve occupational groups.

The fifth function discriminated between the Technical/Protective occupational group from the Math/Sciences occupational group, accounting for 5.57% of the relationship between predictors and groups. Extraversion and Realistic self-efficacy were the highest positively loading predictors, and Conventional interest was the highest negatively loading predictor. The Technical/Protective group reports more Extraversion and Realistic self-efficacy and less Conventional interest than the Math/Sciences group.

Personality Facets Predicting Occupational Aspirations (Hypothesis 4a). A discriminant analysis was conducted for the criterion of occupational aspirations with the thirty NEO-PI-R personality facets as predictors. Results indicated that the 30 facet scales, as a set, significantly differentiated occupational aspirations ($\lambda = .53$, $p < .001$), with group membership accounting for 48.0% of the variance in discriminant scores. This analysis

correctly classified 23.3% of participants with normal procedures and 12.5% through jackknife procedure (Table 62). The jackknife hit rate for the set of personality facets was 1.51 times greater than the chance hit rate (1/12 = 8.3%), providing support for hypothesis 4a. The analysis produced three significant functions. The structure matrix and group centroids associated with this set of functions are presented in Table 64 and 65, and the means and standard deviations by occupational aspiration Table 29.

The first function separated the Engineering/Architecture occupational group from the Community/Social Services occupational group and accounted for 14.44% of the total relationship between predictors and groups. The highest loading predictors were E1-Friendliness, E6-Cheerfulness, O3-Emotionality, A2-Morality, A3-Altruisim, A6-Sympathy, and C3-Dutifulness (negative loading), with the Community/Social Services group expressing more of each of these personality facets than the Engineering/Architecture group.

The second significant function best differentiated the Advertising/Marketing/Legal occupational group from the Math/Sciences occupational group, accounting for 11.30% of the total relationship between predictors and groups. The highest loading predictors on this function were E2-Gregariousness and E3-Assertiveness (positive loading), as well as O5-Ideas, O6-Values, A2-Morality, and A6-Sympathy (negative loading). The Advertising/Marketing/Legal group expressed highest levels of the two Extraversion facets, Gregariousness and Assertiveness, out of all twelve occupational groups, whereas the Math/Sciences majors expressed the lowest levels. In contrast, the Math/Sciences group expressed more of two Openness facets, Ideas and Values, as well as two Agreeableness facets, Morality and Sympathy, than the Advertising/Marketing/Legal group.

For the third significant function the groups that were separated were the Advertising/Marketing/Legal occupational group from the Management/Finance group, accounting for 10.18% of the variance between predictors and groups. Two Openness facets loaded positively on the function, O2-Artistic interests and O5-Ideas. The Advertising/Marketing/Legal group expressed more Openness to Artistic interests and Openness to Ideas than did the Management/Finance group.

Personality Facets and Interests Predicting Occupational Aspirations (Hypothesis 4b). A discriminant analysis was conducted for the criterion of occupational aspirations with the 30 NEO-PI-R personality facets and the 31 Public Domain Basic Interest Markers as predictors. Results indicated that the 30 personality facet scales and the 31 basic interest markers combined significantly differentiated occupational aspirations ($\lambda = .06$, $p < .001$), with group membership accounting for 94.0% of the variance in discriminant scores. Prediction with personality facets and basic interests resulted in a hit rate of 57.7% and a jackknife hit rate of 39.3% (Table 62). Correct classification using the jackknife procedure was 4.73 times the rate by chance alone. Results indicated that the 30 personality facets with the 31 basic interest markers contributed additional variance beyond personality facets (χ^2 (1) = 242.06, $p < .001$), providing support for hypothesis 4b. The analysis produced eight significant functions. The structure matrix and group centroids associated with this set of functions are presented in Table 66 and 67, and the means and standard deviations are presented in Table 29 and Table 30.

Management/Finance and Engineering/Architecture occupational groups were separated from the Doctor and Other Healthcare occupational groups in the first significant function, which accounted for 48.16% of the total relationship between predictors and groups

for this function. Six basic interest markers loaded highly on this function including Business BIM, Engineering BIM, Finance BIM, Sales BIM (positively loaded) and Medical Service BIM and Social Services BIM (negatively loaded). The Management/Finance and Engineering/Architecture groups reported more interest in Business, Engineering, Finance, and Sales than the Doctor and Other Healthcare group did. The Doctors and Other Healthcare groups reported more interest in medical Service and Social Services than the Management/Finance and Engineering/Architecture groups.

The second significant function accounted for 41.86% of the total relationship between predictors and groups, and discriminated between the Doctors occupational group and the Education occupational group. Three basic interest markers loaded high and positive on this function, including Life Science BIM, Medical Service BIM, and Physical Science BIM. The only negatively loading predictor was Teaching BIM. The Doctors group expressed more interest in Life science, Medical Service, and Physical Science, but less interest in Teaching than the Education group.

The third function discriminated between the Engineering/Architecture occupational group and the Advertising/Marketing/Legal and General Business occupational groups, accounting for 32.72% of the total relationship between predictors and groups for this function. The most highly loading predictors were Engineering BIM, Math BIM, Physical Science BIM and Skilled Trades BIM (positively loaded), as well as Business BIM and HRM BIM (negatively loaded). The Engineering/Architecture group expressed more interest in Engineering, Math, Physical Science, and Skilled trades than the Advertising/Marketing/Legal or General Business group, who expressed more interest in Business and HRM than the Engineering/Architecture group.

The Arts occupational group was separated from the Management/Finance occupational group in the fourth function, accounting for 25.10% of the total relationship between predictors and groups. Creative Arts BIM, Creative Writing BIM, and Social Science BIM correlated highly with this function (positively loaded), while Finance BIM loaded highly negatively. The Arts group reported more interest in Creative Arts, Creative Writing, and Social Science than did the Management/Finance group. The Arts group reported less interest in Finance than the Management/Finance group.

The fifth function separated the Arts occupational group from the Social Sciences occupational group, accounting for 18.49% of the total relationship between predictors and groups for this function. On this function, no predictors loaded above the .33 correlation cut-off, however those that load the highest were Protective BIM and Social Science BIM (negatively loading). The Arts group had lower mean scores for Protective and Social Science basic interests.

The sixth significant function accounted for 16.40% of the relationship between predictors and group membership in this function, and discriminated between the Technical/Protective occupational group and the Math/Sciences occupational aspirations group. Loading highly on this function were Protective BIM (positively loading) and Social Science BIM (negatively loading). The Technical/Protective group scored higher for the Protective BIM but lower for the Social Science BIM than the Math/Sciences group.

The seventh significant function combined the two groups from the previous function, Technical/Protective and Math/Sciences occupational groups, and differentiated them from the Other Healthcare occupational group. This function accounted for 14.29% of the relationship between predictors and groups. Only one predictor loaded highly on this

function, which was the Life Science BIM. The Technical/Protective and Math/Sciences groups reported more interest in Life Science than the Other Healthcare group.

The eighth and final significant function separated the Advertising/Marketing/Legal occupational group from the Community/Social Services occupational group, accounting for 10.50% of the relationship between predictors and groups in this function. Management BIM and Politics BIM loaded highly on this function, with the Advertising/Marketing/Legal group expressing more of these basic interests than the Community/Social Services group.

Personality Facets and Self-Efficacy Predicting Occupational Aspirations (Hypothesis 4c). A discriminant analysis was conducted for the criterion of occupational aspirations with the 30 NEO-PI-R personality facets and the 27 Career Confidence Inventory basic confidence scales (BCSs) as predictors. Results indicated that the 30 personality facet scales and the 27 basic self-efficacy scales combined significantly differentiated occupational aspirations ($\lambda = .11$, $p < .001$), with group membership accounting for 94.0% of the variance in discriminant scores. Prediction with personality facets and basic self-efficacy resulted in a hit rate of 50.7% and a jackknife hit rate of 31.6% (Table 62). Correct classification using the jackknife procedure was 3.81 times the rate by chance alone. Results indicated that the 30 personality facets with the 27 basic self-efficacy scales contributed additional variance beyond personality facets (χ^2 (1) = 182.96, $p < .001$), providing support for hypothesis 4c. The analysis produced six significant functions. The structure matrix and group centroids associated with this set of functions are presented in Table 68 and 69, and the means and standard deviations are presented in Table 29 and Table 31.

The first function separated the General Business and Advertising/Marketing/Legal occupational groups from the Doctors and Other Healthcare occupational groups, accounting

for 89.0% of the relationship between predictors and groups. The most highly loading predictors for this function were Medical Science BCS, Medical Service BCS (negative loading). The Doctors and Other Healthcare groups expressed highest level of confidence in Medical Science and Medical Service of all twelve groups, while the General Business and Advertising/Marketing/Legal groups expressed among the lowest levels of confidence.

The Engineering/Architecture occupational group was separated from the Education occupational group in the second function, which accounted for 37.09% of the relationship between predictors and groups. The highest loading predictors were Mechanical Activities BCS, Science BCS, and Math BCS which loading positively, as well as Helping BCS which loaded negatively. The Engineering/Architecture group expressed more Mechanical Activities, Science, and Math, but less Helping self-efficacy than the Education group.

The third function separated the Engineering/Architecture and Technical/Protective occupational groups from the General Business and the Advertising/Marketing/Legal occupational groups, accounting for 29.38% of the relationship between predictors and groups in this function. Mechanical Activities BCS was the highest positively loading predictor for this function. The Engineering/Architecture and Technical/Protective groups had higher mean confidence scores for Mechanical Activities than the General Business and advertising/marketing/Legal groups. E2-Gregariousness, Marketing/Advertising BCS, Sales BCS, Management BCS, and Entrepreneurship BCS also loaded highly on this function (negatively loading), with higher mean scores from the General Business and Advertising/Marketing/Legal groups than the Engineering/Architecture and Technical/Protective groups.

The fourth significant function discriminated between the Advertising/Marketing/Legal and Arts occupational groups and the Management/Finance group, accounting for 18.49% of the relationship between predictors and groups for this function. The most highly loading predictors were O2-Artistic Interests, O5-Ideas, Visual Arts/Design BCS, Dramatic Arts BCS and Artistic Creativity BCS (positive loading), with the Advertising/Marketing/Legal and Arts groups having higher mean scores on these scales than the Management/Finance group majors. The Management/Finance group did score higher than the Advertising/marketing/Legal and Arts groups on self-efficacy for Accounting/Finance.

The Technical/Protective occupational group was separated from the Community/Social Services occupational group in the fifth function, which accounted for 14.82% of the relationship between predictors and groups for this function. Loading highly on this function were Protective Services BCS (positively loading) and A6-Sympathy (negatively loading). The Technical/Protective group expressed more self-efficacy for Protective Services but scored lower on the Sympathy facet of Agreeableness than the Community/Social Services group.

The sixth significant function discriminated between the Technical/Protective occupational group and the Arts occupational group, accounting for 13.03% of the relationship between predictors and groups for this function. While no predictors met the .33 cut-off, the most highly loading predictor was A6-Sympathy. The Arts group scored higher on A6-Sympathy than the Technical/Protective group.

Personality Facets, Interests, and Self-Efficacy Predicting Occupational Aspirations (Hypothesis 4d). The final discriminant analysis assessing the basic level for occupational

aspirations included the 30 NEO-PI-R personality facets, the 31 Public Domain Basic Interest Markers (BIMs), and the 27 CCI basic confidence scales (BCSs) simultaneously. Results showed that these three sets of predictors combined significantly differentiated among the twelve occupational groups ($\lambda = .04$, $p < .001$), with major group accounting for 96.0% of the variance in discriminant scores. Personality facets, basic interests, and basic self-efficacy combined correctly classified 63.7% of participants through normal procedures and 40.4% by jackknife procedure. The number of cases classified correctly using the more conservative jackknife procedure was 4.87 times greater than classification by chance (1/12=8.3%). Results indicated that the 30 personality facets, 31 basic interest markers, and 27 basic self-efficacy scales combined contributed additional variance beyond personality facets plus basic interest markers (χ^2 (1) = 21.19, $p < .001$) and personality facets plus basic self-efficacy (χ^2 (1) = 62.02, $p < .001$), providing support clear for hypothesis 4b. The analysis produced eight significant functions. The structure matrix and group centroids associated with this set of functions are presented in Table 70 and X63, and the means and standard deviations are presented in Table 29, 30, and 31.

The first significant function maximally separated the Management/Finance and Engineering/Architecture occupational groups from the Doctors and Other Healthcare occupational groups, accounting for 52.0% of the relationship between predictors and groups. Highly loading predictors for this function were Business BIM and Finance BIM (positive loading), as well as Medical Service BIM, Medical Service BCS and Medical Science BCS (negative loading). The Management/Finance and Engineering/Architecture groups reported more interest in Business and Finance than the Doctors and Other Healthcare groups, who

reported more interest in Medical Service and more self-efficacy for Medical Science and medical Service.

The Engineering/Architecture occupational group was differentiated from the Education occupational group in the second function, which accounted for 48.16% of the relationship between predictors and groups for this function. Loading highly on this function were Science BCS (positively loading) and Teaching BIM (negatively loading). The Engineering/Architecture group expressed more Science self-efficacy and less interest in Teaching than the Education group.

For the third function, the Engineering/Architecture occupational group was separated from the Advertising/Marketing/Legal and General Business occupational groups, accounting for 36.97% of the relationship between predictors and groups. The highest loading factors for this function included Engineering BIM, Physical Science BIM, Skilled Trades BIM, and Mechanical Activity BCS (positively loading), as well as HRM BIM and Management BCS (negatively loading). The Engineering/Architecture group expressed more interest in Engineering, Physical Science, and Skilled trades and more self-efficacy for Mechanical Activity than did the Advertising/Marketing/Legal and General Business groups. The latter two groups did report more interest in Human-Resources Management and Management.

The fourth function separated the Arts occupational group from the Management/Finance occupational group, accounting for 28.84% of the relationship between predictors and groups in this function. Creative Arts BIM, Social Sciences BIM, and Visual Arts and Design BIM were the only highly loading predictors, all positively loading. The

Arts group expressed more Creative Arts, Social Science, and Visual Arts and Design interest than the Management/Finance group.

The Arts occupational group was separated from the Social Sciences occupational group in the fifth significant function, accounting for 22.66% of the relationship between predictors and groups. No predictor reached the .33 cut-off, however Social Science BIM was the highest loading on this function. The Arts group reported less interest in Social Science than the Social Sciences group.

The sixth significant function separated the Technical/Protective occupational group from the Math/Sciences occupational group, accounting for 19.80% of the relationship between predictors and groups. Several scales loaded highly on this function, including Life Science BIM, Protective BIM and Protective Services BCS (positively loading). The Technical/Protective group had higher mean scores for Life Science and Protective BIM, as well as a higher mean score for Protective Services BCS than the Math/Sciences group.

The seventh significant function separated the Math/Sciences occupational group from the Other Healthcare occupational group. Social Science BIM was the only highly loading predictor, with the Math/Science group reported more interest in Social Science than the Other Healthcare group.

The eighth significant function for this analysis differentiated between the General Business and Community/Social Services occupational groups, accounting for 14.44% of the relationship between predictors and groups in this function. Once again no predictors surpassed the .33 cut-off value, but Physical Science BIM, Teaching BIM, and Science BCS were the highest loading. The General Business group reported more interest in Physical

Science and Teaching and more self-efficacy for Science than the Community/Social Services group.

Incremental Validity of Facet Level Measures Over Broad Traits

The fifth set of hypotheses is in regards to the main tenet of this study, the incremental validity of basic level variables beyond broad level variables for discriminating among college majors and occupational aspirations. It was predicted that personality facets, basic interests, and basic self-efficacy combined as a set would discriminate among college majors (hypothesis 5a) and occupational aspirations (hypothesis 5b) significantly better than broad personality, broad interests, and broad self-efficacy combined as a set. For college major, discriminant function analysis for all three sets of broad domains combined resulted in a correct classification rate of 48.2% (43.6% jackknife hit rate) while all three sets of basic level factors combined resulted in a correct classification rate of 68.9% (51.7% jackknife hit rate), which is significantly higher than the hit rate for the broad level (χ^2 (1) = 102.87, p < .001). For occupational aspirations, discriminant function analysis for all three sets of broad domains combined resulted in a correct classification rate of 35.7% (28.8% jackknife hit rate) while all three sets of basic level factors combined resulted in a correct classification rate of 63.7% (40.4% jackknife hit rate), which is significantly higher than the hit rate for the broad level (χ^2 (1) = 172.49, p < .001). Hypotheses 5a and 5b were clearly supported, the set of basic level constructs discriminated among both college major and occupational aspirations significantly better than the set of broad level constructs.

Differential Prediction of College Majors and Aspirations

The sixth and final set of hypotheses concerned the differential discrimination for college majors as compared to occupational aspiration. For all three sets of broad level

constructs combined, discriminant function analyses resulted in a correct classification rate of 48.2% (43.6% jackknife hit rate) for college major and a correct classification rate of 35.7% (28.8% jackknife hit rate) for occupational aspirations. College majors were significantly better discriminated than were occupational aspirations when all three sets of broad level constructs were combined (χ^2 (1) = 32.72, $p < .001$). For all three sets of basic level constructs combined, discriminant function analyses resulted in correct classification rate of 68.9% (51.7% jackknife hit rate) for college major and a correct classification rate of 63.7% (40.4% jackknife hit rate) for occupational aspirations. Results indicate than all three sets of basic level constructs combined did not discriminate college majors or occupational aspirations better than the other (χ^2 (1) = 4.30, $p = .04$).

Chapter 5: Discussion

Understanding how individuals make educational and occupational choices is one of the central themes of vocational psychology, with the goal of ultimately helping individuals maximize their educational and occupational success and satisfaction. While interests and self-efficacy have been the staple predictors in the vocational choice literature, until recently personality measures have received less attention. Additionally, vocational research has often focused on only one or two constructs at a time, whereas there is a more recent shift towards simultaneous assessment of multiple constructs (Armstrong & Rounds, 2008). The present study adds to the research on educational and occupational choices by examining the incremental concurrent validity of facet level constructs beyond broad level constructs for discriminating among academic majors and occupational aspirations. As one of the first studies to assess personality, interests, and self-efficacy simultaneously at the facet level, the results strengthen the evidence for the incremental validity of facet level constructs, while further demonstrating the importance of measuring multiple constructs simultaneously. The findings of this study expand the literature and advance our knowledge of how these basic level constructs are associated with people's major and occupational choices and has implications for career counseling and vocational research.

Incremental Validity of Multiple Constructs

Previous research has demonstrated unique contributions of personality, interests, and self-efficacy in the career choice process. While many studies of vocational choice examine a single construct at a time (Armstrong & Rounds, 2008), there has been a recent shift towards measuring a combination of constructs simultaneously. However, many of these studies looked at only two of these constructs at a time rather than all three. For the criterion of

college major, studies have found support for the incremental validity of broad interests beyond personality (PSSs; Gasser, Larson, & Borgen, 2007), broad self-efficacy beyond sex and personality (Larson et al., 2007), broad interests and broad self-efficacy beyond sex and personality (Larson, Wu, Bailey, Gasser, Bonitz & Borgen, 2010), broad interests and broad self-efficacy beyond each other (Rottinghaus, Betz & Borgen, 2003), and basic interests and basic self-efficacy beyond each other (Larson, Wu, Bailey, Borgen, & Gasser, 2010). For occupation or career aspirations, incremental validity has been demonstrated for broad personality beyond broad interests (De Fruyt & Mervielde, 1999), broad self-efficacy beyond broad interests (Donnay & Borgen, 1999; Rottinghaus, Betz & Borgen, 2003), broad self-efficacy beyond sex and personality (PSSs; Larson, Wei, Wu, Borgen & Bailey, 2007), and both broad and basic self-efficacy beyond personality (Betz, Borgen & Harmon, 2006).

Several prominent vocational researchers have argued that the examination of multiple constructs at once improves our understanding of vocational behavior and career development (Ackerman, 1999; Armstrong et al., 2008; Borgen, 1999; Betz, 1999). The relationship between interests and self-efficacy is the most established, with a recent meta-analysis by Rottinghaus et al. (2003) reporting an average weighted effect size of .59, accounting for 35% of the variance between the variables. The relationship between interests and personality is also widely researched, with results from two meta-analyses (Larson, Rottinghaus, & Borgen, 2002; Barrick, Mount, & Gupta, 2003) having identified meaningful relationships between personality traits and interest domains. The relationship between personality and self-efficacy is the least researched, although some links have been identified, including the finding that Neuroticism is negatively associated with confidence in

all but the Artistic domain, that Openness to Experience is positively related to confidence in all or almost all of the domains.

Building upon this previous research, the present study examined personality, interests, and self-efficacy simultaneously as well as in a step-wise fashion, thereby allowing for the examination of the unique contribution of each construct. For both broad and basic level constructs, as well as for both academic major and occupational aspirations, the present study demonstrated the incremental validity of the addition of multiple constructs. Discriminant analyses were run in a stepwise fashion, first with personality, then personality and interests, followed by personality plus self-efficacy, and finally personality, interests and self-efficacy simultaneously. In each set of analyses, personality alone was a significant predictor, and the addition of interests or self-efficacy significantly increased the classification rates, and the combined model with all three constructs was significantly better at classifying participants than either analysis including only two constructs. These results demonstrate the incremental validity of each additional construct, adding weight to the argument for the simultaneous assessment of multiple constructs. In other words, the best way to predict the academic and career choices of students is to use a combination of personality, interest, and self-efficacy measures.

While vocational research has begun to examine personality more often in recent research, it is not well integrated into vocational assessments. The Strong Interest Inventory (SII; Donnay et al., 2005) has a set of five Personal Style Scales, however these have been found to be primarily related to Extraversion and Openness (Lindley & Borgen, 2000), whereas the present study found evidence that more than just these two Big Five domains are related to major and occupational choice. However, measures of the Big Five personality

domains and associated facets are not as commonly used in applied settings, and currently there is little information about how to integrate personality scores with results obtained from other measures. For example, despite being one of the most complete sources of information regarding occupations, the Occupational Information Network (O*NET) database developed by the U.S. Department of Labor includes no information about the personality requirements of different types of work.

Incremental Validity of Basic Level Constructs

While much focus in the realm of vocational choice research has focused on broad level constructs, the utility of basic or facet level measures has become more recognized over time. Basic interests have been found to provide incremental validity beyond broad interests in predicting college major (Ralston, Borgen, Rottinghaus & Donnay, 2004; Gasser, Larson & Borgen, 2007) and occupational group or career intentions (Donnay & Borgen, 1996; Rottinghaus, Gaffey, Borgen & Ralston, 2006). Similar results have been found for basic self-efficacy beyond broad self-efficacy for college major (Rottinghaus, Betz & Borgen, 2003) and occupational group (Betz, Borgen, Rottinghaus, Paulsen, Halper & Harmon, 2003; Rottinghaus, Betz & Borgen, 2003; Betz, Borgen & Harmon, 2006). The incremental validity of personality facets beyond broad personality has been found for educational achievement (De Fruyt & Mervielde, 1996; O'Connor & Paunonen, 2007), but has not been established for academic major choice or for future career aspirations.

Two studies have begun to examine multiple basic level constructs at once, including Rottinghaus, Betz, and Borgen (2003) and Larson, Wu, Bailey, Borgen, and Gasser (2010). Rottinghaus et al. (2003) examined both broad and basic level interests and self-efficacy, finding that the more specific level scales explained the largest proportion of variance among

both college major and career plans, as well as finding incremental validity of basic self-efficacy beyond basic interests. A more recent study by Larson and colleagues also found evidence of the unique contributions of basic self-efficacy and basic interests, as well as the incremental validity of each over the other for discriminating among college major groups. The Rottinghaus study only compared broad and basic self-efficacy directly, while the Larson study did not compare facet and broad-level constructs. The literature review conducted for this project identified no previous studies which examined personality, interests, and self-efficacy at both the broad and the basic level simultaneously, making the present study the first of its kind.

For both criterions examined, academic major and occupational aspirations, the set of basic level constructs combined substantially improved the correct classification rate compared to the set of broad level constructs combined. The incremental validity of basic level constructs beyond broad level constructs was strongly supported by the current study. For academic major, the hit rate rose from three times the rate of classification by chance for the set of broad measures to over three and a half times the rate of chance for the basic measures, and for occupational aspirations the hit rate rose from approximately three and a half times chance to nearly five times chance. Not only were these differences statistically significant, but also clinically meaningful as well. The use of the combination of basic level measures allowed for the correct classification of 20% more participants for academic major and 28% more participants for occupational aspirations. In clinical use these numbers would mean that you would be able to help 20-30% more people find a major or occupation which is a good fit for them and thus more likely to be satisfied with.

A revision to vocational assessments and resources would also be beneficial to link basic/facet level construct data to majors and occupations. One of the most prominent links in the field is between broad interests and occupations. For example, a key feature of the U.S. Department of Labor's O*NET, an expansive database describing occupations and commonly used as resource in career counseling, is the rating of each occupation for each of the six RIASEC types. A search function is enabled by which an individual can enter a RIASEC code and find matching occupations, but this function is not available for personality or self-efficacy, nor for any of the basic level measures. No published resources are known of which provide detailed personality or self-efficacy information matching individuals to occupations at either the broad or basic level, nor for basic interests. The growing evidence supporting the use of multiple constructs and the use of basic/facet level constructs to inform academic and career choices suggests that the time has come to begin developing new resources to maximize their potential utility in applied settings.

Differentiation Between Academic Majors

Several themes were apparent in terms of which major groups were contrasted against each other, which was relatively consistent across the analyses for the broad and the basic measures. One of the most frequent differentiations was between Engineering/Technology majors and Education majors, with the Science/Math majors occasionally paired with the Engineering group in these functions. Personality scales that helped distinguish between these groups were Extraversion and its facet Friendliness, Agreeableness and its facet Altruism, Conscientiousness, as well as the Openness facet of Ideas. Interest scales that differentiated were Realistic, Investigative, Conventional, and Social, as well as facets relating to Engineering/Technology such as Engineering, Math, Physical Science, and Skilled

Trades BIMs. Self-efficacy showed a similar pattern, with Investigative and Conventional on the broad side, and Science, Math, and Accounting/Finance on the basic level. The Engineering/Technology majors clearly differed from the Education majors in terms of all three constructs and at both the broad and the basic level, indicating that people who will fit well in one major or the other are likely very different in a variety of meaningful ways. In particular, these differences seemed to point towards a more People oriented preference for the Education majors and a more Things oriented preference for the Engineering/Technology majors, which is consistent with Prediger's (1982) Things/People dimension. Not only did the Engineering/Technology majors' interests fall on the Things side of the hexagon, but so did their self-efficacy. For the Education majors, their interests fell on the People side of Holland's hexagon, and the personality traits and facets that separated them from the Engineering/Technology majors were also more people oriented (i.e. Extraversion, friendliness, Agreeableness, altruism).

The Science/Math majors were also frequently contrasted against the Business majors, a contrast that was frequently the first and largest function. The Business group expressed more Enterprising and Conventional interest than the Science/Math majors, who expressed more Investigative and Social interest. In terms of basic interest, the Business majors scored higher than the Science/Math majors for Business, Finance, Management, and Sales. In terms of broad SE, the Science/Math majors expressed more Investigative self-efficacy, as well as more self-efficacy in the basic scales of Science, Medical Science, Medical Service, Life Science, and while the Business majors expressed more basic self-efficacy for Marketing/Advertising. These results suggest that the Science/Math majors have a preference for Ideas oriented tasks, while Business majors have a preference for Data

oriented tasks, consistent with Prediger's (1982) Data/Ideas dimension. Basic interests and self-efficacy for each group were very consistent with that major, demonstrating their differences at both a broader dimensional level as well as a facet level.

The Science/Math majors were also differentiated from the Engineering/Technology group and the Community Services group. The Science/Math and Engineering/Technology major groups were differentiated by a variety of broad and basic scales. The Science/Math majors scored higher on the personality scale of Openness, though no personality facets were significant. On the broad level, the Science/Math majors scored higher for Enterprising and Investigative Interest, and lower for Realistic interest and self-efficacy. At the basic level, the Engineering/Technology majors scored higher than the Science/Math majors for Engineering and Skilled Trades BIM. Despite being two major groups that many would consider to be quite similar, and in fact are often paired together in the current analyses, there are clear differences between Science/Math majors and Engineering/Technology majors. These results suggest that individuals majoring in Science/Math are more open to experience and more flexible in terms of their thought and behavior. Intellectual curiosity is associated with both the Openness personality trait and Investigative interests, both of which Science/Math majors are higher in. Both the Engineering/Technology group and the Science Math group were substantially higher than the other major groups in terms of their level of Investigative interest, yet this scale still helped differentiation between these two groups. Although Engineering/Technology majors score high on Investigative interests, the Science/Math majors scored significantly higher. Information such as this could be very useful in helping an individual interested in the STEM fields narrow down their options.

The Arts majors were differentiated from the Business majors and the Education majors in several functions each. Openness, Artistic interests and self-efficacy, Realistic interests and self-efficacy were broad level predictors, while basic level predictors were O2-Artistic Interests, O5-Ideas, O6-Cautiousness, N5-Immoderation, Creative Arts BIM, Visual Arts/Design BCS, Artistic Creativity BCS, Finance BIM.. Basic level predictors varied depending on the group being contrasted. These results indicate that the Arts majors vary from several other groups across a wide variety of scales and thus are a very unique group. Business majors were also contrasted with the Education majors in several functions, with Investigative and Conventional Self-efficacy as well as several Enterprising basic interest scales as predictors. Contrast pairs that were less frequent included Engineering/Technology versus Business or Community Services, Education versus Social Sciences, and Social Sciences versus Community Services.

Interpretation of the functions can also be examined by looking at each set of predictors and patterns that emerge. For broad personality, Extraversion, Openness, Agreeableness, and Conscientiousness are all significant predictors for at least one pair when personality is the only set of predictors, but only Openness remains as a significant predictor after interests or self-efficacy are added into the model. Broad interests show a much different pattern, with all six RIASEC types being significant predictors both when only included with personality and when included with personality and self-efficacy. Broad interests appear to be strong predictors of major choice regardless of what other constructs are included. Broad self-efficacy showed a pattern between those of personality and interests. When only personality and self-efficacy were included, Realistic, Investigative, Artistic, and Conventional self-efficacy were all significant predictors. When all three constructs were

included Realistic drops out, leaving only Investigative, Artistic, and Conventional as significant predictors. It is somewhat surprising that the Realistic and Social self-efficacy scales were not significant predictors as they are often found to be important contributing scales in other vocational research.

When only personality facets were included as predictors, ten facet scales were significant predictors, including one Neuroticism facet, one Extraversion facet, four Openness facet, three Agreeableness facets and one Conscientiousness facets. A drastic shift occurred after the addition of interests, self-efficacy, or both where only O2-Artistic Interest and O5-Ideas remained significant. The pattern for personality facets mirrors that of broad personality. The pattern for basic interest was in some ways similar and in some ways different from the pattern for broad interests. When only personality and interests were included in the analysis, twelve of the basic interest scales were significant, and nearly the same twelve remained significant when self-efficacy was added to the analysis. For basic self-efficacy there were eleven scales significant when only personality and self-efficacy were included, and ten scales were significant when all three constructs were included. The significant scales were mostly the same across the two analyses, with a few scales that dropped out or were added in. Basic interests and basic self-efficacy appear to be relatively consistent as predictors regardless of which constructs were included in the analysis.

Differentiation Themes Between Occupational Aspirations

The first and largest function for the criterion of occupational aspirations often included the Other Healthcare group and was frequently paired with the Doctor group; however the group it was contrasted with was not always consistent. For the broad level analyses, Other Healthcare was differentiated from Engineering/Architecture, Math/Science,

and Arts, and for the basic level analyses it was differentiated from Engineering/Architecture, Management/Finance, General Business, and Advertising/Marketing/Legal groups. At the broad level the scales that best distinguished between Other Healthcare and Engineering/Architecture were Realistic and Social interests, which aligns with Prediger's (1982) Things/People dimension. However, a great number of majors are contrasted by level of Realistic and Social interest, thus this information alone may not be very beneficial to an individual. At the basic level the associated scales were consistent with the content of the groups being contrasted, such as the Finance BIM when it was the Management/Finance group, or Medical Service BIM and BCS and Medical Science BCS with Doctor and Other Healthcare. This function demonstrates the potential benefits of using the more specifically focused facet level measures, because a high score on one of these basic interest or self-efficacy scales has an interpretation which is much more clear and specific than that of a broad scale such as Realistic or Social interest.

Another theme seen for occupational aspirations was a frequent pairing of General Business and Advertising/Marketing/Legal groups contrasted with other groups. For broad level analyses these usually fell in the second function, and were contrasted with Engineering/Architecture and Math/Science. In terms of personality, the Agreeableness and Extraversion scales both differentiated between these two groups, and for interest and self-efficacy the scales were Realistic, Investigative, and Enterprising. For the basic level analyses these primarily fell in the third function, but also in the second, fourth, and eighth functions. For this level of analyses the groups that the Business and Advertising/Marketing/Legal groups were differentiated from were again Math/Science, Engineering/Architecture, as well as less frequently with Management/Finance,

Technical/Protective, and Community/Social Services. Personality facets associated with these functions tended to be facets of Extraversion and Agreeableness, as well as the Ideas, Values, and Artistic Interest facets of Openness. In the interest and self-efficacy area the scales again corresponded well to the groups being contrasted, including scales such as Engineering BIM, Business BIM, Mechanical Activity BCS, Sales BCS.

The Arts group was also commonly distinguished from the Management/Finance group and sometimes from the Social Science group, with Openness, Artistic interests and self-efficacy as broad level predictors. Basic level predictors included Creative Arts BIM, Creative Writing BIM, Dramatic Arts BCS, Artistic Creativity BCS and Social Science BIM. The Education group was commonly contrasted with the Engineering/Architecture and Doctors groups, with basic level predictors again being content specific (Life Science BIM, Medical Service BIM, Teaching BIM, Science BCS, Helping BCS, etc.). The Technical/Protective group was contrasted with a number of different groups, including Math/Science, Management/Finance, Other Healthcare, Community/Social Services, and the Arts. The most common predictors of these contrasts were Extraversion, Realistic interest and self-efficacy, Protective BIM, and Protective Services BCS.

When examining each measure individually some interesting patterns emerge. For broad personality, Neuroticism, Openness, Agreeableness, and Extraversion are all significant when personality is the only predictor, whereas Agreeableness is no longer a significant predictor in the full model. Broad interests follow the same pattern for occupational aspirations as they did for college major, with all six RIASEC types being significant with just personality and with the full model. Again, the strength of interests as a predictor of vocational choice is apparent. For broad self-efficacy all six types are significant

when only personality and self-efficacy are included in the analysis, but in the full model Social self-efficacy is no longer a significant predictor.

When only personality facets are used to predict occupational aspirations a total of 13 facet scales are significant, four Extraversion facets, four Openness facets, four Agreeableness facets, and one Conscientiousness facet. However, when interests and self-efficacy are included in the analysis none of the personality facets remain significant. It appears that while personality facets may provide interesting information about differences between individuals considering various occupations, these difference are relatively small and are overshadowed by the larger contributors of interests and self-efficacy. Nineteen of the basic interest markers are significant predictors when included with just personality, and twelve of these remain significant after the addition of self-efficacy. A relatively similar pattern is found for basic self-efficacy. When only personality and self-efficacy are considered, fourteen of the basic self-efficacy scales are significant. When interests are added to the mix only seven of these scales remain significant. The pattern of significant predictors varies depending on which constructs are included in the analysis, therefore it appears important to examine various combinations in order to identify meaningful scale-major or scale-occupation relationships.

Interpretation of the functions resulting from the discriminant function analyses for both academic major and occupational aspirations supports the use of the facet level measures due to the higher level of specificity that basic level scales provide. For example, analyses utilizing sets of basic level scales not only resulted in higher rates of correct classification, but they also resulted in more functions demonstrating how various groups differ from each other. When interpreting the results of a broad level measure, a high score

on a broad interest scale can mean a good fit with many areas and thus provides less useful information, whereas a high score on a related basic level interest scale is much more clear for which direction that indicates as a possible option for the individual. For example, a person with a high score on the Realistic broad interest scale may seem well suited for the Engineering/Architecture, Math/Science, or Technical/Protective occupational groups, whereas a high score on the Protective Services basic interest scale would indicate a good fit with only the Technical/Protective group in the present study.

Some of the discriminant functions described above were between two groups commonly considered to be very different, such as Engineering/Technology and Education, while other contrasts were between two groups commonly considered to be much more similar, such as Engineering/Technology and Science/Math. While the first contrast is interesting and useful, it is the latter contrast which really adds to the vocational field in terms of being able to help clients find a good fit. The present study future studies of similar design will assist in learning what sets two similar groups apart and will enhance our ability to help students pick which of these options will be the best fit for them.

A theme present throughout the discriminant function analyses was that contrast pairs often included one group that was very high on a scale and another group which was very low on a scale. Career counselors often emphasize that what you don't like to do is important in addition to what you do like to do, and the present study supports that concept. Examining the groups contrasted in the present study can provide information not only about what academic major or occupation would be a good fit based on what one does like, is confident in, or is like, but also what one doesn't like, isn't confident in, and isn't like.

Results of the present study seem to indicate a need for revision of vocational assessments and resources, and interpretation of the discriminant functions may be a useful tool in doing so. The creation of "codes" for majors and occupations for personality, interests, and self-efficacy at both the broad and basic level similar to the Holland codes for broad interests could be benefitted from the results of these functions. Much research which utilizes discriminant function analysis for predicting vocational choice does not report structure matrices or standardized coefficients and does not interpret the resulting functions. An increase in this type of interpretation would provide opportunity for replication of the present results and better inform future work on vocational assessments and resources. For the research into vocational choice that does interpret the function, a standardized set of academic major or occupational groups are not used which makes comparison and generalization across studies difficult. The development of a more standardized set of groups would likely benefit this field of research.

An application of the present study could be to apply the results to creating a set of scales such as the Occupational Scales of the Strong Interest Inventory which compare an individual's interest profile to the interest profile of groups of individuals who are satisfied in their occupation. This could be done for both various constructs as well as for the academic major criterion. The functions created through discriminant function analysis result in the calculation of a formula which incorporates an individual's scores on the various measures in order to predict which group that individual likely falls in. While a formula which produces a single major or occupational option for an individual would be of limited utility in applied settings where the goal is often to identify a range of potential options, there may be possible applications for use in research on person-environment congruence.

Prediction of Academic Major Versus Occupational Aspirations

A unique aspect of the present study is the inclusion of both academic major and occupational aspirations as criterion variables which allows for direct comparison between results for each. When all three broad measures were used, prediction was significantly better for academic majors compared to occupational aspirations. When all three basic level measures were included, prediction was higher for academic majors than for occupational aspirations, but this difference did not quite reach significance. One possible contribution to this result is the number of groups used for each criterion. There were seven academic major groups and twelve occupational groups used in the present analyses, and it is inherently easier to predict accurately with a smaller number of groups. While future research could control for this by using the same number of groups for each criterion, this difference also mimics an actual difference in the real world, with there being many more possible occupations than there are majors. Another likely contributing factor is the fact that the criterion of academic major was an actual choice already made, whereas the criterion of occupational aspiration is a potential future choice, therefore academic major is a much more proximal decision. It is also possible that the specificity of facet/basic level measures are better suited to the more specific nature of occupations as compared to majors resulting in less of a difference between the two criterion despite factors mentioned above.

Based on the more proximal nature of academic majors and the actual difference in the real world in the number of options for each criterion, it is likely that this pattern of better prediction for major will remain in future research. Past research primarily looks at either major choice or occupational choice as a criterion, rather than looking at both in order to determine which is most effective. Future research which also assesses both academic major

and occupational aspirations would be beneficial to replicate the findings of the present study regarding which we are more accurately able to predict.

While the present study seems to demonstrate that we are more successful at predicting college major, career counseling often focuses on assisting a student in identifying one or more occupations which will likely be a good fit for them and then work backwards to identify a major that would correspond to those career options. This may be partly due to a desire from students to have a plan for the future and a sense of security that can come from that, and it may also be partly due to the fact that this is the primary emphasis placed on future planning by U.S. society. In other words, the most frequently asked question of students regarding long term career planning is the proverbial "what do you want to be when you grow up?" question. In this context a student's choice of a college major is often treated as a secondary consideration, subsumed by the student's choice occupation or career path.

In addition, vocational assessments and resources also tend to focus on linking individual differences variables to occupations rather than to majors, providing much more guidance for selecting an occupation than for selecting a major. For example, the Strong Interest Inventory which is one of the most widely used career assessments includes occupational scales which compare a student's interest profile to a variety of occupations, but does not have an equivalent set of scales for academic major. Despite being one of the most extensive vocational information resources, O*NET includes information on occupations only and not on major. With so many resources being designed around occupations it is no wonder that career counseling focuses on this arena as well.

The results of the present study seem to indicate that the vocational field, both research and counseling, may need to make a shift towards assisting students in choosing a

major rather than an occupation in order to be more effective. Assessments such as the Strong and resources such as O*NET could begin to include information linking personality, interests, and self-efficacy for majors as well as occupations, which would assist career counselors in helping career clients in identifying academic major options. Replication and extension of the present study could aid in the development of such materials.

Integrated Modes of Individual Differences

The present study clearly demonstrated that more participants are correctly classified when all three constructs are included, as well as accounting for the most amount of variance among the major and occupational groups. Additionally, the obtained results support the tenet that basic level constructs are more effective for representing the multidimensional nature of important life choices such as an individual's selection of an academic major or future career choice. As the empirical evidence has accumulated for the use of interests, personality, and self-efficacy measures to predict vocational outcomes, the need has emerged for integrative models of the inter-relations and joint effects of multiple traits. Indeed, some researchers have begun to develop integrated models of career choice which better account for the multidimensional nature of academic major choice or career choice. However, a consensus has yet to emerge regarding best strategy for developing and representing this type of integrated model, and this initial work on the development of integrated models has typically focused on broad-level constructs.

For example, Ackerman and Heggestad (1997) put forth an integrative model that combines both cognitive and non-cognitive measures for predicting career outcomes, developing a set of "trait complexes" which describe the linkages between ability, interests, and personality using Holland's RIASEC model as an organizational framework. Four trait

complexes were identified, including: Social, Clerical/Conventional, Science/Math, and Intellectual/Cultural trait complexes. Armstrong et al. (2008) extended the work of Ackerman and Heggestad with their development of the Atlas of Individual Differences. The goal in developing the Atlas of Individual Differences was to map the interrelations among various individual difference variables to assist individuals in linking themselves to career choices using a wide range of constructs in a coherent manner, which was achieved by organizing results into a spatial model based on Holland's RIASEC types.

Integrative frameworks such as that of Ackerman and Heggestad (1997) or Armstrong et al. (2008) may assist individual's in considering multiple constructs and their impact simultaneously, and may lead to the identification of educational or occupational possibilities that will lead to better fit for the individual than possibilities identified based on any single construct. The present study suggests that facet level measures provide a great deal of incremental validity beyond broad level measures. However, it will be difficult to take advantage of this incremental validity in applied settings until there is a shift towards developing integrative models at the facet level of measurement. In addition, an overall pattern appeared in the present study in which the addition of predictor sets decreased the number of scales from the previous predictor set which were significant. This is expected based on the nature of the statistical analysis as the variance of the group is split among a larger number of predictors the amount of variance accounted for by each decreases. This pattern supports the need for an integrated model; more measures and more scales lead to more complexity, and need for an organizational framework from which to make sense of it.

Based on the discriminant functions that emerged in the facet-level analyses, it would appear that differences along broad level scales does not tell the complete story. For example

several sets of groups were separated based on their Realistic and Social interest scores (Engineering/Technology & Science/Math vs. Education; Engineering/Architecture vs. Other Healthcare & Doctors). When looking at group means for these two interest scales, it can be seen that the Engineering/Technology group scores substantially higher than all other groups on Realistic interest and much lower on Social interest, while many other groups score very high on Social interest and low on Realistic interest. So knowing an individual's scores on these two scales may not provide much useful information for making a vocational choice, whereas the facet level is very helpful. In the above mentioned pairs, the groups had very distinctive profiles at the facet level that provide more distinction between groups with similar broad level scores. For example, the Engineering/Technology major group scored high on Engineering BIM, Math, BIM, Physical Science BIM, Science BCS, and Math BCS, while Science/Math scored high on Life Science BIM, Physical Science BIM, Science BCS, and Math BCS. The Other Healthcare and Doctors groups were very clearly differentiated by Medical Service BIM and BCS as well as Medical Science BCS, whereas Education was differentiated by the personality facets of friendliness, altruism, and openness to ideas. At the facet level, these groups are much more clearly differentiated at the facet level than at the broad level, but the number of facet level scales leads to a much more complex profile than at the broad level for which an integrative model would be useful to help make all of this information more manageable.

Counseling Implications

This study demonstrates the improved classification rates and increased proportion of variance explained by examining personality, interests and self-efficacy simultaneously as well as by measuring these constructs at the basic or facet level of measurement. Greater

accuracy of classification equates to more individuals finding a major or occupation which is a good fit for them and fewer individuals selecting a major or occupation which is not a good fit. Research shows that the concept of fit has important implications for the career satisfaction and success of an individual (Dawis & Lofquist, 1984), and career satisfaction has also been linked with more general life satisfaction (Tait, Padgett, & Baldwin, 1989; Lent & Brown, 2006b). Many students who seek career counseling find the vocational choice processes stressful and anxiety provoking, and research such as this allows us to optimize this process in a way that will benefit students. Not only may the decision making process itself be shortened, but increased accuracy of prediction will lead to fewer students ending up in majors or careers that they do not enjoy or will not be successful in and necessitating entering the career decision making process again. Changing one's major or career path after pursuing a non-optimal choice can cost a great deal in terms of time, money, and emotional/mental energy. Even employers may spend fewer resources training new workers with increased career satisfaction which has been linked to job tenure (Dawis & Lofquist, 1984).

Simultaneous assessment of multiple constructs and use of facet level constructs lead to greater accuracy in prediction partly due to the ability to provide more nuanced and individualized interpretations of career assessment results. For example, a student who has an interest or self-efficacy profile with little differentiation at the broad level may show a much more differentiated pattern at the basic level. An individual with moderate interest in the Social area may have very high interest in Teaching but very low interest in Counseling and Helping, a difference that would be very useful in the choice process. This potential utility was demonstrated in a study by Ralston et al. (2006) which examined the various career

intentions of undergraduate psychology majors. At the broad level of interests, students majoring in psychology tended to have a similar interest type, but were varied significantly on ten of the basic interest scales and for two of the personal style scales depending on whether their future career aspirations were towards research or practice. When looking beyond psychology majors, many fields prepare students for a wide range of career paths, and basic interests and self-efficacy may be invaluable for helping individuals choose amongst various alternatives (Donnay & Borgen, 1996).

Interactions in which a person's level of one trait impacts the expression of another also provide meaningful information. For example, a person with high interests and self-efficacy for Computers and Information Systems may select a different career path depending on their level of Extraversion and associated facets. While personality is generally the weakest of the three constructs assessed in the present study in terms of accounting for differences between groups, it may provide important information for the interpretation of other variables. Hartman and Betz (2007) found that Neuroticism was correlated negatively with nearly all forms of career self-efficacy, which may alter one's interpretation of low self-efficacy from that of possible low ability to simply a need for efficacy building experiences.

Personality may also offer a new perspective on the career choice process, perhaps one that is less biased by societal and personal messages. A common theme heard from those in the career choice process is an experience of pressure from themselves, friends, family, and even society about what one "should" do or be (Gottfredson, 1981). Messages about future career choices may be tied to specific abilities, what one should pursue because of that status, prestige, or income associated with a field, because of family patterns or dreams, or related to gender roles. As these messaged become internalized over time, it may become

difficult to distinguish preferences that reflect the unique characteristics of an individual from the internalized preferences of others. Personality may be a set of traits that is less frequently involved in these types of messages and thus perhaps provide a less biased way of considering what fields might be a natural fit for an individual.

While there are many benefits of assessing personality, interests, and self-efficacy and all at the basic/facet level, there are also costs associated with it. Basic/facet level measures tend to be much longer in length; therefore increasing amount of time needed to complete the measures and interpret results, as well as increased financial cost for printing assessments or paying for administration of an assessment. How the costs and benefits of using this array of assessments may balance out differently depending on the purpose of assessment. For an individual who wants to be certain of their career path, the extra time and expense may be well worth it. On the other hand, for a researcher with limited resources the increase in accuracy may not be enough to make it worthwhile. In research situations attrition is an issue of concern. For example, the original sample of the present study was much larger than the sample used for analyses, possibly due to the length of the survey packets and associated amount of time to be completed. While some participants simply didn't finish all the packets, others simply missed the final page of a survey or packet, possible related to fatigue from completely lengthy survey. While this study supports a substantial benefit of utilizing basic level measures for personality, interests and self-efficacy, the cost/benefit ratio will have to be considered in each individual situation.

The present study utilized public domain measures for broad and facet level personality as well as broad and basic interests which inherently have less financial cost associated with them. Much of the research base on vocational choice tends to use measures

such as the Strong Interest Inventory and NEO-PI-R which include a cost per administration. Results of the present study were comparable to or an improvement on the prediction rates of other studies utilizing more expensive commercially published measures, therefore use of public domain measures may be a way to maintain the benefits of simultaneous assessment of multiple constructs and use of facet level measures while keeping some aspects of cost down. In actual career counseling situations cost is often a factor for individuals in deciding which assessments to take or not, therefore use of public domain measures may be a way to provide the most comprehensive results for an individual and maximize their career decision making process.

Limitations and Future Directions

A limitation of the present study is that it included students of all years in school and did not assess for level of decidedness regarding major or occupational aspirations. Other studies examining the vocational choice process have advocated for the inclusion of only participants who are decided on their major or career path. A benefit of this approach would be a likely increase in predictive ability as individuals who are decided may be more likely to have selected a major/career which is a good fit with their personality, interests, and skills. However, this may not necessarily be the case. It is not uncommon for young students to feel very decided about their major or career path at one point in time, and then later on begin to question their choice and consider other options. This can be related to better understanding of themselves and the world of work through increased experiences with coursework and job experience. Although the rates were still both statistically significant as well as clinically meaningful, the inclusion of only decided students may have increased the rate of correct

classification. Therefore, additional research is needed to determine the extent to which these measures can be used to help undecided students make future choices.

Although the sample used in the present study was quite large, there were not sufficient participants to run the discriminant analyses separately for men and women. Research clearly demonstrates some gender differences on various personality, interest, and self-efficacy scales, and recent research has also demonstrated that some vocational constructs may discriminate among college majors differentially for men and women (Larson, Wu, Bailey, Borgen & Gasser, 2010). The sample sizes of the occupational groups were also not optimal. While the recommendation is for each group sample size to exceed the number of predictor variables, this was not possible in the present study without rendering the groups too broad and therefore not meaningful. While there is a risk of over interpreting differences with violating this recommendation, it does not appear that it was problematic in the present study. First, the amount of change between the hit rate and jackknife hit rate appeared within normal range compared to other similar studies, and second, the recommendation was met for the major groups and yet the results for the two criterions were relatively similar and actually lower for the occupational aspiration analyses. However, it would be advisable to replicate the present findings with adequate group sample sizes to determine whether the results of the present study are replicable and generalizable.

Another limitation of the present study relates to the racial and ethnic homogeneity of the sample, which was predominantly Caucasian. Generalization of the results of this study should be done cautiously for other racial or ethnic groups. The attrition rate was somewhat high for this study, another limitation. The survey packets completed by participants included the scales used in the present study as well as some additional scaled, resulting in three

packets of surveys containing three survey booklets each. The length of the survey material may have led to participant fatigue and increased the rate of attrition.

An additional limitation is in regards to the manner in which the broad personality scales were calculated. A separate scale for broad personality was not included in the initial survey packet, and therefore these scales were calculated from the items of the personality facet scale. Each broad personality scale was calculated with the correct items when possible, however in a few instances a similar item was substituted out of necessity. Future research should include separate measures to ensure that results are not altered by these substitutions.

A final limitation of the present study is that the majors and occupational aspirations used were limited to those present in the participant pool. While a systematic method was used to create these groups to ensure that similar majors and occupations were grouped together, there were times when a group was comprised of sub-groups which were more dissimilar than other groups. In addition, some major and occupational groups were omitted due to lack of sufficient sample size, such as agriculture majors. While this is not an uncommon limitation in research such as this, predictive and interpretative ability would be enhanced by inclusion of a complete range of majors and occupational groups.

Summary and Conclusion

The present study sought to build on the research base regarding the use of individual differences for predicting vocational choice. The concurrent and incremental validity of facet level constructs beyond broad level constructs was thoroughly established through the use of discriminant function analysis. In addition to providing evidence for the increased predictive power of basic level variables, the present study also supported the use of public domain measures for these constructs. The results of this study lend evidence to the current trend of

developing an integrated model of the career choice process, which will hopefully continue on into the future to include more facet level constructs. Also highlighted is the need for the development of an assessment model which includes the Big Five personality domains and facets, broad and basic interests, and broad and basic self-efficacy which would increase the likelihood of use of all six constructs, as well as facilitate the integration of these constructs in applied settings. Clinical implications of these findings are also clear, demonstrating the ability for assessing multiple facet level constructs simultaneously for more effectively being able to guide individuals towards majors or career paths that will provide a good fit and lead to greater satisfaction.

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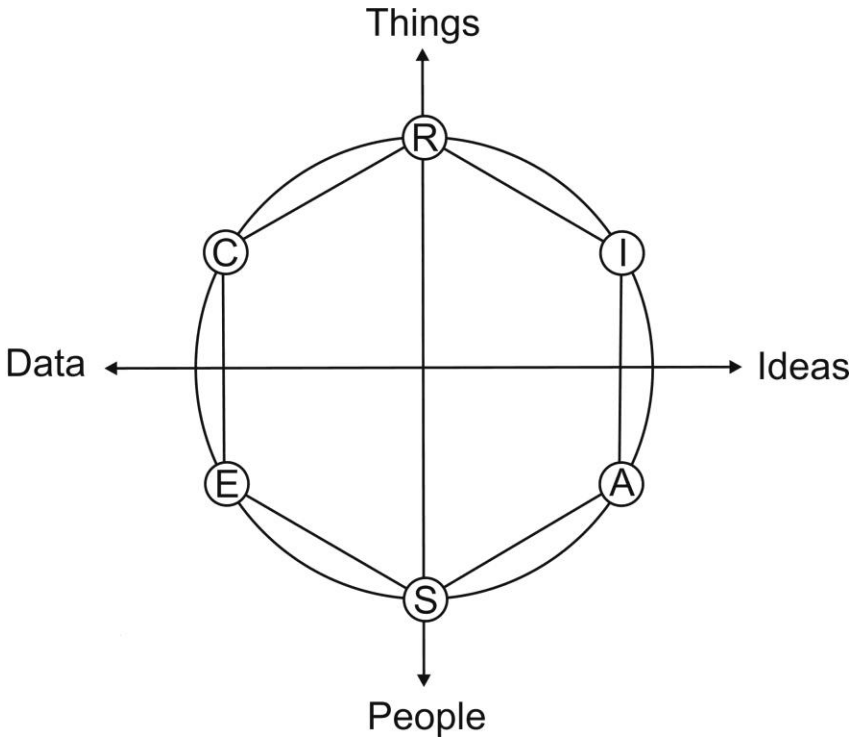
Figures

Figure 1. Prediger Dimensions Embedded in Holland's RIASEC Model of Interests.



Tables

Table 1. Scales of the Broad Level Measures.

The Interest Profiler	IPIP 5 NEO-PI-R Broad Domains	Career Confidence Inventory
Realistic	Neuroticism	Realistic
Investigative	Extraversion	Investigative
Artistic	Openness to Experience	Artistic
Social	Agreeableness	Social
Enterprising	Conscientiousness	Enterprising
Conventional		Conventional

Table 2. Scales of the Public Domain Basic Interest Markers (BIMs).

Scale Name	Brief Description
Realistic Scales	
Athletic Coaching	Involvement in teaching exercise, sports, and games
Engineering	Developing and using technology to produce and maintain things
Manual Labor	Performing work that requires routine physical activity
Outdoor-Agriculture	Working in outdoor settings with animals and plants
Physical/Risk Taking	Taking risks and seeking novel situations
Protective	Guarding, ensuring safety, and enforcing rules and laws
Skilled Trades	Building, repairing, using tools and materials
Technical Writing	Writing for business and record-keeping purposes
Information Technology	Using computers and electronic devices for communication
Investigative Scales	
Life Science	Research, development, and consulting activities relating to plants and animals
Mathematics	Working with quantitative concepts and mathematical formulas
Medical Service	Applying medical knowledge and skills to the diagnosis, prevention, & treatment of disease
Physical Science	Research, development, and consulting activities relating to inanimate materials
Artistic Scales	
Creative Arts	Activities involving the visual arts or music
Creative Writing	Developing and creating stories
Law	Researching, documenting, and debating legal matters
Performing Arts	Performing for an audience
Politics	Influencing ideas of individuals and governing a group of people in a political realm
Personal Service	Performing everyday tasks for others
Social Sciences	Research, development, and consulting activities relevant to human behavior and social organizations
Social Scales	
Family Activity	Performing domestic activities
Religious Activities	Leading spiritual groups, altruistic teaching
Social Service	Helping people cope with problems
Teaching	Instructing people
Professional Advising	Advising people in meeting professional goals
Personal Service	Performing everyday tasks for others
Social Sciences	Research, development, and consulting activities relevant to human behavior and social organizations
Enterprising	
Business	Dealing with structured wholesale and retail activities
Human Relations management	Arranging positive interpersonal settings within organizations
Management	Planning, organizing, and coordinating the activities of others
Sales	Selling marketing products
Professional Advising	Advising people in meeting professional goals
Finance	Managing assets and debts
Conventional Scales	
Office Work	Performing clerical tasks
Finance	Managing assets and debts
Information Technology	Using computers and electronic devices for communication

Table 3. Scales of the IPIP 30 NEO-PI-R Facet Scales.

Scale Name	Brief Description
Neuroticism Facet Scales	
Anxiety	Apprehensive, fearful, prone to worry, nervous, tense, jittery
Anger	Tendency to experience anger, frustration, and bitterness; hot-tempered, angry, frustrated
Depression	Tendency to experience depressive affect; prone to feelings of guilt, sadness, hopelessness, and loneliness; easily discouraged and often dejected
Self-Consciousness	Feel shame and embarrassment; uncomfortable around others; sensitive to ridicule, prone to feelings of inferiority
Immoderation	Inability to control cravings and urges; perceive desires as too strong to resist; hasty, sarcastic, self-centered
Vulnerability	Feel unable to cope with stress, becoming dependent, hopeless, or panicked when facing emergencies; easily rattled, panicked
Extraversion Facet Scales	
Friendliness	Affectionate and friendly; genuinely like people, easily form close attachments to others; characterized as outgoing, talkative, & affectionate
Gregariousness	Preference for other people's company; enjoy company of others; characterized as being convivial, having many friends, & seeking social contact
Assertiveness	Dominant, forceful, & social ascendant; speak without hesitation, often become group leaders; described as dominant, forceful, confident, & decisive
Activity Level	Rapid tempo, vigorous movement, sense of energy, & need to keep busy; lead fast paced lives; described as energetic, fast-paced, & vigorous
Excitement-Seeking	Crave excitement & stimulation; like bright colors & noisy environments; described as flashy, seekers of strong stimulation, & risk takers
Cheerfulness	Tendency to experience positive emotions such as joy, happiness, love, & excitement; laugh easily & often; seen as cheerful, high-spirited, joyful, & optimistic
Openness to Experience Facet Scales	
Imagination	Open to fantasy & have a vivid imagination, have active fantasy life; daydream as way of creating an interesting inner world, no simply as an escape; believe that imagination contributes to a rich & creative life
Artistic Interests	Deep appreciation for art & beauty; moved by poetry, absorbed in music, & intrigued by art; need not have artistic talent
Emotionality	Receptivity to one's own inner feelings/emotions, evaluation of emotion as an important part of life; experience deeper and more differentiated emotional states, feel more intensely than others; described as emotionally responsive, sensitive, empathic, & values own feelings
Adventurousness	Willingness to try different activities, go new places, or eat unusual foods; prefer novelty and variety to familiarity and routine; described as seeking novelty, variety, & trying new activities
Ideas	Intellectual curiosity, active pursuit of intellectual interests for their own sake; open-mindedness and willingness to consider new, perhaps unconventional ideas; enjoy philosophical arguments and brain-teasers; does not imply intelligence, though it can contribute to the development of intellectual potential
Values	Readiness to reexamine social, political, and religious values; seen as tolerant, broad-minded, nonconforming, and open-minded.

Table 3. (Continued)

Agreeableness Facet Scales	
Trust	Believe that others are honest and well intentioned; characterized as being forgiving, trusting, and peaceable
Morality	Are frank, sincere, and ingenuous; unwilling to manipulate others through flattery, craftiness, or deception
Altruism	Active concern for others' welfare as shown in generosity, consideration of others, and a willingness to assist others in need of help; see as warm, soft-hearted, gentle, generous, and kind
Cooperation	Tends to defer to others, to inhibit aggression, and to forgive and forget; are meek and mild, characterized as being deferential, obliging, and kind
Modesty	Are humble and self-effacing, though not necessarily lacking in self-confidence or self-esteem
Sympathy	Attitudes of sympathy and concern for others; moved by others' needs and emphasize the human side of social policies; described as friendly, warm, kind, gently, and soft-hearted
Conscientiousness Facet Scales	
Self-Efficacy	Sense that one is capable, sensible, prudent, and effective; feel well prepared to deal with life; perceived by others as being efficient, thorough, confident, and intelligence
Orderliness	Are neat, tidy, and well organized, keep things in their proper places; described as precise, efficient, and methodical
Dutifulness	Governed by conscience, adhere strictly to their ethical principles and scrupulously fulfill their moral obligations; described as dependable, mannerly, organized, and thorough
Achievement-Striving	Have high aspiration levels and work hard to achieve their goals; are diligent and purposeful, have a sense of direction in life; seen as ambitious, industrious, enterprising, and persistent; very high scorers may invest too much in their careers and become workaholics
Self-Discipline	Ability to begin tasks and carry them through to completion despite boredom and other distractions; ability to motivate themselves to get the job done; described as organized, thorough, energetic, capable, and efficient
Cautiousness	Tendency to think carefully before acting; are cautious and deliberate; described as cautious, logical, and mature

Table 4. Scales of the Career Confidence Inventory.

Scale Name	Sample Item
Realistic Basic Scales	
Mechanical Activities	Fix things around the house
Information Technology	Design a computer database
Protective Services	Fight fires
Outdoors	Serve as a park director
Investigative Basic Scales	
Science	Keep up with new scientific discoveries
Medical Science	Investigate the cause of a disease
Math	Solve math word problems
Artistic Basic Scales	
Visual Arts & Design	Paint a landscape
Dramatic Arts	Produce movies/films
Music	Play in an orchestra
Writing	Communicate your ideas through writing
Artistic Creativity	Create an advertisement for a consumer product
Social Basic Scales	
Helping	Console a grieving person
Teaching	Give good examples to explain a challenging topic
Cultural sensitivity	Social with people from another culture
Human Resources & Training	Teach on-the-job skills to new employees
Medical Service	Provide first aid to an injured person
Enterprising Basic Scales	
Marketing & Advertising	Market a new product
Sales	Sell products on commission
Management	Evaluate and hire new employees
Entrepreneurship	Construct a business plan
Public Speaking	Speak at your class reunion
Politics	Persuade others to support a political candidate
Law	Fairly judge legal cases
Conventional Basic Scales	
Accounting & Finance	Record and analyze financial data
Office Management	Assign office tasks to a group of workers
Personal Computing	Learn a new computer program

Table 5. Concurrent Validity Studies Review.

Me Citation	Variables Included	Level (Broad or Facet)	Outcome (Major, Occupation, Other)	Sample Type	Men & Women separately	Measures Used
De Fruyt & Mervielde (1996)	Interests Personality	Broad (for interests) Broad & basic (for personality	Educational achievement	College students	Yes	SDS NEO-PI-R
Rottinghaus, Lindley, Green & Borgen (2002)	Interests Personality Self-efficacy	Broad	Level of educational aspirations	College students	No	SII GOTs SCI ACL
O'Connor & Paunonen (2007)	Personality	Broad & basic	Academic Performance	College students	No	Review/meta-analysis
Lent, Brown, Schmidt, Brenner, Lyons, & Treistman (2003)	Interests Self-efficacy	Basic (technical/science fields only)	College major	College students	No	For technical/science only
Nauta & Epperson (2003)	Interests Self-efficacy	Basic (SME only)	Major choice	High School & College Students	No	For SME areas only
Ralston, Borgen, Rottinghaus, & Donnay (2004)	Interests	Broad & Basic	College Major	Adults	No	SII GOTs & BISs
Gasser, Larson, & Borgen (2007)	Interests Personality	Broad & Basic (for interests)	College Major	College students	Yes	SII GOTs, BISs, PSSs
Larson, Wu, Bailey, Gasser, Bonitz, & Borgen (2010)	Interests Personality Self-efficacy	Broad	College major	College students	No	SII GOTs MPQ SCI
Larson, Wu, Bailey, Borgen, & Gasser (2010)	Interests Self-Efficacy	Basic	College Major	College Students	Yes	SII BISs ESCI
Lent, Brown, Brenner, Chopra, Davis, Talleyrand & Suthakarm (2010)	Interest Self-efficacy	Basic (math/science only)	Future course enrollment	College Students	No	For math/science only
Rottinghaus, Betz, & Borgen (2003)	Interests Self-efficacy	Broad & Basic (for both)	College Major & Career Preferences	College Students	No	SII GOTs & BISs SCI & ESCI
Larson, Wei, Wu, Borgen & Bailey (2007)	Personality Self-Efficacy	Broad	College Major & Career Aspirations	College Students	No	NEO-FFI SCI

Table 5. (Continued).

Lent, Brown, & Hackett (1994)	Interests Self-Efficacy	Broad	Career choice	Mostly college students	No	various
Donnay & Borgen (1996)	Interests Personality	Broad & Basic (for Interests)	Occupational Group membership	Adults	No	SII GOTs, BISs, & PSSs
Donnay & Borgen (1999)	Interests Self-Efficacy	Broad	Occupational group membership	Adults	Yes	SII GOTs SCI
De Fruyt & Mervielde (1999)	Interests Personality	Broad	Nature of employment	College students	No	SDS NEO-PI-R
Tracey & Hopkins (2001)	Interests Ability Self-Estimate	Broad	Occupational group membership	High school students	No	UNIACT IWRA
Fouad, Smith, & Zao (2002)	Interests Self-efficacy	Basic (4 subject areas only)	Career Aspirations	College Students	No	For 4 fields only
Lent, Brown, Nota, & Soresi (2003)	Interests Self-efficacy	Occupational Titles	Career Choice Consideration	High school students	No	For 42 occupational titles
Betz, Borgen, Rottinghaus, Paulsen, Halper, & Harmon (2003)	Self-efficacy	Basic	Career Choice	Adult	No	ESCI
Betz, Borgen, & Harmon (2006)	Interests Self-Efficacy Personality	Broad (for interests & personality) Broad & Basic (for self-efficacy)	Occupational Group Membership - interests not used to predict occupational group	Adult	No	SII GOTs & PSSs SCI & 14 basic confidence scales
Rottinghaus, Gaffey, Borgen & Ralston (2006)	Interests	Broad & Basic	Career Intentions	College Students	No	SII GOTs & BISs

Table 6. Discriminant Analysis Entry Order.

Hypothesis 1: College Major
Personality Traits Only
Personality Traits + Broad Interests
Personality Traits + Broad Self-Efficacy
Personality Traits + Broad Interests + Broad Self-Efficacy

Hypothesis 2: College Major
Personality Facets only
Personality Facets + Basic Interests
Personality Facets + Basic Self-Efficacy
Personality Facets + Basic Interests + Basic Self-Efficacy

Hypothesis 3: Occupational Aspirations
Personality Traits Only
Personality Traits + Broad Interests
Personality Traits + Broad Self-Efficacy
Personality Traits + Broad Interests + Broad Self-Efficacy

Hypothesis 4: Occupational Aspirations
Personality Facets only
Personality Facets + Basic Interests
Personality Facets + Basic Self-Efficacy
Personality Facets + Basic Interests + Basic Self-Efficacy

Table 7. Scale Reliabilities for the IPIP NEO-PI-R Domain Scales.

Scale	*# of Items*	*Mean*	*SD*	*Alpha*
Neuroticism	10	2.48	0.67	0.84
Extraversion	10	3.48	0.65	0.84
Openness	10	3.48	0.62	0.76
Agreeableness	10	3.59	0.53	0.77
Conscientiousness	10	3.60	0.60	0.83

Table 8. Scale Reliabilities for the IPIP NEO-PI-R Facet Scales.

Scale	*# of Items*	*Mean*	*SD*	*Alpha*
N1: Anxiety	10	2.97	0.65	0.82
N2: Anger	10	2.64	0.72	0.88
N3: Depression	10	2.27	0.71	0.87
N4: Self-Consciousness	10	2.87	0.63	0.80
N5: Immoderation	10	3.10	0.59	0.75
N6: Vulnerability	10	2.66	0.59	0.78
E1: Friendliness	10	3.71	0.63	0.85
E2: Gregariousness	10	3.36	0.66	0.83
E3: Assertiveness	10	3.38	0.59	0.81
E4: Activity Level	10	3.11	0.45	0.66
E5: Excitement-Seeking	10	3.32	0.65	0.80
E6: Cheerfulness	10	3.92	0.57	0.82
O1: Imagination	10	3.63	0.62	0.82
O2: Artistic Interests	10	3.85	0.65	0.81
O3: Emotionality	10	3.58	0.55	0.76
O4: Adventurousness	10	3.34	0.52	0.74
O5: Ideas	10	3.40	0.59	0.77
O6: Values	10	2.70	0.60	0.74
A1: Trust	10	3.54	0.57	0.82
A2: Morality	10	3.84	0.54	0.77
A3: Altruism	10	3.95	0.53	0.82
A4: Cooperation	10	3.57	0.57	0.75
A5: Modesty	10	3.14	0.52	0.71
A6: Sympathy	10	3.47	0.53	0.72
C1: Self-Efficacy	10	3.78	0.46	0.76
C2: Orderliness	10	3.53	0.66	0.82
C3: Dutifulness	10	3.95	0.51	0.80
C4: Achievement-Striving	10	3.88	0.54	0.83
C5: Self-Discipline	10	3.30	0.68	0.86
C6: Cautiousness	10	3.21	0.58	0.77

Table 9. Scale Reliabilities for the Interest Profiler.

Scale	*# of Items*	*Mean*	*SD*	*Alpha*
Realistic Interest	10	2.11	0.77	0.90
Investigative Interest	10	2.54	0.87	0.90
Artistic Interest	10	2.91	0.87	0.87
Social Interest	10	3.36	0.75	0.85
Enterprising Interest	10	2.82	0.76	0.84
Conventional Interest	10	2.40	0.76	0.89

Table 10. Scale Reliabilities for the Basic Interest Markers.

Scale	*# of Items*	*Mean*	*SD*	*Alpha*
Athletic Coaching BIM	6	3.36	1.01	0.90
Business BIM	12	2.74	0.83	0.92
Creative Arts BIM	11	2.99	0.99	0.93
Creative Writing BIM	11	2.79	0.98	0.93
Engineering BIM	11	2.19	0.82	0.93
Family Activity BIM	14	3.99	0.66	0.90
Finance BIM	12	2.59	0.84	0.93
Human Relations Mgmt BIM	11	2.72	0.77	0.91
Information Technology BIM	12	2.35	0.83	0.93
Law BIM	11	2.46	0.96	0.95
Life Science BIM	10	2.41	0.92	0.92
Management BIM	10	2.58	0.78	0.88
Manual Labor BIM	13	2.19	0.71	0.90
Mathematics BIM	10	2.41	1.03	0.95
Medical Service BIM	10	2.99	0.92	0.91
Outdoor-Agriculture BIM	10	2.44	0.77	0.87
Office Work BIM	11	2.64	0.74	0.89
Performing Arts BIM	11	2.84	0.94	0.91
Personal Service BIM	14	2.93	0.73	0.89
Physical/Risk Taking BIM	9	3.16	0.80	0.83
Physical Science BIM	12	2.40	0.86	0.92
Politics BIM	8	2.37	0.92	0.92
Professional Advising BIM	9	2.78	0.74	0.86
Protective BIM	11	2.39	0.80	0.90
Religious Activities BIM	12	2.84	0.99	0.95
Sales BIM	13	2.53	0.81	0.93
Skilled Trades BIM	11	2.15	0.87	0.94
Social Science BIM	9	3.01	0.81	0.87
Social Service BIM	12	3.22	0.84	0.92
Teaching BIM	10	2.97	0.80	0.89
Technical Writing BIM	10	2.04	0.72	0.90

Table 11. Scale Reliabilities for the Career Confidence Inventory Domain Scales.

Scale	*# of Items*	*Mean*	*SD*	*Alpha*
Realistic Self-Efficacy	18	2.75	0.70	0.90
Investigative Self-Efficacy	19	2.96	0.72	0.90
Artistic Self-Efficacy	23	2.72	0.72	0.91
Social Self-Efficacy	21	3.38	0.62	0.90
Enterprising Self-Efficacy	35	2.81	0.64	0.94
Conventional Self-Efficacy	22	3.00	0.62	0.90

Table 12. Scale Reliabilities for the Career Confidence Inventory Basic Scales.

Scale	*# of Items*	*Mean*	*SD*	*Alpha*
Mechanical Activities BCS	9	2.77	0.81	0.87
Information Technology BCS	8	2.41	0.84	0.88
Protective Services BCS	6	2.49	0.90	0.88
Outdoors BCS	8	2.83	0.76	0.82
Science BCS	8	2.81	0.79	0.82
Medical Science BCS	6	2.59	0.98	0.89
Mathematics BCS	7	3.33	0.94	0.87
Visual Arts & Design BCS	10	2.75	0.88	0.89
Music BCS	5	2.44	0.99	0.81
Dramatic Arts BCS	5	2.61	0.89	0.82
Writing BCS	7	3.18	0.86	0.86
Artistic Creativity BCS	12	2.69	0.80	0.89
Helping BCS	6	3.55	0.83	0.82
Teaching BCS	6	3.29	0.71	0.76
Cultural Sensitivity BCS	7	3.22	0.72	0.79
Human Res. & Training BCS	9	3.33	0.70	0.85
Medical Service BCS	6	2.89	0.88	0.85
Marketing & Advertising BCS	9	2.91	0.80	0.89
Sales BCS	8	2.65	0.82	0.89
Management BCS	6	3.04	0.81	0.84
Entrepreneurship BCS	5	2.92	0.82	0.80
Public Speaking BCS	5	3.30	0.81	0.79
Politics BCS	4	2.29	0.91	0.85
Law BCS	5	2.56	0.88	0.85
Accounting & Finance BCS	7	2.59	0.85	0.87
Office Management BCS	10	3.36	0.66	0.82
Personal Computing BCS	5	3.35	0.88	0.79

Table 13. Correlation Matrix for the Interest Profiler, Career Confidence Inventory, and IPIP NEO-PI-R Domain Scales.

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1. Realistic Interest	1.00																
2. Investigative Interest	0.45	1.00															
3. Artistic Interest	0.18	0.27	1.00														
4. Social Interest	-0.17	0.10	0.26	1.00													
5. Enterprising Interest	0.09	0.04	0.22	0.21	1.00												
6. Conventional Interest	0.44	0.20	0.09	0.02	0.45	1.00											
7. Realistic Self-Efficacy	0.58	0.40	0.16	-0.05	0.05	0.12	1.00										
8. Investigative Self-Efficacy	0.31	0.61	0.09	0.05	-0.01	0.17	0.58	1.00									
9. Artistic Self-Efficacy	0.12	0.16	0.68	0.16	0.23	0.05	0.37	0.25	1.00								
10. Social Self-Efficacy	-0.09	0.11	0.28	0.59	0.22	-0.01	0.26	0.30	0.47	1.00							
11. Enterprising Self-Efficacy	0.10	0.13	0.18	0.19	0.55	0.23	0.43	0.33	0.51	0.62	1.00						
12. Conventional Self-Efficacy	0.15	0.15	0.09	0.10	0.45	0.48	0.40	0.45	0.37	0.48	0.72	1.00					
13. Neuroticism	-0.05	-0.04	0.05	-0.04	-0.03	0.06	-0.20	-0.15	-0.01	-0.19	-0.20	-0.12	1.00				
14. Extraversion	-0.18	-0.07	0.09	0.29	0.16	-0.20	0.01	-0.02	0.16	0.37	0.29	0.09	-0.42	1.00			
15. Openness	-0.04	0.15	0.46	0.14	-0.03	-0.13	0.04	0.09	0.40	0.23	0.05	-0.03	-0.01	0.12	1.00		
16. Agreeableness	-0.19	-0.05	0.04	0.37	-0.08	-0.13	-0.05	0.05	0.02	0.32	-0.01	0.03	-0.38	0.35	0.15	1.00	
17. Conscientiousness	-0.14	-0.04	-0.08	0.16	0.05	-0.04	0.01	0.14	0.02	0.22	0.15	0.19	-0.37	0.24	-0.02	0.38	1.00

Table 14. Correlation Matrix for the IPIP NEO-PI-R Facet Scales.

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
1. N1	1.00														
2. N2	0.60	1.00													
3. N3	0.59	0.56	1.00												
4. N4	0.60	0.34	0.50	1.00											
5. N5	0.32	0.36	0.39	0.19	1.00										
6. N6	0.76	0.58	0.66	0.56	0.38	1.00									
7. E1	-0.33	-0.34	-0.51	-0.57	-0.05	-0.32	1.00								
8. E2	-0.24	-0.21	-0.31	-0.50	0.08	-0.19	0.71	1.00							
9. E3	-0.30	-0.08	-0.38	-0.64	-0.03	-0.35	0.57	0.51	1.00						
10. E4	-0.09	-0.02	-0.22	-0.34	-0.19	-0.23	0.23	0.22	0.46	1.00					
11. E5	-0.25	-0.09	-0.13	-0.39	0.28	-0.17	0.40	0.55	0.37	0.10	1.00				
12. E6	-0.23	-0.28	-0.47	-0.29	0.07	-0.24	0.66	0.53	0.38	0.10	0.43	1.00			
13. O1	0.03	0.00	-0.02	0.02	0.13	-0.03	0.15	0.08	0.10	-0.07	0.29	0.38	1.00		
14. O2	0.03	-0.09	-0.07	-0.06	0.05	0.02	0.29	0.19	0.16	0.07	0.16	0.40	0.43	1.00	
15. O3	0.37	0.22	0.11	0.08	0.12	0.29	0.25	0.17	0.18	0.08	0.04	0.32	0.34	0.44	1.00
16. O4	-0.40	-0.28	-0.26	-0.44	-0.02	-0.34	0.38	0.39	0.33	0.17	0.45	0.31	0.20	0.32	0.03
17. O5	-0.24	-0.18	-0.18	-0.25	-0.17	-0.34	0.14	0.02	0.27	0.21	0.13	0.19	0.36	0.38	0.17
18. O6	0.05	0.03	0.22	0.07	0.19	0.12	-0.12	-0.06	-0.08	-0.21	0.11	-0.08	0.14	0.16	0.03
19. A1	-0.23	-0.37	-0.42	-0.19	-0.10	-0.25	0.47	0.31	0.15	0.07	0.06	0.42	0.06	0.23	0.17
20. A2	-0.01	-0.26	-0.28	-0.05	-0.33	-0.10	0.27	0.03	-0.02	0.15	-0.21	0.25	0.09	0.35	0.29
21. A3	-0.03	-0.31	-0.30	-0.15	-0.11	-0.12	0.56	0.36	0.24	0.14	0.17	0.57	0.29	0.51	0.50
22. A4	-0.12	-0.48	-0.28	0.03	-0.24	-0.12	0.29	0.12	-0.12	-0.01	-0.15	0.27	0.06	0.32	0.16
23. A5	0.20	-0.02	0.29	0.39	-0.04	0.22	-0.23	-0.25	-0.49	-0.17	-0.20	-0.19	-0.09	0.03	0.00
24. A6	0.14	-0.14	-0.02	0.05	-0.05	0.11	0.24	0.14	0.03	0.05	-0.07	0.28	0.15	0.40	0.49
25. C1	-0.39	-0.34	-0.63	-0.45	-0.36	-0.57	0.44	0.25	0.45	0.40	0.12	0.39	0.10	0.19	0.10
26. C2	0.15	0.04	-0.11	0.08	-0.19	0.03	0.05	-0.08	0.05	0.27	-0.20	0.02	-0.07	0.11	0.15
27. C3	-0.07	-0.26	-0.38	-0.09	-0.41	-0.24	0.30	0.04	0.11	0.25	-0.23	0.28	0.08	0.27	0.30
28. C4	-0.10	-0.13	-0.44	-0.24	-0.26	-0.27	0.35	0.18	0.43	0.54	0.04	0.34	0.07	0.25	0.28
29. C5	-0.24	-0.20	-0.41	-0.30	-0.43	-0.32	0.24	0.13	0.30	0.50	-0.08	0.09	-0.13	0.07	0.04
30. C6	-0.04	-0.25	-0.26	0.05	-0.50	-0.20	-0.06	-0.24	-0.12	0.11	-0.55	-0.13	-0.17	0.03	0.01

Table 14. (Continued).

	16	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
16. O4	1.00														
17. O5	0.34	1.00													
18. O6	0.13	0.16	1.00												
19. A1	0.16	0.07	-0.02	1.00											
20. A2	0.11	0.13	-0.22	0.34	1.00										
21. A3	0.25	0.19	-0.07	0.48	0.59	1.00									
22. A4	0.11	0.05	-0.08	0.47	0.60	0.56	1.00								
23. A5	-0.13	-0.18	-0.01	-0.03	0.30	0.13	0.27	1.00							
24. A6	0.10	0.15	0.09	0.33	0.49	0.62	0.46	0.20	1.00						
25. C1	0.27	0.35	-0.25	0.33	0.39	0.41	0.26	-0.25	0.09	1.00					
26. C2	-0.19	-0.01	-0.22	0.07	0.31	0.17	0.20	0.05	0.09	0.29	1.00				
27. C3	0.06	0.18	-0.29	0.35	0.75	0.57	0.52	0.14	0.39	0.56	0.42	1.00			
28. C4	0.14	0.27	-0.27	0.29	0.43	0.43	0.25	-0.13	0.21	0.66	0.43	0.58	1.00		
29. C5	0.09	0.12	-0.21	0.22	0.32	0.19	0.21	-0.09	0.06	0.54	0.47	0.43	0.65	1.00	
30. C6	-0.16	0.10	-0.20	0.16	0.45	0.17	0.37	0.12	0.15	0.36	0.43	0.56	0.33	0.43	1.00

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Table 15. Correlation Matrix for the Public Domain Basic Interest Markers.

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
1. Athletic Coaching BIM	1.00														
2. Business BIM	0.24	1.00													
3. Creative Arts BIM	-0.04	0.07	1.00												
4. Creative Writing BIM	0.02	0.11	0.65	1.00											
5. Engineering BIM	0.12	0.37	0.16	0.04	1.00										
6. Family Activity BIM	0.20	0.06	0.27	0.25	-0.18	1.00									
7. Finance BIM	0.19	0.81	-0.08	-0.07	0.43	-0.02	1.00								
8. Human Relations Mgmt BIM	0.18	0.73	0.09	0.22	0.20	0.22	0.64	1.00							
9. Information Technology BIM	0.05	0.45	0.14	0.11	0.71	-0.12	0.49	0.31	1.00						
10. Law BIM	0.17	0.41	0.08	0.29	0.24	0.00	0.38	0.47	0.28	1.00					
11. Life Science BIM	0.09	0.00	0.20	0.15	0.40	0.00	0.08	0.04	0.24	0.22	1.00				
12. Management BIM	0.22	0.85	0.05	0.16	0.38	0.10	0.73	0.77	0.48	0.51	0.06	1.00			
13. Manual Labor BIM	0.25	0.20	0.18	0.08	0.58	0.04	0.25	0.21	0.37	0.12	0.40	0.20	1.00		
14. Math BIM	0.09	0.25	0.04	-0.06	0.57	-0.09	0.41	0.13	0.51	0.15	0.33	0.24	0.33	1.00	
15. Medical Service BIM	0.27	0.02	0.12	0.14	0.14	0.20	0.05	0.13	0.06	0.31	0.67	0.11	0.18	0.19	1.00
16. Outdoor-Agriculture BIM	0.26	0.09	0.22	0.12	0.53	0.07	0.14	0.11	0.26	0.13	0.66	0.13	0.75	0.29	0.37
17. Office Work BIM	0.11	0.64	0.11	0.12	0.25	0.29	0.65	0.69	0.40	0.28	0.05	0.66	0.36	0.27	0.08
18. Performing Arts BIM	0.08	0.13	0.66	0.70	0.12	0.27	-0.01	0.20	0.15	0.22	0.16	0.19	0.17	0.02	0.15
19. Personal Service BIM	0.28	0.33	0.45	0.42	-0.01	0.54	0.16	0.48	0.05	0.22	0.07	0.37	0.26	-0.05	0.26
20. Physical/Risk Taking BIM	0.46	0.10	0.17	0.10	0.38	0.03	0.07	0.05	0.21	0.30	0.36	0.14	0.39	0.17	0.35
21. Physical Science	0.11	0.13	0.24	0.16	0.63	-0.08	0.21	0.09	0.48	0.24	0.78	0.17	0.42	0.56	0.48
22. Politics BIM	0.15	0.38	0.17	0.41	0.20	0.00	0.29	0.45	0.22	0.62	0.17	0.48	0.14	0.06	0.13
23. Professional Advising BIM	0.19	0.67	0.13	0.25	0.22	0.28	0.58	0.86	0.32	0.45	0.09	0.73	0.21	0.17	0.22
24. Protective BIM	0.34	0.26	0.02	0.09	0.54	-0.11	0.29	0.29	0.38	0.49	0.35	0.33	0.57	0.24	0.32
25. Religious Activity BIM	0.16	0.01	0.21	0.29	0.01	0.31	0.00	0.22	0.04	0.11	0.06	0.10	0.17	0.07	0.14
26. Sales BIM	0.26	0.80	0.11	0.15	0.32	0.12	0.62	0.65	0.39	0.35	0.05	0.72	0.29	0.16	0.07
27. Skilled Trades BIM	0.20	0.24	0.13	-0.03	0.84	-0.13	0.31	0.12	0.56	0.17	0.37	0.25	0.73	0.47	0.11
28. Social Science BIM	0.03	0.15	0.36	0.50	0.03	0.29	0.09	0.46	0.08	0.42	0.36	0.25	0.10	0.08	0.44
29. Social Service BIM	0.14	0.11	0.24	0.35	-0.16	0.55	0.03	0.49	-0.10	0.28	0.12	0.23	0.07	-0.10	0.42
30. Teaching BIM	0.14	0.25	0.28	0.49	0.06	0.46	0.17	0.54	0.13	0.31	0.16	0.42	0.18	0.08	0.24
31. Technical Writing BIM	0.10	0.47	0.23	0.26	0.68	-0.07	0.49	0.40	0.73	0.33	0.31	0.48	0.48	0.48	0.13

Table 15. (Continued).

	16	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*	*31*
16. Outdoor-Agriculture BIM	1.00															
17. Office Work BIM	0.17	1.00														
18. Performing Arts BIM	0.19	0.17	1.00													
19. Personal Service BIM	0.20	0.50	0.51	1.00												
20. Physical/Risk Taking BIM	0.47	-0.07	0.21	0.14	1.00											
21. Physical Science	0.57	0.10	0.18	0.02	0.41	1.00										
22. Politics BIM	0.15	0.22	0.34	0.24	0.24	0.19	1.00									
23. Professional Advising BIM	0.15	0.66	0.26	0.49	0.08	0.14	0.42	1.00								
24. Protective BIM	0.51	0.18	0.16	0.13	0.63	0.42	0.36	0.27	1.00							
25. Religious Activity BIM	0.14	0.16	0.31	0.30	0.05	0.09	0.24	0.26	0.08	1.00						
26. Sales BIM	0.17	0.57	0.20	0.44	0.14	0.13	0.37	0.60	0.30	0.10	1.00					
27. Skilled Trades BIM	0.64	0.19	0.07	0.00	0.44	0.54	0.14	0.14	0.58	0.05	0.26	1.00				
28. Social Science BIM	0.17	0.25	0.36	0.40	0.16	0.30	0.41	0.50	0.17	0.31	0.15	-0.02	1.00			
29. Social Service BIM	0.08	0.32	0.29	0.58	0.06	0.00	0.27	0.54	0.09	0.43	0.18	-0.15	0.64	1.00		
30. Teaching BIM	0.19	0.41	0.41	0.49	0.03	0.15	0.41	0.61	0.15	0.40	0.28	0.02	0.57	0.64	1.00	
31. Technical Writing BIM	0.38	0.47	0.26	0.20	0.17	0.48	0.30	0.41	0.41	0.12	0.45	0.56	0.20	0.05	0.32	1.00

Table 16. Correlation Matrix for the Career Confidence Inventory Basic Confidence Scales.

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
1. Mechanical Act. BCS	1.00														
2. Information Technology BCS	0.46	1.00													
3. Protective Services BCS	0.51	0.34	1.00												
4. Outdoors BCS	0.61	0.20	0.53	1.00											
5. Science BCS	0.54	0.39	0.37	0.48	1.00										
6. Medical Science BCS	0.40	0.21	0.38	0.47	0.72	1.00									
7. Math BCS	0.48	0.37	0.19	0.25	0.60	0.27	1.00								
8. Visual Arts & Design BCS	0.36	0.36	0.17	0.36	0.20	0.19	0.09	1.00							
9. Music BCS	0.24	0.25	0.15	0.30	0.22	0.22	0.06	0.49	1.00						
10. Dramatic Arts BCS	0.25	0.31	0.30	0.37	0.19	0.22	0.04	0.67	0.57	1.00					
11. Writing BCS	0.17	0.20	0.14	0.31	0.20	0.15	0.12	0.45	0.39	0.64	1.00				
12. Artistic Creative BCS	0.34	0.48	0.25	0.36	0.20	0.20	0.08	0.91	0.56	0.81	0.53	1.00			
13. Helping BCS	0.12	-0.11	0.10	0.23	0.08	0.22	0.01	0.20	0.18	0.26	0.37	0.21	1.00		
14. Teaching BCS	0.36	0.27	0.29	0.33	0.40	0.33	0.36	0.28	0.29	0.41	0.50	0.36	0.53	1.00	
15. Cultural Sensitivity BCS	0.18	0.14	0.18	0.28	0.24	0.21	0.11	0.38	0.29	0.44	0.52	0.42	0.55	0.56	1.00
16. Human Resources & Training BCS	0.24	0.19	0.27	0.26	0.21	0.21	0.21	0.26	0.17	0.36	0.50	0.34	0.57	0.73	0.64
17. Medical Service BCS	0.31	0.10	0.42	0.41	0.42	0.72	0.09	0.18	0.18	0.22	0.16	0.19	0.47	0.36	0.29
18. Marketing/Advertising BCS	0.33	0.45	0.29	0.32	0.19	0.16	0.22	0.62	0.30	0.61	0.50	0.76	0.23	0.45	0.42
19. Sales BCS	0.29	0.34	0.33	0.27	0.16	0.14	0.19	0.37	0.21	0.44	0.38	0.50	0.27	0.40	0.38
20. Management BCS	0.26	0.30	0.36	0.26	0.13	0.18	0.18	0.28	0.15	0.38	0.36	0.40	0.31	0.51	0.41
21. Entrepreneurship BCS	0.34	0.38	0.34	0.28	0.20	0.19	0.28	0.30	0.13	0.34	0.29	0.40	0.20	0.45	0.33
22. Public Speaking BCS	0.26	0.17	0.29	0.27	0.27	0.21	0.23	0.23	0.26	0.39	0.51	0.32	0.49	0.68	0.54
23. Politics BCS	0.22	0.25	0.45	0.25	0.20	0.21	0.06	0.24	0.28	0.44	0.39	0.35	0.27	0.42	0.43
24. Law BCS	0.27	0.29	0.62	0.32	0.32	0.36	0.16	0.22	0.21	0.42	0.38	0.34	0.28	0.44	0.39
25. Accounting BCS	0.34	0.46	0.37	0.24	0.30	0.22	0.46	0.16	0.14	0.21	0.20	0.25	0.08	0.39	0.21
26. Office Management BCS	0.25	0.23	0.13	0.22	0.18	0.17	0.31	0.31	0.15	0.32	0.46	0.35	0.49	0.60	0.51
27. Personal Computing BCS	0.43	0.76	0.18	0.17	0.38	0.15	0.46	0.27	0.14	0.18	0.23	0.33	0.00	0.30	0.17

Table 16. (Continued).

	16	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*
16. Human Resources & Training BCS	1.00											
17. Medical Service BCS	0.33	1.00										
18. Marketing/Advertising BCS	0.59	0.16	1.00									
19. Sales BCS	0.59	0.18	0.84	1.00								
20. Management BCS	0.73	0.25	0.69	0.68	1.00							
21. Entrepreneurship BCS	0.60	0.22	0.65	0.62	0.82	1.00						
22. Public Speaking BCS	0.76	0.31	0.45	0.47	0.51	0.44	1.00					
23. Politics BCS	0.48	0.27	0.43	0.48	0.47	0.42	0.57	1.00				
24. Law BCS	0.46	0.38	0.42	0.43	0.48	0.45	0.48	0.65	1.00			
25. Accounting BCS	0.45	0.17	0.49	0.49	0.65	0.68	0.31	0.38	0.45	1.00		
26. Office Management BCS	0.76	0.22	0.57	0.53	0.69	0.62	0.58	0.32	0.32	0.51	1.00	
27. Personal Computing BCS	0.24	0.05	0.38	0.26	0.23	0.28	0.21	0.09	0.18	0.33	0.31	1.00

Table 17. Correlation Matrix for the Public Domain Basic Interest Markers by the IPIP NEO-PI-R Facet Scales.

	N1	*N2*	*N3*	*N4*	*N5*	*N6*	*E1*	*E2*	*E3*	*E4*	*E5*	*E6*	*O1*	*O2*	*O3*	*O4*
Athletic Coaching BIM	-0.21	-0.17	-0.23	-0.22	-0.07	-0.24	0.21	0.24	0.17	0.15	0.29	0.18	-0.03	-0.09	-0.11	0.11
Business BIM	-0.13	-0.02	-0.01	-0.17	0.01	-0.13	0.02	0.15	0.13	0.05	0.08	-0.03	-0.11	-0.10	-0.11	0.05
Creative Arts BIM	0.05	0.00	0.11	0.04	0.10	0.10	0.03	0.03	0.01	-0.07	0.08	0.17	0.34	0.57	0.21	0.18
Creative Writing BIM	0.04	0.01	0.08	-0.06	0.07	0.05	0.09	0.06	0.11	-0.03	0.07	0.19	0.35	0.37	0.23	0.10
Engineering BIM	-0.20	-0.05	0.04	-0.06	-0.06	-0.18	-0.20	-0.15	-0.07	-0.05	0.09	-0.17	-0.02	-0.15	-0.27	0.06
Family Activity BIM	0.11	-0.01	-0.10	-0.04	0.02	0.04	0.29	0.22	0.18	0.18	0.04	0.35	0.19	0.37	0.36	0.06
Finance BIM	-0.13	-0.03	-0.03	-0.09	-0.07	-0.14	-0.08	0.01	0.02	0.07	-0.02	-0.12	-0.18	-0.16	-0.14	-0.01
Human Relations Mgmt BIM	-0.07	-0.03	-0.03	-0.18	-0.02	-0.08	0.11	0.17	0.19	0.07	0.01	0.06	-0.08	0.03	0.07	0.06
Information Technology BIM	-0.14	-0.04	0.02	-0.02	-0.07	-0.12	-0.16	-0.09	-0.08	-0.06	-0.01	-0.13	0.00	-0.12	-0.17	0.04
Law BIM	-0.10	-0.05	0.01	-0.16	-0.05	-0.10	-0.01	0.07	0.12	0.07	0.13	-0.04	0.00	-0.04	-0.04	0.10
Life Science BIM	-0.07	-0.10	0.04	-0.02	-0.05	-0.10	-0.06	-0.11	-0.05	0.00	0.05	0.00	0.11	0.11	-0.06	0.11
Management BIM	-0.16	-0.03	-0.04	-0.23	-0.03	-0.17	0.04	0.16	0.21	0.12	0.07	-0.03	-0.10	-0.10	-0.09	0.05
Manual Labor BIM	-0.12	-0.05	0.07	0.01	0.00	-0.08	-0.12	-0.11	-0.08	-0.03	0.08	-0.04	0.02	-0.08	-0.13	0.01
Mathematics BIM	-0.10	-0.06	0.01	-0.01	-0.08	-0.11	-0.13	-0.13	-0.05	0.05	-0.02	-0.10	-0.04	-0.10	-0.13	0.01
Medical Service BIM	-0.02	-0.10	-0.02	-0.04	-0.04	-0.06	0.07	0.05	0.02	0.06	0.08	0.07	0.04	0.12	0.06	0.09
Outdoor-Agriculture BIM	-0.14	-0.12	0.01	-0.05	-0.02	-0.12	-0.04	-0.08	-0.04	0.02	0.12	0.00	0.08	0.03	-0.12	0.10
Office Work BIM	0.08	0.05	0.07	0.05	0.02	0.03	-0.07	0.01	-0.01	0.08	-0.12	-0.04	-0.08	0.00	0.08	-0.09
Performing Arts BIM	0.02	0.01	0.05	-0.10	0.08	0.05	0.15	0.16	0.15	-0.01	0.14	0.21	0.30	0.37	0.19	0.10
Personal Service BIM	0.10	0.02	0.04	-0.04	0.15	0.12	0.19	0.28	0.14	0.08	0.14	0.24	0.08	0.27	0.23	0.08
Physical/Risk Taking BIM	-0.27	-0.16	-0.09	-0.23	0.06	-0.22	0.10	0.15	0.15	0.05	0.56	0.15	0.19	0.04	-0.12	0.32
Physical Science BIM	-0.12	-0.08	0.05	-0.06	-0.06	-0.14	-0.10	-0.12	-0.04	-0.02	0.06	-0.05	0.12	0.07	-0.12	0.14
Politics BIM	-0.11	0.01	0.03	-0.20	0.06	-0.10	0.03	0.10	0.21	0.05	0.13	-0.01	0.01	0.01	0.02	0.09
Professional Advising BIM	-0.08	-0.08	-0.05	-0.18	-0.04	-0.10	0.13	0.17	0.19	0.09	0.01	0.08	-0.07	0.06	0.07	0.07
Protective BIM	-0.23	-0.07	-0.03	-0.14	-0.02	-0.20	-0.07	-0.02	0.03	-0.02	0.24	-0.05	0.02	-0.19	-0.22	0.10
Religious Act. BIM	-0.04	-0.09	-0.07	-0.08	-0.10	-0.05	0.20	0.12	0.13	0.12	-0.02	0.20	0.10	0.21	0.24	0.03
Sales BIM	-0.11	0.01	-0.01	-0.15	0.05	-0.06	0.08	0.21	0.14	-0.01	0.12	0.04	-0.10	-0.09	-0.09	0.03
Skilled Trades BIM	-0.23	-0.10	0.01	-0.05	-0.07	-0.19	-0.16	-0.15	-0.06	-0.03	0.11	-0.10	-0.01	-0.17	-0.27	0.08
Social Science BIM	0.05	-0.09	0.07	-0.03	0.00	0.03	0.08	0.06	0.04	-0.03	0.02	0.16	0.20	0.35	0.30	0.14
Social Service BIM	0.10	-0.05	0.01	-0.05	0.05	0.10	0.25	0.23	0.14	0.07	0.07	0.27	0.07	0.30	0.37	0.10
Teaching BIM	-0.01	-0.07	-0.05	-0.13	0.01	-0.03	0.18	0.14	0.20	0.10	-0.02	0.18	0.10	0.20	0.22	0.06
Technical Writing BIM	-0.08	-0.01	0.06	-0.04	-0.04	-0.06	-0.12	-0.07	-0.05	-0.02	0.01	-0.11	0.00	-0.08	-0.12	-0.01

Table 17. (Continued).

	O5	*O6*	*A1*	*A2*	*A3*	*A4*	*A5*	*A6*	*C1*	*C2*	*C3*	*C4*	*C5*	*C6*
Athletic Coaching BIM	-0.08	-0.18	0.16	-0.06	0.09	0.01	-0.06	-0.12	0.18	-0.02	0.03	0.14	0.15	-0.08
Business BIM	0.03	-0.06	-0.06	-0.21	-0.14	-0.14	-0.14	-0.17	0.04	0.02	-0.12	0.04	0.06	-0.05
Creative Arts BIM	0.25	0.25	0.03	0.01	0.14	0.07	-0.05	0.14	-0.04	-0.07	-0.05	0.00	-0.08	-0.08
Creative Writing BIM	0.28	0.19	0.02	-0.02	0.16	0.03	-0.16	0.16	-0.01	-0.10	-0.04	0.03	-0.04	-0.06
Engineering BIM	0.20	0.03	-0.08	-0.25	-0.27	-0.17	-0.12	-0.21	-0.02	-0.12	-0.20	-0.11	-0.06	-0.07
Family Activity BIM	0.01	-0.15	0.26	0.29	0.43	0.24	0.03	0.30	0.21	0.25	0.30	0.33	0.21	0.06
Finance BIM	0.04	-0.08	-0.05	-0.18	-0.18	-0.13	-0.09	-0.14	0.04	0.08	-0.07	0.02	0.08	0.05
Human Relations Mgmt BIM	0.05	-0.01	0.05	-0.09	0.04	-0.03	-0.10	0.07	0.05	0.04	-0.01	0.09	0.10	0.00
Information Technology BIM	0.20	0.05	-0.06	-0.18	-0.21	-0.12	-0.12	-0.18	-0.01	-0.06	-0.11	-0.08	-0.06	0.00
Law BIM	0.18	0.05	-0.09	-0.15	-0.06	-0.18	-0.12	-0.04	0.04	-0.07	-0.10	0.00	0.02	-0.07
Life Science BIM	0.27	0.14	0.02	-0.01	-0.01	0.00	-0.01	0.00	0.06	-0.05	0.01	0.01	0.00	0.04
Management BIM	0.08	-0.04	-0.01	-0.20	-0.11	-0.12	-0.18	-0.12	0.08	0.03	-0.08	0.06	0.10	-0.03
Manual Labor BIM	0.01	0.01	-0.01	-0.17	-0.11	-0.10	0.01	-0.10	-0.06	-0.10	-0.11	-0.07	-0.05	-0.09
Mathematics BIM	0.25	0.03	-0.01	-0.10	-0.15	-0.07	-0.08	-0.09	0.02	-0.02	-0.03	0.02	-0.03	0.03
Medical Service BIM	0.14	0.07	0.12	0.05	0.16	0.07	0.05	0.12	0.11	0.05	0.08	0.07	0.08	0.04
Outdoor-Agriculture BIM	0.12	0.02	0.03	-0.08	-0.03	-0.03	0.01	-0.06	0.02	-0.10	-0.05	-0.02	-0.02	-0.04
Office Work BIM	-0.05	-0.06	0.03	-0.07	-0.02	-0.01	0.01	0.05	0.00	0.16	0.04	0.08	0.06	0.06
Performing Arts BIM	0.18	0.13	0.08	-0.05	0.13	0.00	-0.25	0.12	0.00	-0.10	-0.07	0.00	-0.08	-0.11
Personal Service BIM	-0.10	0.03	0.17	-0.03	0.20	0.09	-0.07	0.14	0.00	0.05	-0.01	0.10	0.06	-0.10
Physical/Risk Taking BIM	0.19	0.05	0.01	-0.15	0.00	-0.13	-0.10	-0.13	0.07	-0.16	-0.14	-0.03	-0.07	-0.28
Physical Science BIM	0.35	0.14	-0.01	-0.08	-0.10	-0.05	-0.08	-0.04	0.02	-0.09	-0.06	-0.03	-0.05	-0.03
Politics BIM	0.24	0.11	-0.06	-0.23	-0.08	-0.23	-0.23	-0.05	0.00	-0.16	-0.17	-0.04	-0.04	-0.09
Professional Advising BIM	0.07	-0.05	0.09	-0.03	0.10	0.03	-0.10	0.11	0.10	0.07	0.06	0.13	0.13	0.04
Protective BIM	0.07	-0.03	-0.09	-0.24	-0.17	-0.23	-0.11	-0.19	0.02	-0.14	-0.16	-0.09	-0.02	-0.13
Religious Act. BIM	0.14	-0.28	0.17	0.18	0.26	0.19	-0.03	0.32	0.08	0.01	0.16	0.17	0.08	0.08
Sales BIM	-0.05	-0.04	-0.01	-0.24	-0.11	-0.14	-0.16	-0.13	0.01	-0.02	-0.16	-0.01	0.03	-0.12
Skilled Trades BIM	0.15	-0.02	-0.05	-0.20	-0.22	-0.16	-0.06	-0.21	-0.02	-0.13	-0.15	-0.09	-0.06	-0.09
Social Science BIM	0.31	0.23	0.08	0.09	0.29	0.13	0.00	0.31	0.02	-0.02	0.09	0.05	-0.01	0.03
Social Service BIM	0.03	0.04	0.22	0.16	0.44	0.19	0.07	0.44	0.04	0.05	0.15	0.14	0.06	-0.03
Teaching BIM	0.15	0.03	0.18	0.07	0.23	0.12	-0.10	0.23	0.08	0.03	0.12	0.16	0.08	0.04
Technical Writing BIM	0.15	0.10	-0.08	-0.22	-0.18	-0.13	-0.13	-0.14	-0.07	-0.07	-0.16	-0.08	-0.05	-0.03

Table 18. Correlation Matrix for the Career Confidence Inventory Basic Confidence Scales and the IPIP NEO-PI-R Facet Scales.

	N1	*N2*	*N3*	*N4*	*N5*	*N6*	*E1*	*E2*	*E3*	*E4*	*E5*	*E6*	*O1*	*O2*	*O3*
Mechanical Activities BCS	-0.25	-0.12	-0.09	-0.08	-0.08	-0.25	-0.03	-0.08	0.05	0.04	0.16	0.02	0.10	0.00	-0.19
Information Technology BCS	-0.18	-0.06	-0.03	-0.05	-0.06	-0.16	-0.11	-0.06	0.00	-0.02	0.04	-0.08	0.03	-0.12	-0.19
Protective Services BCS	-0.30	-0.12	-0.12	-0.24	-0.07	-0.28	0.03	0.04	0.14	0.07	0.31	0.00	0.01	-0.20	-0.26
Outdoors BCS	-0.16	-0.12	-0.09	-0.09	-0.06	-0.16	0.05	0.00	0.05	0.03	0.22	0.11	0.17	0.11	-0.09
Science BCS	-0.15	-0.13	-0.08	-0.07	-0.11	-0.21	-0.03	-0.09	0.03	0.08	0.07	0.02	0.10	0.05	-0.08
Medical Science BCS	-0.10	-0.09	-0.06	-0.08	-0.09	-0.14	0.04	0.01	0.07	0.09	0.10	0.03	0.02	0.04	-0.03
Mathematics BCS	-0.14	-0.12	-0.13	0.00	-0.13	-0.20	-0.04	-0.10	0.00	0.09	-0.02	0.02	0.01	-0.02	-0.09
Visual Arts & Design BCS	-0.04	0.01	0.03	-0.05	0.06	0.01	0.07	0.06	0.11	-0.01	0.16	0.14	0.25	0.38	0.09
Music BCS	-0.02	0.02	0.04	-0.04	0.01	-0.01	0.07	0.00	0.08	0.04	0.04	0.12	0.22	0.30	0.09
Dramatic Arts BCS	-0.06	0.02	0.00	-0.14	0.04	-0.04	0.12	0.11	0.17	-0.01	0.18	0.16	0.28	0.24	0.08
Writing BCS	-0.05	-0.01	-0.07	-0.12	0.02	-0.11	0.16	0.09	0.19	0.06	0.08	0.21	0.27	0.29	0.15
Artistic Creativity BCS	-0.07	0.00	0.01	-0.10	0.06	-0.03	0.10	0.11	0.16	-0.02	0.20	0.16	0.26	0.29	0.06
Helping BCS	-0.04	-0.11	-0.13	-0.20	-0.02	-0.07	0.37	0.27	0.31	0.20	0.15	0.35	0.12	0.29	0.32
Teaching BCS	-0.16	-0.13	-0.21	-0.25	-0.05	-0.23	0.23	0.15	0.36	0.23	0.10	0.23	0.11	0.13	0.10
Cultural Sensitivity BCS	-0.14	-0.14	-0.11	-0.24	0.01	-0.14	0.29	0.23	0.28	0.08	0.18	0.29	0.20	0.34	0.22
Human Res. & Training BCS	-0.17	-0.10	-0.23	-0.34	-0.01	-0.23	0.34	0.31	0.48	0.26	0.16	0.28	0.06	0.15	0.14
Medical Service BCS	-0.15	-0.11	-0.14	-0.21	-0.04	-0.15	0.21	0.19	0.19	0.16	0.23	0.17	0.04	0.07	0.04
Marketing & Advertising BCS	-0.13	-0.03	-0.09	-0.18	0.06	-0.12	0.16	0.20	0.24	0.04	0.21	0.17	0.08	0.09	-0.03
Sales BCS	-0.17	-0.05	-0.12	-0.26	0.04	-0.15	0.22	0.28	0.29	0.11	0.23	0.16	-0.02	-0.01	-0.07
Management BCS	-0.18	-0.05	-0.16	-0.29	0.00	-0.22	0.19	0.26	0.34	0.20	0.20	0.13	-0.01	-0.02	-0.03
Entrepreneurship BCS	-0.23	-0.07	-0.18	-0.25	-0.04	-0.23	0.12	0.20	0.25	0.18	0.16	0.11	-0.01	-0.04	-0.10
Public Speaking BCS	-0.22	-0.12	-0.25	-0.38	-0.06	-0.28	0.31	0.25	0.51	0.29	0.17	0.24	0.11	0.13	0.09
Politics BCS	-0.20	-0.05	-0.07	-0.26	0.01	-0.18	0.11	0.15	0.29	0.12	0.19	0.05	-0.02	-0.03	-0.06
Law BCS	-0.18	-0.08	-0.08	-0.22	-0.05	-0.20	0.07	0.10	0.20	0.12	0.21	0.05	0.01	-0.07	-0.09
Accounting & Finance BCS	-0.13	-0.03	-0.09	-0.09	-0.07	-0.16	-0.03	0.03	0.08	0.13	0.02	-0.05	-0.11	-0.15	-0.12
Office Management BCS	-0.05	-0.02	-0.15	-0.16	-0.01	-0.11	0.22	0.22	0.29	0.26	0.07	0.20	0.03	0.18	0.15
Personal Computing BCS	-0.15	-0.08	-0.08	-0.05	-0.06	-0.16	0.01	-0.01	0.03	0.01	0.06	0.06	0.07	0.02	-0.09

Table 18. (Continued).

	O4	*O5*	*O6*	*A1*	*A2*	*A3*	*A4*	*A5*	*A6*	*C1*	*C2*	*C3*	*C4*	*C5*	*C6*
Mechanical Activities BCS	0.13	0.21	-0.03	0.02	-0.09	-0.07	-0.08	-0.08	-0.13	0.14	-0.06	0.00	0.05	0.02	-0.04
Information Technology BCS	0.05	0.17	0.04	-0.06	-0.18	-0.20	-0.13	-0.14	-0.23	0.05	-0.05	-0.12	-0.04	-0.02	-0.02
Protective Services BCS	0.13	0.11	-0.06	-0.04	-0.25	-0.15	-0.22	-0.19	-0.21	0.10	-0.11	-0.14	-0.03	0.03	-0.13
Outdoors BCS	0.12	0.17	0.01	0.07	-0.03	0.04	-0.01	-0.08	-0.05	0.11	-0.06	0.02	0.06	0.03	-0.04
Science BCS	0.13	0.39	0.07	0.06	-0.02	-0.02	0.00	-0.11	-0.01	0.19	-0.01	0.06	0.12	0.04	0.06
Medical Science BCS	0.09	0.21	0.03	0.07	-0.02	0.04	0.00	-0.04	0.00	0.13	0.02	0.04	0.08	0.10	0.05
Mathematics BCS	0.04	0.28	-0.03	0.09	0.05	-0.02	0.07	-0.06	-0.03	0.21	0.06	0.15	0.18	0.06	0.11
Visual Arts & Design BCS	0.15	0.18	0.17	0.01	-0.11	0.03	-0.03	-0.15	-0.01	0.02	-0.04	-0.12	0.03	0.02	-0.09
Music BCS	0.07	0.20	0.07	0.03	-0.02	0.06	0.01	-0.17	0.06	-0.02	-0.05	-0.05	0.01	-0.02	-0.02
Dramatic Arts BCS	0.09	0.18	0.14	0.02	-0.11	0.05	-0.07	-0.22	0.01	0.02	-0.10	-0.10	0.01	-0.02	-0.11
Writing BCS	0.14	0.33	0.09	0.06	0.05	0.17	0.05	-0.17	0.11	0.18	0.02	0.09	0.18	0.08	0.03
Artistic Creativity BCS	0.12	0.17	0.15	0.01	-0.16	0.01	-0.07	-0.22	-0.05	0.02	-0.07	-0.15	0.02	-0.01	-0.13
Helping BCS	0.14	0.12	-0.09	0.24	0.21	0.45	0.19	-0.01	0.35	0.21	0.06	0.22	0.26	0.15	-0.01
Teaching BCS	0.15	0.31	-0.02	0.19	0.06	0.20	0.08	-0.20	0.12	0.29	0.07	0.18	0.32	0.16	0.09
Cultural Sensitivity BCS	0.29	0.31	0.17	0.18	0.07	0.30	0.09	-0.15	0.25	0.17	-0.02	0.08	0.18	0.07	-0.03
Human Res. & Training BCS	0.21	0.21	-0.06	0.16	0.05	0.23	0.02	-0.24	0.11	0.33	0.13	0.16	0.37	0.22	0.04
Medical Service BCS	0.12	0.09	-0.06	0.13	-0.01	0.18	0.02	-0.06	0.08	0.17	0.02	0.05	0.13	0.15	-0.04
Marketing & Advertising BCS	0.11	0.13	0.03	0.02	-0.16	0.00	-0.08	-0.24	-0.10	0.11	0.00	-0.09	0.11	0.06	-0.11
Sales BCS	0.11	0.06	-0.02	0.04	-0.17	-0.01	-0.09	-0.23	-0.10	0.13	-0.01	-0.08	0.12	0.09	-0.12
Management BCS	0.10	0.08	-0.08	0.03	-0.12	0.01	-0.09	-0.22	-0.09	0.21	0.10	0.00	0.21	0.18	-0.02
Entrepreneurship BCS	0.13	0.10	-0.07	0.03	-0.14	-0.04	-0.09	-0.20	-0.12	0.19	0.04	-0.01	0.17	0.16	-0.03
Public Speaking BCS	0.23	0.31	-0.06	0.12	0.02	0.18	0.00	-0.28	0.07	0.32	0.03	0.13	0.31	0.19	0.03
Politics BCS	0.14	0.20	0.06	0.00	-0.22	-0.05	-0.18	-0.27	-0.07	0.07	-0.12	-0.14	0.02	0.04	-0.07
Law BCS	0.11	0.24	0.02	-0.06	-0.21	-0.05	-0.22	-0.20	-0.09	0.10	-0.09	-0.10	0.05	0.04	-0.06
Accounting & Finance BCS	-0.03	0.08	-0.07	0.00	-0.14	-0.13	-0.11	-0.12	-0.14	0.10	0.08	0.00	0.10	0.10	0.06
Office Management BCS	0.09	0.13	-0.10	0.19	0.10	0.20	0.11	-0.11	0.09	0.29	0.26	0.22	0.37	0.25	0.11
Personal Computing BCS	0.12	0.22	0.00	0.01	-0.02	-0.02	-0.03	-0.09	-0.12	0.18	0.05	0.07	0.10	0.02	0.04

Table 19. Correlation Matrix for the Career Confidence Inventory Basic Confidence Scale with the Public Domain Basic Interest Markers.

	Athletic Coaching BIM	*Business BIM*	*Creative Arts BIM*	*Creative Writing BIM*	*Engineering BIM*	*Family Activity BIM*	*Finance BIM*	*Human Relations Mgmt BIM*	*Info. Tech. BIM*	*Law BIM*
Mechanical Activities BCS	0.22	0.09	0.15	-0.02	0.57	0.02	0.11	-0.03	0.32	0.06
Information Technology BCS	0.05	0.28	0.09	0.07	0.51	-0.14	0.28	0.10	0.69	0.14
Protective Services BCS	0.34	0.17	-0.09	0.01	0.37	-0.18	0.19	0.14	0.22	0.36
Outdoors BCS	0.25	-0.01	0.19	0.15	0.28	0.06	0.00	0.00	0.07	0.08
Science BCS	0.10	0.02	0.07	0.03	0.40	-0.05	0.12	-0.03	0.30	0.14
Medical Science BCS	0.20	-0.04	0.04	0.05	0.18	0.03	0.02	0.00	0.08	0.18
Mathematics BCS	0.14	0.15	-0.01	-0.11	0.36	0.02	0.29	0.00	0.30	0.05
Visual Arts & Design BCS	0.03	0.14	0.69	0.44	0.21	0.16	-0.01	0.06	0.15	0.06
Music BCS	-0.02	0.01	0.45	0.42	0.14	0.10	-0.03	0.04	0.13	0.07
Dramatic Arts BCS	0.06	0.18	0.50	0.62	0.14	0.12	0.00	0.17	0.13	0.24
Writing BCS	0.05	0.13	0.38	0.65	-0.01	0.21	-0.01	0.22	0.07	0.23
Artistic Creativity BCS	0.06	0.24	0.61	0.52	0.23	0.12	0.05	0.15	0.24	0.15
Helping BCS	0.18	-0.03	0.14	0.25	-0.23	0.49	-0.11	0.24	-0.23	0.15
Teaching BCS	0.17	0.16	0.12	0.24	0.10	0.25	0.13	0.29	0.11	0.22
Cultural Sensitivity BCS	0.08	0.15	0.32	0.36	0.00	0.26	0.05	0.34	0.04	0.25
Human Res. & Train. BCS	0.21	0.35	0.08	0.20	-0.01	0.31	0.23	0.49	0.05	0.27
Medical Service BCS	0.31	-0.06	0.02	0.09	0.03	0.15	-0.06	0.07	-0.07	0.17
Marketing & Advert. BCS	0.17	0.52	0.31	0.31	0.22	0.11	0.32	0.37	0.26	0.23
Sales BCS	0.22	0.52	0.12	0.16	0.17	0.09	0.33	0.40	0.19	0.25
Management BCS	0.25	0.57	0.01	0.11	0.11	0.15	0.45	0.49	0.13	0.30
Entrepreneurship BCS	0.25	0.56	0.03	0.06	0.21	0.12	0.49	0.40	0.21	0.26
Public Speaking BCS	0.19	0.22	0.08	0.24	0.03	0.22	0.13	0.34	0.05	0.30
Politics BCS	0.17	0.31	0.05	0.24	0.15	-0.03	0.24	0.35	0.13	0.45
Law BCS	0.19	0.27	0.00	0.21	0.18	-0.06	0.26	0.30	0.16	0.66
Accounting & Finance BCS	0.22	0.54	-0.08	-0.04	0.27	0.01	0.65	0.39	0.33	0.27
Office Management BCS	0.16	0.36	0.13	0.14	-0.01	0.40	0.27	0.38	0.08	0.16
Personal Computing BCS	0.05	0.17	0.11	0.04	0.37	0.02	0.17	0.03	0.56	0.06

Table 19. (Continued).

	Life Science BIM	*MGMT BIM*	*Manual Labor BIM*	*Mathematics BIM*	*Medical Service BIM*	*Outdoor-Ag. BIM*	*Office Work BIM*	*Performing Arts BIM*	*Personal Service BIM*	*Phys./Risk Taking BIM*
Mechanical Activities BCS	0.31	0.11	0.47	0.33	0.18	0.47	0.02	0.07	-0.02	0.42
Information Technology BCS	0.10	0.29	0.18	0.37	-0.02	0.09	0.17	0.09	-0.05	0.16
Protective Services BCS	0.21	0.24	0.31	0.15	0.20	0.30	-0.02	0.07	-0.01	0.55
Outdoors BCS	0.48	0.03	0.41	0.10	0.31	0.59	-0.05	0.19	0.13	0.47
Science BCS	0.61	0.07	0.23	0.47	0.47	0.37	-0.02	0.06	-0.08	0.34
Medical Science BCS	0.59	0.04	0.14	0.22	0.70	0.29	-0.05	0.08	0.06	0.30
Mathematics BCS	0.23	0.13	0.18	0.68	0.15	0.21	0.13	-0.06	-0.08	0.17
Visual Arts & Design BCS	0.12	0.11	0.13	0.04	0.05	0.15	0.06	0.43	0.33	0.16
Music BCS	0.14	0.06	0.14	0.06	0.06	0.15	0.03	0.60	0.21	0.06
Dramatic Arts BCS	0.10	0.23	0.06	0.00	0.08	0.10	0.06	0.62	0.33	0.17
Writing BCS	0.09	0.17	-0.01	-0.05	0.10	0.06	0.10	0.43	0.26	0.09
Artistic Creativity BCS	0.09	0.22	0.11	0.05	0.02	0.11	0.10	0.51	0.34	0.17
Helping BCS	0.03	0.08	-0.03	-0.14	0.27	0.00	0.08	0.21	0.37	0.07
Teaching BCS	0.14	0.28	0.08	0.20	0.19	0.13	0.16	0.23	0.21	0.15
Cultural Sensitivity BCS	0.15	0.22	0.04	0.02	0.18	0.07	0.12	0.33	0.33	0.15
Human Res. & Train. BCS	0.03	0.43	0.01	0.03	0.13	0.01	0.29	0.19	0.32	0.11
Medical Service BCS	0.33	0.03	0.11	0.03	0.61	0.19	-0.07	0.11	0.17	0.31
Marketing & Advert. BCS	0.01	0.47	0.08	0.09	0.00	0.04	0.27	0.30	0.33	0.14
Sales BCS	-0.02	0.48	0.10	0.07	0.01	0.05	0.26	0.22	0.29	0.16
Management BCS	-0.06	0.58	0.03	0.05	0.05	0.00	0.34	0.12	0.29	0.11
Entrepreneurship BCS	-0.01	0.53	0.09	0.14	0.03	0.07	0.32	0.09	0.23	0.14
Public Speaking BCS	0.05	0.33	0.02	0.06	0.11	0.06	0.13	0.26	0.20	0.18
Politics BCS	0.08	0.40	0.10	0.01	0.07	0.10	0.13	0.22	0.16	0.23
Law BCS	0.15	0.37	0.08	0.12	0.20	0.07	0.11	0.18	0.10	0.30
Account. & Finance BCS	0.06	0.52	0.13	0.34	0.09	0.08	0.44	0.01	0.11	0.08
Office Management BCS	-0.01	0.41	0.00	0.07	0.12	-0.02	0.39	0.16	0.39	0.01

Table 19. (Continued).

	Physical Sci. BIM	*Politics BIM*	*Prof. Advis. BIM*	*Prot. BIM*	*Religious Act. BIM*	*Sales BIM*	*Skill Trades BIM*	*Soc. Sci. BIM*	*Social Serv. BIM*	*Teach. BIM*	*Tech. Writ. BIM*
Mechanical Act. BCS	0.43	0.05	0.05	0.39	0.05	0.11	0.65	-0.03	-0.09	0.01	0.32
Information Tech. BCS	0.31	0.11	0.12	0.22	-0.02	0.23	0.37	-0.08	-0.18	-0.02	0.52
Protective Service BCS	0.28	0.28	0.13	0.68	0.01	0.17	0.38	0.01	-0.05	0.01	0.22
Outdoors BCS	0.38	0.10	0.04	0.38	0.09	0.06	0.34	0.12	0.05	0.10	0.14
Science BCS	0.67	0.13	0.04	0.26	0.08	0.00	0.35	0.19	-0.05	0.05	0.27
Medical Science BCS	0.48	0.09	0.08	0.24	0.07	0.00	0.15	0.22	0.14	0.07	0.14
Math BCS	0.39	0.00	0.05	0.11	0.05	0.05	0.33	-0.01	-0.13	0.01	0.25
Visual Art/Design BCS	0.17	0.13	0.11	0.05	0.13	0.17	0.15	0.16	0.11	0.16	0.25
Music BCS	0.19	0.16	0.10	0.04	0.23	0.04	0.10	0.16	0.09	0.22	0.23
Dramatic Arts BCS	0.14	0.35	0.23	0.14	0.16	0.22	0.05	0.26	0.17	0.30	0.25
Writing BCS	0.10	0.35	0.24	0.03	0.22	0.11	-0.05	0.35	0.22	0.35	0.17
Artistic Creativity BCS	0.16	0.23	0.18	0.10	0.13	0.28	0.13	0.16	0.10	0.21	0.31
Helping BCS	-0.07	0.19	0.30	-0.01	0.40	0.05	-0.17	0.40	0.65	0.47	-0.10
Teaching BCS	0.19	0.27	0.37	0.13	0.24	0.13	0.09	0.29	0.29	0.50	0.21
Cultural Sens. BCS	0.16	0.34	0.34	0.06	0.31	0.16	-0.03	0.49	0.44	0.41	0.13
HR/Training BCS	0.04	0.31	0.50	0.09	0.22	0.32	-0.01	0.28	0.36	0.41	0.11
Medical Service BCS	0.21	0.12	0.15	0.29	0.19	0.01	0.04	0.21	0.35	0.18	0.02
Market./Advert. BCS	0.09	0.28	0.37	0.12	0.06	0.56	0.13	0.11	0.09	0.20	0.30
Sales BCS	0.05	0.30	0.39	0.15	0.09	0.63	0.13	0.06	0.12	0.19	0.25
Mgmt BCS	-0.01	0.29	0.48	0.15	0.04	0.49	0.05	0.08	0.17	0.23	0.19
Entrepreneurial BCS	0.07	0.23	0.41	0.16	0.02	0.48	0.16	0.03	0.08	0.15	0.24
Public Speak. BCS	0.08	0.41	0.39	0.13	0.27	0.18	0.04	0.25	0.26	0.40	0.11
Politics BCS	0.10	0.70	0.32	0.27	0.20	0.31	0.12	0.20	0.17	0.27	0.20
Law BCS	0.18	0.55	0.29	0.42	0.08	0.24	0.12	0.26	0.14	0.20	0.22
Account./Finance BCS	0.16	0.20	0.39	0.21	0.02	0.40	0.20	0.01	0.02	0.13	0.32
Office Mgmt BCS	-0.01	0.16	0.42	-0.01	0.16	0.28	-0.04	0.19	0.30	0.31	0.10
Personal Comput. BCS	0.28	0.05	0.07	0.13	-0.01	0.13	0.28	-0.03	-0.12	-0.02	0.35

Table 20. Means and Standard Deviations of IPIP NEO-PI-R Domain Scales by Major Group.

Major Group	*ART*		*BUS*		*CS*		*EDU*		*E/T*		*S/M*		*SS*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Neuroticism	2.62	0.67	2.43	0.64	2.44	0.65	2.47	0.63	2.48	0.70	2.40	0.71	2.44	0.69	2.69	0.69
Extraversion	3.43	0.65	3.56	0.59	3.54	0.60	3.67	0.67	3.27	0.66	3.49	0.65	3.52	0.62	3.33	0.70
Openness	3.72	0.60	3.28	0.53	3.35	0.55	3.31	0.69	3.38	0.66	3.58	0.56	3.63	0.64	3.61	0.57
Agreeableness	3.56	0.50	3.52	0.52	3.68	0.53	3.73	0.52	3.46	0.50	3.73	0.51	3.59	0.56	3.56	0.52
Conscientiousness	3.63	0.55	3.58	0.58	3.64	0.58	3.68	0.65	3.52	0.58	3.67	0.60	3.60	0.58	3.40	0.69

Note. N = . ART = Arts. BUS = Business. CS = Community Services. EDU = Education. E/T = Engineering/Technology. S/M = Science/Math. SS = Social Sciences. TOT = Total.

Table 21. Means and Standard Deviations for the Interest Profiler by Major Group.

Major Group	*ART*		*BUS*		*CS*		*EDU*		*E/T*		*S/M*		*SS*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Realistic Interest	2.04	0.73	2.07	0.81	1.90	0.69	1.84	0.67	2.80	0.70	2.15	0.71	2.00	0.72	1.91	0.70
Investigative Interest	2.31	0.78	2.23	0.79	2.45	0.78	2.13	0.77	2.93	0.88	3.33	0.77	2.52	0.81	2.42	0.67
Artistic Interest	3.33	0.83	2.68	0.83	2.52	0.76	2.85	0.79	2.83	0.86	2.94	0.91	3.04	0.87	3.02	0.84
Social Interest	3.26	0.70	3.11	0.74	3.59	0.63	3.76	0.68	2.90	0.80	3.47	0.67	3.59	0.66	3.41	0.68
Enterprising Interest	2.87	0.69	3.35	0.63	2.58	0.79	2.60	0.68	2.64	0.75	2.59	0.73	2.79	0.75	2.79	0.71
Conventional Interest	2.32	0.62	2.83	0.74	2.17	0.71	2.12	0.68	2.66	0.79	2.37	0.77	2.25	0.74	2.21	0.67

Note. N = . ART = Arts. BUS = Business. CS = Community Services. EDU = Education. E/T = Engineering/Technology. S/M = Science/Math. SS = Social Sciences. TOT = Total.

Table 22. Means and Standard Deviations for the Career Confidence Inventory Domain Scales by Major Group.

Major Group	*ART*		*BUS*		*CS*		*EDU*		*E/T*		*S/M*		*SS*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Realistic Self-Efficacy	2.69	0.67	2.64	0.74	2.68	0.62	2.54	0.56	3.20	0.70	2.83	0.64	2.74	0.71	2.52	0.65
Investigative Self-Efficacy	2.60	0.68	2.70	0.65	2.95	0.74	2.54	0.64	3.36	0.63	3.56	0.62	2.88	0.73	2.62	0.70
Artistic Self-Efficacy	3.14	0.66	2.59	0.72	2.45	0.60	2.70	0.70	2.58	0.67	2.65	0.70	2.81	0.75	2.71	0.73
Social Self-Efficacy	3.35	0.65	3.25	0.62	3.43	0.54	3.56	0.58	3.18	0.63	3.41	0.59	3.53	0.60	3.32	0.58
Enterprising Self-Efficacy	2.81	0.63	3.11	0.61	2.63	0.56	2.68	0.58	2.75	0.64	2.67	0.61	2.90	0.68	2.64	0.59
Conventional Self-Efficacy	2.96	0.55	3.32	0.56	2.83	0.55	2.79	0.56	3.09	0.67	2.93	0.62	2.94	0.63	2.80	0.55

Note. N = . ART = Arts. BUS = Business. CS = Community Services. EDU = Education. E/T = Engineering/Technology. S/M = Science/Math. SS = Social Sciences. TOT = Total.

Table 23. Means and Standard Deviations of IPIP NEO-PI-R Facet Scales by Major Group.

Major Group	*ART*		*BUS*		*CS*		*EDU*		*E/T*		*S/M*		*SS*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
N1: Anxiety	3.04	0.65	2.92	0.61	3.01	0.55	3.08	0.61	2.90	0.67	2.95	0.71	2.88	0.66	3.20	0.65
N2: Anger	2.79	0.69	2.70	0.68	2.59	0.64	2.71	0.70	2.64	0.74	2.46	0.72	2.57	0.75	2.73	0.82
N3: Depression	2.38	0.73	2.20	0.64	2.17	0.69	2.18	0.68	2.30	0.78	2.20	0.71	2.26	0.72	2.56	0.70
N4: Self-Consciousness	2.92	0.62	2.81	0.59	2.88	0.55	2.83	0.65	2.90	0.69	2.88	0.69	2.77	0.60	3.13	0.64
N5: Immoderation	3.21	0.63	3.11	0.58	3.14	0.61	3.06	0.49	3.01	0.56	3.01	0.62	3.04	0.58	3.26	0.56
N6: Vulnerability	2.74	0.59	2.60	0.53	2.63	0.54	2.77	0.55	2.62	0.63	2.60	0.61	2.59	0.61	2.99	0.53
E1: Friendliness	3.62	0.62	3.74	0.57	3.83	0.57	3.90	0.64	3.48	0.66	3.79	0.61	3.76	0.59	3.59	0.68
E2: Gregariousness	3.40	0.69	3.52	0.62	3.43	0.59	3.41	0.64	3.12	0.66	3.36	0.67	3.38	0.60	3.27	0.69
E3: Assertiveness	3.39	0.64	3.43	0.52	3.40	0.51	3.47	0.56	3.33	0.57	3.40	0.58	3.42	0.59	3.15	0.62
E4: Activity Level	3.15	0.46	3.13	0.45	3.13	0.45	3.13	0.44	3.14	0.45	3.11	0.40	3.11	0.45	2.91	0.45
E5: Excitement-Seeking	3.37	0.68	3.35	0.62	3.32	0.63	3.14	0.67	3.33	0.68	3.27	0.66	3.32	0.58	3.33	0.69
E6: Cheerfulness	3.92	0.57	3.89	0.53	4.02	0.54	3.90	0.62	3.75	0.64	3.99	0.52	3.97	0.53	3.94	0.54
O1: Imagination	3.72	0.66	3.51	0.57	3.58	0.61	3.56	0.62	3.61	0.64	3.65	0.65	3.69	0.59	3.77	0.60
O2: Artistic Interests	4.07	0.59	3.60	0.67	3.79	0.57	3.83	0.64	3.64	0.70	3.98	0.60	3.96	0.61	4.07	0.59
O3: Emotionality	3.64	0.51	3.47	0.52	3.62	0.52	3.67	0.52	3.40	0.52	3.57	0.56	3.67	0.62	3.72	0.50
O4: Adventurousness	3.40	0.51	3.33	0.51	3.35	0.54	3.23	0.52	3.28	0.48	3.45	0.54	3.39	0.51	3.23	0.50
O5: Ideas	3.46	0.62	3.30	0.54	3.28	0.58	3.16	0.60	3.53	0.60	3.57	0.50	3.51	0.60	3.27	0.55
O6: Values	2.75	0.56	2.57	0.52	2.60	0.49	2.53	0.62	2.68	0.67	2.81	0.59	2.81	0.62	2.74	0.57
A1: Trust	3.48	0.61	3.48	0.54	3.62	0.51	3.63	0.56	3.46	0.57	3.72	0.57	3.53	0.57	3.53	0.55
A2: Morality	3.81	0.49	3.72	0.55	3.84	0.56	4.00	0.54	3.70	0.53	4.00	0.47	3.85	0.53	3.88	0.59
A3: Altruism	3.92	0.52	3.83	0.53	4.04	0.49	4.07	0.56	3.74	0.49	4.05	0.50	4.07	0.49	4.02	0.53
A4: Cooperation	3.52	0.55	3.47	0.58	3.66	0.58	3.65	0.56	3.46	0.55	3.68	0.55	3.56	0.59	3.63	0.55
A5: Modesty	3.12	0.51	3.06	0.47	3.25	0.50	3.21	0.53	3.04	0.52	3.21	0.49	3.06	0.58	3.31	0.58
A6: Sympathy	3.46	0.53	3.33	0.51	3.44	0.52	3.55	0.45	3.35	0.59	3.57	0.50	3.57	0.51	3.60	0.51
C1: Self-Efficacy	3.75	0.45	3.77	0.43	3.83	0.41	3.75	0.52	3.77	0.51	3.84	0.45	3.82	0.43	3.60	0.45
C2: Orderliness	3.52	0.65	3.53	0.59	3.59	0.60	3.60	0.67	3.45	0.59	3.59	0.67	3.51	0.70	3.53	0.69
C3: Dutifulness	3.91	0.51	3.90	0.47	3.96	0.49	4.05	0.52	3.85	0.54	4.05	0.51	4.00	0.51	3.94	0.56
C4: Achievement-Striving	3.94	0.50	3.88	0.50	3.92	0.54	3.92	0.57	3.83	0.56	3.95	0.49	3.86	0.53	3.68	0.62
C5: Self-Discipline	3.35	0.63	3.31	0.65	3.34	0.66	3.40	0.75	3.16	0.64	3.36	0.71	3.31	0.66	3.10	0.71
C6: Cautiousness	3.13	0.60	3.13	0.51	3.23	0.61	3.31	0.55	3.21	0.58	3.32	0.57	3.28	0.56	3.10	0.64

Table 24. Means and Standard Deviations for the Basic Interest Markers by Major Group.

Major Group	*ART*		*BUS*		*CS*		*EDU*		*E/T*		*S/M*		*SS*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Athletic Coaching BIM	3.25	1.02	3.49	0.95	3.84	0.93	3.32	1.09	3.23	0.99	3.31	0.98	3.23	1.02	3.19	1.04
Business BIM	2.74	0.66	3.51	0.66	2.47	0.71	2.27	0.73	2.73	0.80	2.45	0.79	2.66	0.77	2.50	0.77
Creative Arts BIM	3.66	0.91	2.62	0.94	2.71	0.89	2.85	0.91	2.80	0.92	3.04	0.98	3.08	0.95	3.11	0.99
Creative Writing BIM	3.24	0.96	2.56	0.94	2.48	0.84	2.93	0.93	2.44	0.91	2.67	1.02	3.05	0.94	2.86	0.96
Engineering BIM	2.26	0.76	2.21	0.80	1.89	0.65	1.74	0.61	3.05	0.83	2.16	0.72	2.05	0.74	1.88	0.65
Family Activity BIM	4.08	0.62	3.85	0.71	4.08	0.65	4.28	0.64	3.75	0.61	3.97	0.66	4.06	0.58	4.00	0.59
Finance BIM	2.40	0.65	3.32	0.84	2.32	0.64	2.12	0.66	2.74	0.83	2.43	0.78	2.52	0.78	2.36	0.72
Human Relat. Mgmt BIM	2.63	0.76	3.11	0.70	2.58	0.72	2.50	0.74	2.51	0.76	2.53	0.72	2.94	0.70	2.61	0.79
Info. Tech. BIM	2.33	0.70	2.56	0.83	2.02	0.59	1.98	0.63	2.94	1.01	2.29	0.72	2.31	0.80	2.02	0.68
Law BIM	2.40	1.00	2.62	0.92	2.22	0.79	2.16	0.86	2.37	0.84	2.31	0.90	2.83	1.09	2.45	0.90
Life Science BIM	2.14	0.80	1.98	0.75	2.33	0.84	2.02	0.77	2.75	0.92	3.33	0.88	2.36	0.75	2.43	0.87
Management BIM	2.48	0.68	3.17	0.69	2.39	0.68	2.26	0.74	2.60	0.78	2.36	0.78	2.59	0.71	2.32	0.79
Manual Labor BIM	2.15	0.70	2.15	0.76	2.16	0.65	2.09	0.69	2.47	0.70	2.29	0.73	2.08	0.69	2.10	0.68
Mathematics BIM	2.16	0.91	2.44	0.99	2.10	0.92	1.97	0.94	3.31	0.93	2.85	1.06	2.18	0.84	2.01	0.91
Medical Service BIM	2.60	0.84	2.52	0.79	3.38	0.82	2.65	0.74	2.99	0.88	3.77	0.83	3.17	0.80	3.03	0.94
Outdoor-Agriculture BIM	2.32	0.74	2.21	0.76	2.42	0.70	2.32	0.75	2.84	0.74	2.72	0.78	2.34	0.72	2.43	0.70
Office Work BIM	2.61	0.67	3.01	0.70	2.57	0.75	2.48	0.69	2.61	0.78	2.53	0.75	2.60	0.73	2.50	0.73
Performing Arts BIM	3.12	0.92	2.73	0.92	2.55	0.83	2.94	0.91	2.71	0.98	2.85	0.99	3.00	0.89	2.75	0.94
Personal Service BIM	3.14	0.63	2.90	0.77	3.07	0.78	2.97	0.72	2.59	0.74	2.89	0.71	2.99	0.69	2.94	0.70
Physical/Risk Taking BIM	3.08	0.83	3.05	0.84	3.21	0.68	2.85	0.77	3.45	0.75	3.31	0.78	3.17	0.79	3.06	0.83
Physical Science BIM	2.27	0.79	2.09	0.74	2.26	0.74	1.96	0.74	2.97	0.90	3.04	0.83	2.35	0.76	2.20	0.74
Politics BIM	2.37	0.94	2.46	0.88	2.17	0.89	2.37	0.91	2.35	0.88	2.16	0.84	2.58	0.99	2.30	0.91
Professional Advising BIM	2.67	0.74	3.03	0.67	2.66	0.71	2.64	0.72	2.66	0.78	2.66	0.76	3.02	0.64	2.67	0.78
Protective BIM	2.28	0.87	2.41	0.81	2.38	0.75	2.11	0.67	2.67	0.79	2.35	0.74	2.52	0.83	2.30	0.78
Religious Activity BIM	2.88	1.07	2.70	0.92	3.01	0.90	3.18	0.98	2.77	0.97	2.79	1.04	2.87	0.98	2.67	1.02
Sales BIM	2.57	0.84	3.15	0.72	2.31	0.76	2.15	0.66	2.48	0.75	2.35	0.71	2.49	0.79	2.36	0.74
Skilled Trades BIM	2.14	0.82	2.13	0.89	1.98	0.75	1.81	0.66	2.97	0.90	2.10	0.76	2.03	0.79	1.83	0.67
Social Science BIM	2.91	0.84	2.67	0.82	2.88	0.70	2.97	0.73	2.78	0.84	3.14	0.66	3.61	0.60	3.14	0.75
Social Service BIM	3.12	0.80	2.96	0.88	3.38	0.82	3.53	0.80	2.72	0.75	3.27	0.75	3.60	0.72	3.36	0.75
Teaching BIM	2.89	0.78	2.78	0.75	2.78	0.72	3.65	0.68	2.73	0.83	2.99	0.79	3.21	0.70	2.92	0.76
Technical Writing BIM	2.04	0.68	2.11	0.68	1.85	0.60	1.88	0.70	2.43	0.90	1.96	0.61	2.02	0.75	1.82	0.58

Note. N = . ART = Arts. BUS = Business. CS = Community Services. EDU = Education. E/T = Engineering/Technology. S/M = Science/Math. SS = Social Sciences. TOT = Total.

Table 25. Means and Standard Deviations for the Career Confidence Inventory Basic Scales by Major Group.

Major Group	*ART*		*BUS*		*CS*		*EDU*		*E/T*		*S/M*		*SS*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Mechanical BCS	2.79	0.75	2.61	0.85	2.70	0.69	2.47	0.60	3.36	0.84	2.83	0.76	2.73	0.76	2.46	0.73
Information Technology BCS	2.51	0.72	2.58	0.84	2.06	0.64	2.20	0.73	2.95	1.01	2.25	0.69	2.33	0.83	2.05	0.64
Protective Services BCS	2.33	0.89	2.52	0.92	2.38	0.90	2.25	0.84	2.74	0.95	2.45	0.75	2.65	0.95	2.39	0.88
Outdoors BCS	2.73	0.77	2.63	0.75	2.75	0.71	2.79	0.69	3.01	0.69	3.14	0.79	2.86	0.78	2.78	0.69
Science BCS	2.40	0.78	2.42	0.78	2.73	0.89	2.28	0.70	3.35	0.78	3.53	0.77	2.69	0.85	2.46	0.86
Medical Science BCS	2.17	0.82	2.15	0.83	2.96	0.97	2.21	0.77	2.79	0.94	3.43	0.98	2.69	0.92	2.43	0.88
Math BCS	3.08	0.91	3.39	0.86	3.17	0.85	2.99	0.86	3.95	0.84	3.76	0.77	3.12	0.97	2.92	0.93
Visual Arts & Design BCS	3.38	0.91	2.59	0.83	2.48	0.76	2.67	0.91	2.57	0.72	2.64	0.85	2.77	0.86	2.72	0.83
Music BCS	2.66	1.07	2.26	0.89	2.08	0.85	2.45	0.93	2.47	1.05	2.48	0.99	2.57	1.02	2.50	0.96
Drama BCS	2.99	0.90	2.55	0.94	2.19	0.70	2.62	0.86	2.44	0.74	2.56	0.89	2.74	0.92	2.61	0.87
Writing BCS	3.46	0.90	3.06	0.85	3.08	0.76	3.25	0.81	2.89	0.82	3.07	0.83	3.38	0.86	3.12	0.82
Creativity BCS	3.22	0.75	2.70	0.80	2.34	0.67	2.60	0.80	2.58	0.70	2.52	0.73	2.72	0.83	2.65	0.79
Helping BCS	3.51	0.78	3.27	0.83	3.78	0.70	3.87	0.75	3.11	0.81	3.61	0.82	3.87	0.74	3.58	0.83
Teach BCS	3.24	0.71	3.16	0.72	3.24	0.63	3.54	0.63	3.32	0.78	3.34	0.68	3.37	0.74	3.12	0.67
Cultural Sensitivity BCS	3.26	0.79	3.10	0.71	3.15	0.66	3.25	0.68	3.04	0.68	3.27	0.73	3.41	0.73	3.19	0.69
Human Res. &Training BCS	3.26	0.75	3.47	0.66	3.32	0.64	3.31	0.65	3.20	0.77	3.31	0.68	3.45	0.69	3.19	0.70
Medical Service BCS	2.64	0.90	2.52	0.73	3.37	0.86	2.80	0.75	2.80	0.83	3.29	0.94	3.07	0.82	2.81	0.84
Marketing & Advertising BCS	3.16	0.71	3.32	0.80	2.55	0.69	2.65	0.77	2.85	0.77	2.69	0.72	2.90	0.86	2.81	0.72
Sales BCS	2.70	0.86	3.07	0.80	2.43	0.70	2.49	0.76	2.60	0.76	2.44	0.82	2.66	0.85	2.51	0.66
Management BCS	2.96	0.78	3.55	0.74	2.83	0.73	2.80	0.67	2.90	0.79	2.87	0.82	3.07	0.78	2.86	0.81
Entrepreneur BCS	2.88	0.81	3.45	0.70	2.74	0.74	2.62	0.76	2.91	0.87	2.75	0.76	2.91	0.82	2.62	0.75
Public Speaking BCS	3.28	0.86	3.31	0.80	3.30	0.70	3.37	0.79	3.27	0.84	3.31	0.72	3.48	0.86	2.95	0.84
Politics BCS	2.29	0.99	2.41	0.88	2.07	0.85	2.32	0.86	2.29	0.87	2.13	0.79	2.47	0.99	2.15	0.90
Law BCS	2.47	0.96	2.64	0.89	2.31	0.86	2.40	0.83	2.50	0.79	2.47	0.78	2.86	0.96	2.54	0.77
Account BCS	2.42	0.69	3.16	0.85	2.32	0.73	2.29	0.78	2.73	0.84	2.50	0.85	2.51	0.81	2.38	0.74
Office Mgmt BCS	3.50	0.69	3.62	0.65	3.45	0.71	3.34	0.65	3.29	0.72	3.45	0.72	3.42	0.72	3.37	0.70
Personal Computing BCS	3.44	0.88	3.48	0.85	3.04	0.71	3.02	0.83	3.72	0.94	3.35	0.75	3.37	0.93	3.05	0.87

Note. N = . ART = Arts. BUS = Business. CS = Community Services. EDU = Education. E/T = Engineering/Technology. S/M = Science/Math. SS = Social Sciences. TOT = Total. BCS = Basic Confidence Scale.

Table 26. Means and Standard Deviations of IPIP NEO-PI-R Domain Scales by Occupational Group.

Occupational Asp.	*M/F*		*A/M/L*		*BUS*		*E/A*		*M/S*		*SS*		*C/SS*		*EDU*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Neuroticism	2.34	0.68	2.40	0.62	2.66	0.62	2.51	0.80	2.62	0.71	2.41	0.72	2.60	0.67	2.49	0.63
Extraversion	3.44	0.56	3.68	0.61	3.62	0.63	3.22	0.61	3.20	0.77	3.47	0.68	3.50	0.68	3.54	0.68
Openness	3.16	0.48	3.64	0.57	3.49	0.59	3.47	0.67	3.68	0.58	3.62	0.68	3.56	0.56	3.42	0.68
Agreeableness	3.55	0.44	3.48	0.54	3.45	0.53	3.42	0.54	3.56	0.51	3.71	0.53	3.71	0.50	3.67	0.52
Conscientiousness	3.61	0.58	3.52	0.51	3.56	0.63	3.56	0.63	3.38	0.67	3.61	0.59	3.56	0.52	3.58	0.67

Occupational Asp.	*ART*		*DR*		*OH*		*T/P*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Neuroticism	2.68	0.63	2.39	0.61	2.31	0.65	2.49	0.73	2.54	0.64
Extraversion	3.46	0.63	3.50	0.63	3.65	0.57	3.52	0.57	3.06	0.52
Openness	3.70	0.62	3.48	0.56	3.32	0.57	3.39	0.60	3.69	0.66
Agreeableness	3.55	0.48	3.64	0.60	3.76	0.52	3.48	0.48	3.70	0.65
Conscientiousness	3.55	0.53	3.72	0.58	3.77	0.52	3.63	0.53	3.52	0.83

Notes. M/F = Management/Finance. A/M/L = Advertising/Marketing/Legal. BUS = Business. E/A = Engineering/Architecture. M/S = Math/Science. SS = Social Sciences. C/SS = Community/Social Services. EDU = Education. ART = Arts. DR = Doctors. OH = Other Healthcare. T/P = Technical/Protective. TOT = Total.

Table 27. Means and Standard Deviations for the Interest Profiler by Occupational Group.

Occupational Asp.	*M/F*		*A/M/L*		*BUS*		*E/A*		*M/S*		*SS*		*C/SS*		*EDU*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Realistic Interest	2.28	0.83	1.93	0.70	1.81	0.67	2.92	0.67	2.34	0.62	1.94	0.71	1.79	0.66	1.94	0.70
Investigative Interest	2.30	0.78	2.34	0.82	2.23	0.77	2.84	0.85	3.20	0.82	2.62	0.86	2.20	0.79	2.23	0.73
Artistic Interest	2.61	0.88	3.16	0.67	2.83	0.81	2.94	0.85	3.01	0.77	2.99	0.88	2.91	0.81	2.93	0.88
Social Interest	2.94	0.70	3.35	0.77	3.34	0.71	2.72	0.81	3.07	0.69	3.65	0.63	3.72	0.56	3.71	0.67
Enterprising Interest	3.16	0.58	3.42	0.59	3.46	0.70	2.76	0.71	2.38	0.77	2.78	0.68	2.65	0.88	2.59	0.72
Conventional Interest	2.97	0.70	2.42	0.59	2.50	0.71	2.66	0.84	2.52	0.77	2.21	0.70	2.14	0.72	2.22	0.73

Occupational Aspiration	*ART*		*DR*		*OH*		*T/P*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Realistic Interest	2.02	0.72	2.08	0.70	1.79	0.65	2.66	0.76	1.98	0.83
Investigative Interest	2.33	0.80	3.11	0.83	2.53	0.88	2.81	0.81	2.44	0.94
Artistic Interest	3.36	0.86	2.84	0.90	2.44	0.80	2.83	0.85	2.99	0.73
Social Interest	3.27	0.58	3.51	0.67	3.71	0.62	2.99	0.68	3.22	0.79
Enterprising Interest	2.97	0.65	2.69	0.70	2.52	0.74	2.59	0.77	2.72	0.39
Conventional Interest	2.40	0.59	2.23	0.72	2.18	0.75	2.45	0.85	2.54	0.88

Notes. M/F = Management/Finance. A/M/L = Advertising/Marketing/Legal. BUS = Business. E/A = Engineering/Architecture. M/S = Math/Science. SS = Social Sciences. C/SS = Community/Social Services. EDU = Education. ART = Arts. DR = Doctors. OH = Other Healthcare. T/P = Technical/Protective. TOT = Total.

Table 28. Means and Standard Deviations for the Career Confidence Inventory Domain Scales by Occupational Group.

Occupational Aspirations	*M/F*		*A/M/L*		*BUS*		*E/A*		*M/S*		*SS*		*C/SS*		*EDU*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Realistic Self-Efficacy	2.80	0.82	2.54	0.65	2.58	0.64	3.28	0.63	2.88	0.63	2.70	0.75	2.50	0.65	2.63	0.63
Investigative Self-Efficacy	2.83	0.68	2.66	0.61	2.64	0.71	3.29	0.60	3.42	0.66	2.93	0.67	2.63	0.77	2.59	0.63
Artistic Self-Efficacy	2.50	0.72	2.94	0.65	2.81	0.73	2.79	0.69	2.60	0.58	2.76	0.74	2.63	0.68	2.72	0.73
Social Self-Efficacy	3.14	0.59	3.47	0.59	3.42	0.63	3.07	0.64	3.23	0.60	3.53	0.66	3.58	0.54	3.53	0.59
Enterprising Self-Efficacy	3.00	0.65	3.23	0.63	3.24	0.54	2.75	0.64	2.53	0.55	2.86	0.66	2.67	0.67	2.68	0.60
Conventional Self-Efficacy	3.35	0.59	3.12	0.57	3.22	0.47	3.09	0.60	2.92	0.68	2.98	0.65	2.76	0.63	2.81	0.58

Occupational Aspirations	*ART*		*DR*		*OH*		*T/P*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Realistic Self-Efficacy	2.59	0.61	2.80	0.62	2.65	0.65	3.19	0.67	2.22	0.62
Investigative Self-Efficacy	2.60	0.72	3.44	0.73	3.16	0.76	2.83	0.71	2.68	0.73
Artistic Self-Efficacy	3.15	0.73	2.68	0.69	2.41	0.63	2.51	0.75	2.36	0.68
Social Self-Efficacy	3.38	0.57	3.40	0.61	3.51	0.51	3.15	0.66	3.21	0.60
Enterprising Self-Efficacy	2.83	0.61	2.77	0.63	2.66	0.53	2.67	0.60	2.53	0.64
Conventional Self-Efficacy	2.96	0.58	3.00	0.58	2.89	0.55	2.75	0.70	2.91	0.58

Notes. SE = Self-Efficacy. M/F = Management/Finance. A/M/L = Advertising/Marketing/Legal. BUS = Business. E/A = Engineering/Architecture. M/S = Math/Science. SS = Social Sciences. C/SS = Community/Social Services. EDU = Education. ART = Arts. DR = Doctors. OH = Other Healthcare. T/P = Technical/Protective. TOT = Total.

Table 29. Means and Standard Deviations of IPIP NEO-PI-R Facet Scales by Occupational Group.

Occupational Asp.	*M/F*		*A/M/L*		*BUS*		*E/A*		*M/S*		*SS*		*C/SS*		*EDU*	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
N1: Anxiety	2.87	0.62	2.77	0.71	3.10	0.59	2.89	0.78	3.08	0.66	2.99	0.61	3.04	0.69	3.01	0.59
N2: Anger	2.56	0.68	2.64	0.73	2.90	0.68	2.65	0.83	2.59	0.71	2.51	0.73	2.64	0.74	2.70	0.69
N3: Depression	2.15	0.70	2.18	0.62	2.43	0.63	2.36	0.84	2.50	0.77	2.23	0.76	2.37	0.74	2.25	0.67
N4: Self-Consciousness	2.85	0.56	2.63	0.61	2.78	0.62	2.98	0.71	3.06	0.67	2.81	0.61	2.91	0.63	2.88	0.62
N5: Immoderation	3.07	0.53	3.09	0.60	3.24	0.57	3.07	0.57	3.09	0.66	3.00	0.60	2.98	0.60	3.13	0.54
N6: Vulnerability	2.60	0.55	2.50	0.53	2.73	0.55	2.64	0.70	2.76	0.60	2.60	0.60	2.80	0.59	2.75	0.54
E1: Friendliness	3.64	0.55	3.88	0.60	3.78	0.61	3.41	0.64	3.48	0.76	3.74	0.63	3.79	0.65	3.78	0.65
E2: Gregariousness	3.40	0.61	3.72	0.62	3.63	0.57	3.10	0.69	3.08	0.77	3.32	0.58	3.41	0.64	3.35	0.68
E3: Assertiveness	3.32	0.50	3.59	0.61	3.50	0.58	3.27	0.58	3.12	0.62	3.37	0.60	3.29	0.65	3.43	0.56
E4: Activity Level	3.14	0.48	3.17	0.40	3.17	0.45	3.10	0.49	2.96	0.49	3.05	0.43	3.07	0.36	3.10	0.47
E5: Excite.-Seeking	3.25	0.63	3.52	0.65	3.45	0.61	3.36	0.75	3.21	0.60	3.23	0.58	3.27	0.61	3.20	0.66
E6: Cheerfulness	3.79	0.51	4.01	0.56	3.90	0.61	3.74	0.65	3.81	0.63	3.98	0.59	4.00	0.50	3.94	0.60
O1: Imagination	3.42	0.56	3.70	0.58	3.67	0.61	3.63	0.64	3.75	0.69	3.66	0.59	3.64	0.56	3.61	0.62
O2: Artistic Interests	3.48	0.66	3.94	0.62	3.81	0.75	3.69	0.64	3.91	0.66	3.94	0.64	4.03	0.52	3.88	0.65
O3: Emotionality	3.39	0.51	3.55	0.56	3.60	0.50	3.39	0.52	3.54	0.47	3.74	0.61	3.82	0.57	3.65	0.51
O4: Adventurousness	3.27	0.51	3.52	0.50	3.38	0.54	3.29	0.52	3.37	0.55	3.34	0.50	3.28	0.46	3.25	0.52
O5: Ideas	3.23	0.57	3.48	0.58	3.34	0.46	3.59	0.66	3.64	0.49	3.56	0.61	3.36	0.55	3.26	0.57
O6: Values	2.54	0.49	2.67	0.63	2.78	0.61	2.66	0.67	2.96	0.59	2.82	0.60	2.72	0.58	2.64	0.69
A1: Trust	3.56	0.48	3.45	0.54	3.44	0.60	3.40	0.65	3.56	0.56	3.66	0.54	3.50	0.54	3.63	0.56
A2: Morality	3.75	0.53	3.72	0.46	3.62	0.55	3.67	0.52	3.93	0.49	3.95	0.48	4.04	0.55	3.89	0.54
A3: Altruism	3.82	0.44	3.90	0.54	3.86	0.59	3.70	0.50	3.87	0.54	4.13	0.46	4.19	0.50	4.01	0.54
A4: Cooperation	3.51	0.55	3.43	0.61	3.37	0.54	3.48	0.58	3.60	0.47	3.64	0.54	3.73	0.58	3.62	0.54
A5: Modesty	3.13	0.45	3.01	0.43	2.97	0.53	3.06	0.52	3.20	0.50	3.10	0.57	3.27	0.56	3.17	0.54
A6: Sympathy	3.30	0.45	3.31	0.57	3.47	0.50	3.30	0.62	3.49	0.54	3.66	0.48	3.81	0.52	3.52	0.47
C1: Self-Efficacy	3.75	0.44	3.85	0.42	3.76	0.43	3.78	0.50	3.65	0.52	3.83	0.45	3.73	0.40	3.73	0.50
C2: Orderliness	3.55	0.60	3.29	0.60	3.49	0.53	3.48	0.65	3.46	0.63	3.52	0.67	3.51	0.56	3.56	0.69
C3: Dutifulness	3.91	0.45	3.85	0.58	3.80	0.51	3.83	0.55	3.90	0.54	4.09	0.48	4.04	0.49	4.01	0.51
C4: Ach.-Striving	3.86	0.49	3.86	0.46	3.83	0.58	3.86	0.54	3.70	0.63	3.89	0.54	3.82	0.50	3.86	0.58
C5: Self-Discipline	3.36	0.68	3.22	0.55	3.28	0.69	3.25	0.73	3.03	0.71	3.31	0.66	3.21	0.60	3.29	0.75
C6: Cautiousness	3.18	0.52	3.21	0.64	3.04	0.55	3.17	0.63	3.28	0.51	3.31	0.52	3.22	0.64	3.20	0.60

Notes. M/F = Management/Finance. A/M/L = Advertising/Marketing/Legal. BUS = Business. E/A = Engineering/Architecture. M/S = Math/Science. SS = Social Sciences. C/SS = Community/Social Services. EDU = Education. ART = Arts. DR = Doctors. OH = Other Healthcare. T/P = Technical/Protective. TOT = Total.

Table 29. (Continued).

Occupational Aspiration	*ART*		*DR*		*OH*		*T/P*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
N1: Anxiety	3.10	0.59	2.92	0.65	3.04	0.59	2.85	0.67	3.06	0.74
N2: Anger	2.83	0.62	2.53	0.74	2.55	0.71	2.65	0.74	2.56	0.54
N3: Depression	2.45	0.68	2.13	0.64	2.01	0.66	2.35	0.77	2.39	0.69
N4: Self-Consciousness	2.94	0.58	2.85	0.67	2.83	0.60	2.75	0.62	3.41	0.74
N5: Immoderation	3.21	0.59	3.04	0.63	3.09	0.60	3.13	0.60	3.27	0.62
N6: Vulnerability	2.82	0.53	2.56	0.62	2.62	0.55	2.41	0.59	2.93	0.61
E1: Friendliness	3.66	0.60	3.78	0.58	3.94	0.52	3.72	0.49	3.34	0.61
E2: Gregariousness	3.40	0.62	3.40	0.58	3.53	0.59	3.25	0.58	3.01	0.73
E3: Assertiveness	3.37	0.59	3.45	0.58	3.46	0.55	3.45	0.47	3.18	0.29
E4: Activity Level	3.10	0.41	3.18	0.43	3.18	0.39	3.18	0.45	2.73	0.47
E5: Excitement-Seeking	3.37	0.62	3.27	0.67	3.39	0.63	3.49	0.62	3.32	0.54
E6: Cheerfulness	3.91	0.52	4.00	0.49	4.12	0.47	3.84	0.55	3.78	0.58
O1: Imagination	3.75	0.69	3.60	0.64	3.64	0.54	3.66	0.67	3.81	0.55
O2: Artistic Interests	4.08	0.61	3.92	0.61	3.86	0.55	3.68	0.62	4.01	0.69
O3: Emotionality	3.62	0.52	3.54	0.56	3.71	0.51	3.42	0.61	3.64	0.58
O4: Adventurousness	3.39	0.50	3.43	0.52	3.36	0.56	3.40	0.45	3.13	0.45
O5: Ideas	3.38	0.62	3.51	0.60	3.30	0.55	3.34	0.55	3.28	0.72
O6: Values	2.80	0.50	2.67	0.58	2.55	0.47	2.59	0.50	2.93	0.31
A1: Trust	3.49	0.59	3.57	0.59	3.74	0.49	3.37	0.51	3.53	0.76
A2: Morality	3.77	0.52	3.87	0.59	4.03	0.50	3.74	0.52	3.60	0.39
A3: Altruism	3.91	0.52	4.00	0.54	4.14	0.43	3.90	0.42	3.86	0.55
A4: Cooperation	3.51	0.53	3.61	0.63	3.69	0.64	3.44	0.54	3.81	0.52
A5: Modesty	3.12	0.46	3.15	0.60	3.26	0.51	3.10	0.57	3.32	0.38
A6: Sympathy	3.41	0.52	3.49	0.55	3.58	0.45	3.28	0.43	3.26	0.49
C1: Self-Efficacy	3.69	0.41	3.87	0.45	3.86	0.41	3.92	0.43	3.59	0.48
C2: Orderliness	3.47	0.66	3.67	0.65	3.63	0.67	3.59	0.68	3.82	0.75
C3: Dutifulness	3.85	0.50	4.00	0.58	4.12	0.41	3.96	0.48	3.93	0.41
C4: Achievement-Striving	3.87	0.52	3.98	0.55	4.02	0.43	3.93	0.45	3.82	0.68
C5: Self-Discipline	3.28	0.61	3.42	0.65	3.41	0.64	3.35	0.64	3.27	0.80
C6: Cautiousness	3.12	0.54	3.34	0.57	3.22	0.59	3.23	0.59	3.13	0.62

Table 30. Means and Standard Deviations for the Basic Interest Markers by Occupational Group.

Occupational Asp.	*M/F*		*A/M/L*		*BUS*		*E/A*		*M/S*		*SS*		*C/SS*		*EDU*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Athletic Coaching BIM	3.53	0.97	3.48	0.76	3.27	0.97	3.28	1.08	3.02	0.89	3.29	1.00	2.96	0.98	3.31	1.06
Business BIM	3.42	0.65	3.37	0.67	3.35	0.80	2.82	0.72	2.60	0.87	2.61	0.64	2.47	0.82	2.32	0.72
Creative Arts BIM	2.47	0.91	3.17	0.80	3.00	0.96	3.11	0.98	3.08	0.87	3.02	0.92	3.15	0.93	2.91	0.94
Creative Writing BIM	2.31	0.89	3.23	0.85	2.80	1.02	2.50	0.93	2.73	0.80	3.10	0.85	2.86	0.91	2.90	0.94
Engineering BIM	2.36	0.78	2.06	0.70	2.07	0.77	3.32	0.68	2.52	0.81	2.08	0.74	1.79	0.73	1.85	0.65
Family Activity BIM	3.79	0.72	3.84	0.74	3.99	0.84	3.77	0.62	3.82	0.68	4.05	0.54	4.08	0.51	4.17	0.66
Finance BIM	3.51	0.75	2.81	0.68	2.99	0.82	2.80	0.79	2.63	0.87	2.48	0.69	2.26	0.77	2.25	0.70
Human Resource Mgmt BIM	3.03	0.73	3.13	0.68	3.06	0.80	2.44	0.74	2.53	0.78	2.89	0.66	2.78	0.76	2.57	0.76
Information Technology BIM	2.69	0.82	2.43	0.75	2.32	0.70	2.97	1.00	2.78	1.03	2.30	0.77	2.04	0.73	2.07	0.68
Law BIM	2.50	0.92	3.20	1.18	2.57	0.86	2.41	0.88	2.33	0.89	2.83	1.03	2.34	0.97	2.15	0.81
Life Science BIM	2.02	0.74	2.11	0.76	1.98	0.72	2.50	0.87	3.17	0.91	2.45	0.81	2.12	0.85	2.13	0.79
Management BIM	3.04	0.72	3.06	0.72	3.15	0.77	2.65	0.75	2.38	0.78	2.58	0.63	2.34	0.79	2.34	0.73
Manual Labor BIM	2.27	0.73	2.05	0.75	2.05	0.80	2.54	0.77	2.38	0.69	2.07	0.63	1.99	0.67	2.19	0.69
Mathematics BIM	2.63	1.02	2.21	0.96	2.28	0.90	3.33	0.92	3.12	1.03	2.15	0.81	1.99	0.84	2.13	1.02
Medical Service BIM	2.52	0.79	2.70	0.79	2.62	0.78	2.75	0.73	3.21	0.82	3.31	0.69	2.90	0.81	2.66	0.81
Outdoor-Agriculture BIM	2.36	0.81	2.20	0.71	2.17	0.75	2.76	0.79	2.80	0.72	2.33	0.67	2.26	0.75	2.41	0.75
Office Work BIM	3.03	0.68	2.79	0.66	2.84	0.76	2.62	0.81	2.52	0.73	2.55	0.65	2.60	0.76	2.55	0.75
Performing Arts BIM	2.64	0.91	3.09	0.79	2.90	0.94	2.71	0.91	2.89	0.84	3.03	0.74	2.78	0.98	2.93	0.94
Personal Services BIM	2.70	0.75	3.03	0.68	3.21	0.74	2.67	0.75	2.67	0.68	3.00	0.56	2.97	0.80	2.97	0.74
Physical/Risk Taking BIM	3.12	0.85	3.15	0.79	2.95	0.77	3.49	0.76	3.41	0.79	3.04	0.77	2.94	0.73	2.94	0.80
Physical Science BIM	2.20	0.74	2.15	0.74	2.08	0.73	2.93	0.91	3.23	0.78	2.42	0.80	2.07	0.77	2.10	0.74
Politics BIM	2.29	0.87	3.11	0.97	2.45	0.93	2.29	0.92	2.20	0.76	2.49	0.83	2.30	0.95	2.39	0.87
Professional Advising BIM	2.95	0.66	3.13	0.68	3.03	0.76	2.64	0.77	2.58	0.75	3.06	0.64	2.87	0.71	2.71	0.78
Protective BIM	2.50	0.80	2.37	0.74	2.23	0.79	2.78	0.83	2.37	0.75	2.48	0.76	2.18	0.64	2.19	0.73
Religious Activities BIM	2.56	0.90	2.74	0.91	2.79	0.94	2.67	0.97	2.55	0.97	3.04	0.88	3.12	1.18	3.11	1.00
Sales BIM	3.01	0.67	3.03	0.78	3.15	0.87	2.56	0.77	2.34	0.76	2.49	0.70	2.36	0.83	2.23	0.73
Skilled Trades BIM	2.36	0.95	1.97	0.75	2.00	0.79	3.16	0.80	2.35	0.85	2.03	0.80	1.80	0.75	1.93	0.73
Social Science BIM	2.51	0.71	3.23	0.75	2.88	0.90	2.70	0.87	3.16	0.67	3.74	0.59	3.37	0.71	2.99	0.73
Social Service BIM	2.74	0.83	3.20	0.79	3.26	0.86	2.59	0.78	2.87	0.77	3.58	0.73	3.89	0.59	3.45	0.82
Teaching BIM	2.64	0.76	3.13	0.73	2.89	0.76	2.64	0.80	2.83	0.76	3.15	0.72	3.11	0.68	3.60	0.67
Technical Writing BIM	2.16	0.68	2.20	0.72	2.06	0.71	2.48	0.94	2.22	0.83	2.01	0.73	1.81	0.66	1.93	0.70

Table 30. (Continued).

Occupational Aspiration	*ART*		*DR*		*OH*		*T/P*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Athletic Coaching BIM	3.29	1.09	3.40	0.96	3.79	1.05	3.64	0.88	3.67	0.55
Business BIM	2.86	0.68	2.52	0.77	2.39	0.77	2.41	0.84	2.73	0.63
Creative Arts BIM	3.62	1.04	2.99	0.96	2.61	0.92	2.68	1.08	2.84	0.80
Creative Writing BIM	3.34	0.98	2.66	1.01	2.39	0.89	2.58	1.03	2.70	0.75
Engineering BIM	2.18	0.70	2.09	0.70	1.80	0.63	2.38	0.84	2.09	0.82
Family Activity BIM	4.03	0.60	4.01	0.61	4.22	0.53	3.93	0.60	4.12	0.47
Finance BIM	2.43	0.69	2.42	0.75	2.27	0.77	2.29	0.74	2.60	0.89
Human Relations Mgmt BIM	2.71	0.75	2.50	0.68	2.67	0.74	2.55	0.83	2.83	0.60
Information Technology BIM	2.30	0.69	2.22	0.76	1.99	0.62	2.39	0.69	2.50	0.88
Law BIM	2.36	0.89	2.43	0.90	2.28	0.89	2.77	1.11	2.35	0.84
Life Science BIM	2.16	0.86	3.16	0.91	2.59	0.86	2.52	0.86	2.44	0.90
Management BIM	2.47	0.68	2.41	0.78	2.34	0.69	2.45	0.78	2.56	0.87
Manual Labor BIM	2.07	0.65	2.15	0.67	2.01	0.57	2.66	0.66	2.28	0.67
Mathematics BIM	2.08	0.91	2.51	0.95	2.25	1.01	2.34	1.04	2.60	1.10
Medical Service BIM	2.60	0.81	3.93	0.68	3.82	0.84	2.97	0.87	2.64	1.09
Outdoor-Agriculture BIM	2.28	0.74	2.61	0.75	2.35	0.64	2.85	0.79	2.37	0.90
Office Work BIM	2.65	0.70	2.48	0.75	2.60	0.73	2.51	0.76	2.76	0.67
Performing Arts BIM	3.20	0.99	2.72	0.95	2.46	0.90	2.75	1.14	2.78	0.70
Personal Service BIM	3.15	0.60	2.91	0.79	3.10	0.72	2.80	0.75	3.02	0.35
Physical/Risk Taking BIM	3.06	0.85	3.27	0.66	3.17	0.74	3.73	0.88	3.22	0.70
Physical Science BIM	2.19	0.82	2.84	0.86	2.35	0.75	2.47	0.76	2.31	1.13
Politics BIM	2.43	0.92	2.31	0.96	2.02	0.85	2.31	0.93	2.46	0.92
Professional Advising BIM	2.68	0.69	2.63	0.71	2.77	0.74	2.47	0.72	2.68	0.68
Protective BIM	2.24	0.81	2.36	0.69	2.31	0.74	3.31	0.99	2.24	0.63
Religious Activities BIM	2.81	0.98	2.77	0.98	3.11	0.97	2.70	0.91	2.58	1.27
Sales BIM	2.66	0.80	2.33	0.75	2.29	0.71	2.34	0.86	2.47	0.38
Skilled Trades BIM	1.96	0.75	2.11	0.75	1.76	0.64	2.60	0.90	1.92	0.83
Social Science BIM	2.91	0.81	3.09	0.70	3.04	0.67	2.75	0.89	3.11	0.89
Social Service BIM	3.18	0.70	3.29	0.67	3.54	0.78	2.95	0.84	3.20	0.78
Teaching BIM	2.88	0.68	2.76	0.75	2.95	0.77	2.68	0.86	2.91	0.79
Technical Writing BIM	2.05	0.62	1.91	0.63	1.77	0.52	1.92	0.64	2.17	0.88

Notes. M/F = Management/Finance. A/M/L = Advertising/Marketing/Legal. BUS = Business. E/A = Engineering/Architecture. M/S = Math/Science. SS = Social Sciences. C/SS = Community/Social Services. EDU = Education. ART = Arts. DR = Doctors. OH = Other Healthcare. T/P = Technical/Protective. TOT = Total.

Table 31. Means and Standard Deviations for the Career Confidence Inventory Basic Scales by Occupational Group.

Occupation	*M/F*		*A/M/L*		*BUS*		*E/A*		*M/S*		*SS*		*C/SS*		*EDU*	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Mechanical Activity BCS	2.77	0.92	2.49	0.82	2.57	0.69	3.52	0.71	2.98	0.78	2.70	0.83	2.53	0.68	2.57	0.67
Information Technology BCS	2.64	0.83	2.51	0.85	2.43	0.78	3.08	0.88	2.58	0.98	2.36	0.77	2.07	0.76	2.15	0.71
Protective Services BCS	2.68	0.95	2.46	0.89	2.41	0.85	2.79	0.95	2.39	0.76	2.57	0.87	2.13	0.76	2.31	0.84
Outdoors BCS	2.73	0.83	2.61	0.65	2.62	0.67	2.99	0.72	3.08	0.77	2.81	0.82	2.65	0.75	2.82	0.74
Science BCS	2.56	0.84	2.43	0.76	2.39	0.80	3.23	0.75	3.45	0.86	2.76	0.83	2.39	0.86	2.37	0.71
Medical Science BCS	2.25	0.88	2.26	0.75	2.21	0.93	2.51	0.84	3.02	0.85	2.73	0.83	2.40	0.89	2.20	0.72
Mathematics BCS	3.58	0.87	3.09	0.86	3.24	0.87	4.04	0.75	3.69	0.92	3.15	0.95	2.99	1.00	3.05	0.91
Visual Arts/Design BCS	2.47	0.82	2.90	0.79	2.91	0.80	2.99	0.91	2.59	0.74	2.69	0.87	2.67	0.87	2.68	0.88
Music BCS	2.26	0.99	2.55	0.87	2.43	0.99	2.54	1.07	2.47	0.87	2.46	0.94	2.34	0.92	2.53	0.98
Dramatic Arts BCS	2.43	0.88	3.03	0.90	2.67	0.89	2.53	0.79	2.41	0.68	2.74	0.83	2.49	0.85	2.63	0.87
Writing BCS	2.99	0.79	3.61	0.79	3.07	0.93	2.92	0.82	3.00	0.74	3.40	0.81	3.20	0.82	3.22	0.84
Artistic Creativity BCS	2.53	0.77	3.02	0.76	2.95	0.80	2.87	0.78	2.50	0.66	2.69	0.82	2.61	0.77	2.59	0.78
Helping BCS	3.13	0.82	3.51	0.83	3.52	0.75	2.98	0.79	3.19	0.80	3.92	0.78	4.08	0.57	3.81	0.79
Teaching BCS	3.11	0.70	3.36	0.61	3.20	0.75	3.22	0.77	3.25	0.70	3.30	0.79	3.27	0.75	3.55	0.63
Cultural Sensitivity BCS	3.00	0.68	3.43	0.67	3.33	0.76	2.95	0.75	3.16	0.63	3.37	0.76	3.35	0.67	3.29	0.72
Human Resources/Training BCS	3.33	0.66	3.52	0.70	3.59	0.63	3.10	0.77	3.12	0.74	3.40	0.78	3.38	0.62	3.33	0.70
Medical Service BCS	2.53	0.82	2.61	0.68	2.64	0.82	2.59	0.81	2.73	0.66	3.08	0.77	3.01	0.72	2.77	0.76
Marketing/Advertising BCS	3.07	0.73	3.50	0.89	3.50	0.72	3.01	0.73	2.63	0.69	2.92	0.85	2.69	0.81	2.66	0.76
Sales BCS	2.91	0.82	3.11	0.78	3.26	0.71	2.64	0.79	2.34	0.71	2.70	0.84	2.50	0.85	2.47	0.81
Management BCS	3.41	0.81	3.44	0.70	3.74	0.58	2.91	0.77	2.67	0.81	3.01	0.77	2.83	0.82	2.79	0.74
Entrepreneurial BCS	3.39	0.78	3.19	0.70	3.60	0.62	2.98	0.82	2.67	0.76	2.88	0.79	2.67	0.81	2.63	0.79
Public Speaking BCS	3.25	0.82	3.62	0.81	3.34	0.85	3.16	0.84	3.12	0.82	3.36	0.88	3.29	0.85	3.37	0.78
Politics BCS	2.28	0.90	2.86	1.04	2.53	0.93	2.19	0.92	2.01	0.57	2.33	0.83	2.08	0.89	2.35	0.88
Law BCS	2.62	0.89	3.08	1.11	2.67	0.89	2.50	0.85	2.36	0.81	2.79	0.83	2.41	0.94	2.39	0.74
Accounting & Finance BCS	3.33	0.85	2.71	0.75	2.93	0.71	2.69	0.79	2.49	0.91	2.51	0.82	2.30	0.79	2.35	0.77
Office Management BCS	3.56	0.63	3.57	0.68	3.67	0.66	3.29	0.70	3.24	0.74	3.49	0.73	3.32	0.71	3.36	0.71
Personal Computing BCS	3.54	0.82	3.44	0.93	3.29	0.80	3.88	0.87	3.42	0.94	3.35	0.93	3.12	0.86	3.11	0.81

Notes. M/F = Management/Finance. A/M/L = Advertising/Marketing/Legal. BUS = Business. E/A = Engineering/Architecture. M/S = Math/Science. SS = Social Sciences. C/SS = Community/Social Services. EDU = Education. ART = Arts. DR = Doctors. OH = Other Healthcare. T/P = Technical/Protective. TOT = Total.

Table 31. (Continued).

Occupation	*ART*		*DR*		*OH*		*T/P*		*TOT*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Mechanical Activities BCS	2.63	0.74	2.84	0.72	2.66	0.73	3.05	0.83	2.05	0.77
Information Technology BCS	2.48	0.83	2.28	0.84	2.08	0.55	2.36	0.57	2.47	0.84
Protective Services BCS	2.30	0.85	2.49	0.86	2.38	0.84	3.41	1.09	2.00	0.72
Outdoors BCS	2.77	0.76	3.00	0.71	2.79	0.69	3.20	0.68	2.53	0.86
Science BCS	2.38	0.85	3.39	0.81	2.94	0.91	2.73	0.94	2.41	0.99
Medical Science BCS	2.18	0.83	3.52	0.96	3.41	1.01	2.53	0.81	1.93	1.01
Mathematics BCS	3.05	0.90	3.53	0.85	3.29	0.90	3.04	0.96	3.71	0.60
Visual Arts & Design BCS	3.31	0.96	2.69	0.80	2.40	0.70	2.50	0.89	2.31	0.70
Music BCS	2.68	1.11	2.40	0.97	2.16	0.96	2.37	0.98	2.04	0.88
Dramatic Arts BCS	3.08	0.94	2.50	0.89	2.25	0.85	2.44	0.89	2.22	0.74
Writing BCS	3.56	0.85	3.19	0.84	2.97	0.77	2.83	0.93	3.06	0.94
Artistic Creativity BCS	3.22	0.81	2.56	0.73	2.31	0.65	2.42	0.81	2.45	0.54
Helping BCS	3.49	0.68	3.65	0.81	3.90	0.65	3.29	0.85	3.26	0.74
Teaching BCS	3.26	0.65	3.31	0.75	3.29	0.58	3.15	0.77	2.81	0.60
Cultural Sensitivity BCS	3.25	0.68	3.22	0.72	3.22	0.71	2.99	0.76	3.19	0.74
Human Res. & Training BCS	3.30	0.73	3.35	0.68	3.40	0.59	3.16	0.69	3.11	0.65
Medical Service BCS	2.59	0.88	3.46	0.92	3.71	0.84	3.12	0.68	2.22	0.70
Marketing & Advertising BCS	3.26	0.72	2.76	0.72	2.56	0.64	2.55	0.81	2.84	0.72
Sales BCS	2.82	0.79	2.48	0.79	2.38	0.62	2.36	0.75	2.46	0.75
Management BCS	2.99	0.82	2.98	0.80	2.94	0.65	2.81	0.76	2.78	0.79
Entrepreneurship BCS	2.82	0.83	2.89	0.79	2.79	0.68	2.62	0.75	2.64	0.97
Public Speaking BCS	3.25	0.84	3.37	0.77	3.37	0.70	3.23	0.74	2.93	0.92
Politics BCS	2.37	0.99	2.23	0.94	2.07	0.83	2.29	0.87	1.94	0.67
Law BCS	2.42	0.89	2.63	0.88	2.35	0.80	2.83	0.95	2.11	0.71
Accounting & Finance BCS	2.43	0.71	2.55	0.82	2.39	0.79	2.33	0.77	2.25	0.96
Office Management BCS	3.49	0.69	3.55	0.65	3.51	0.60	3.14	0.90	3.48	0.65
Personal Computing BCS	3.35	0.91	3.34	0.89	3.11	0.74	3.29	0.83	3.53	0.89

Table 32. Discriminant Function Results for Broad Level Predictor Sets Examining College Students' Major.

Sets of Predictors	*Hit Rate %*	*Jack Knife %*	*Squared Canonical Correlations*[a]	*Wilks's λ*[b]	*1-Wilks's λ*[c]	*# of Significant Discriminants*
Personality	23.2	21.8	.082	.859*	.141	2
Personality + Interests	41.8	39.3	.289	.414*	.586	4
Personality + Self Efficacy	43.3	40.0	.336	.404*	.596	4
Personality + Interests + Self Efficacy	48.2	43.6	.361	.321*	.679	4

Notes: N = 878. Personality = IPIP NEO-PI-R Domain Scales; Interests = Interest Profiler; Self-Efficacy = Career Confidence Inventory Domain Scales.
[a] The squared canonical correlation is the proportion of variance of the unstandardized first discriminant function scores that is explained by the differences in groups.
[b] Wilks's lambda provides a significance test for the discriminant function.
[c] 1-Wilks's λ is the percentage of variance in discriminant scores explained by group membership.
* $p < .001$

Table 33. Incremental Validity Results for Broad level Predictor Sets Examining College Major.

	McNemar χ^2	*Significance*
H1b. P + I vs. P	80.27	.000
H1c. P + SE vs. P	91.11	.000
H1d. P + I + SE vs. P + I	21.19	.000
H1d. P + I + SE vs. P + SE	12.25	.000

Notes. N = 878. P = Broad personality (IPIP NEO-PI-R Domain Scales); I = Broad Interests (Interest Profiler); SE = Broad Self-Efficacy (Career Confidence Inventory Domain Scales).

Table 34. Discriminant Structure Matrix and Standardized Canonical Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales Examining College Major.

	Structure Matrix		*Standardized Canonical Function Coefficients*	
	Function		*Function*	
	1	*2*	*1*	*2*
Neuroticism Broad Domain	0.20	-0.02	0.10	0.54
Extraversion Broad Domain	-0.26	0.64	-0.37	0.56
Openness Broad Domain	0.90	0.24	0.97	0.06
Agreeableness Broad Domain	-0.03	0.79	-0.08	0.73
Conscientiousness Broad Domain	0.02	0.38	0.18	0.17

Table 35. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales Examining College Major.

	Function	
	1	2
Arts	0.47	0.05
Business	-0.35	-0.11
Community Services	-0.23	0.13
Education	-0.36	0.34
Engineering/Technology	-0.03	-0.41
Science/Math	0.15	0.16
Social Sciences	0.23	0.01

Table 36. Discriminant Structure Matrix and Standardized Canonical Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales and the Interest Profiler Examining College Major.

	Structure Matrix				*Standardized Canonical Function Coefficients*			
	Function				*Function*			
	1	*2*	*3*	*4*	*1*	*2*	*3*	*4*
Neuroticism	0.03	-0.04	0.22	-0.01	0.02	0.09	0.17	-0.05
Extraversion	-0.03	-0.23	-0.24	0.10	0.15	0.00	-0.25	-0.08
Openness	-0.15	-0.02	0.52	0.50	0.04	0.02	0.34	0.38
Agreeableness	-0.22	-0.10	-0.16	0.13	0.01	0.22	-0.13	0.11
Conscientiousness	-0.08	-0.07	-0.04	0.09	-0.06	0.05	0.25	-0.01
Realistic Interest	0.13	0.60	0.26	-0.46	0.10	0.25	0.39	-0.90
Investigative Interest	-0.36	0.72	-0.04	0.35	-0.49	0.75	-0.37	0.59
Artistic Interest	-0.05	-0.05	0.66	0.36	0.04	-0.19	0.72	0.18
Social Interest	-0.45	-0.44	-0.20	0.13	-0.67	-0.58	-0.22	-0.28
Enterprising Interest	0.54	-0.14	-0.18	0.39	0.62	-0.13	-0.14	0.39
Conventional Interest	0.46	0.29	-0.20	0.05	0.40	0.20	-0.30	0.18

Table 37. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales and the Interest Profiler Examining College Major.

	Function			
	1	*2*	*3*	*4*
Arts	.23	-.29	.71	.21
Business	1.10	-.09	-.40	.13
Community Services	-.55	-.28	-.42	-.22
Education	-.50	-.80	-.12	-.43
Engineering/Technology	.22	1.01	.25	-.49
Science/Math	-.81	.73	-.25	.47
Social Sciences	-.32	-.33	.14	.10

Table 38. Discriminant Structure Matrix and Standardized Canonical Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales and the Career Confidence Inventory Domain Scales Examining College Major.

	Structure Matrix				*Standardized Canonical Function Coefficients*			
	Function				*Function*			
	1	*2*	*3*	*4*	*1*	*2*	*3*	*4*
Neuroticism	-0.05	-0.08	0.20	-0.11	0.04	-0.03	0.09	-0.12
Extraversion	-0.08	-0.11	-0.37	0.20	0.02	0.10	-0.26	-0.04
Openness	0.03	-0.26	0.50	0.53	-0.06	0.07	0.46	0.45
Agreeableness	0.11	-0.19	-0.25	0.23	0.02	0.05	-0.10	0.19
Conscientiousness	0.01	-0.10	-0.08	0.12	-0.01	-0.21	0.16	-0.09
Realistic Self-Efficacy	0.23	0.22	0.41	-0.39	0.12	0.04	0.39	-0.99
Investigative Self-Efficacy	0.65	0.33	0.24	0.28	1.05	0.29	-0.03	0.60
Artistic Self-Efficacy	-0.17	-0.30	0.55	0.27	-0.28	-0.61	0.61	0.09
Social Self-Efficacy	0.03	-0.31	-0.24	0.23	0.37	-0.91	-0.59	-0.28
Enterprising Self-Efficacy	-0.28	0.25	-0.02	0.31	-0.53	0.53	-0.23	0.79
Conventional Self-Efficacy	-0.19	0.45	0.08	0.13	-0.48	0.70	0.17	-0.22

Table 39. Group Centroids for Discriminant Analyses of the IPIP NEO-FFI and the Career Confidence Inventory Examining College Major.

	Function			
	1	*2*	*3*	*4*
Arts	-.68	-.55	.61	.03
Business	-.89	.81	-.24	.10
Community Services	.48	-.22	-.44	-.16
Education	-.21	-.81	-.51	-.30
Engineering/Technology	.67	.63	.39	-.41
Science/Math	1.22	.07	.02	.40
Social Sciences	-.07	-.32	-.02	.17

Table 40. Discriminant Structure Matrix and Standardized Canonical Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales, Interest Profiler, and Career Confidence Inventory Domain Scales Examining College Major.

	Structure Matrix				*Standardized Canonical Function Coefficients*			
	Function				*Function*			
	1	*2*	*3*	*4*	*1*	*2*	*3*	*4*
Neuroticism	-0.05	-0.04	0.20	-0.03	0.03	0.10	0.17	-0.08
Extraversion	-0.06	-0.15	-0.28	0.10	-0.01	0.16	-0.21	-0.06
Openness	0.06	-0.16	0.46	0.43	-0.09	0.06	0.25	0.32
Agreeableness	0.13	-0.18	-0.16	0.14	0.01	0.16	-0.03	0.19
Conscientiousness	0.03	-0.09	-0.05	0.09	0.03	-0.09	0.25	-0.02
Realistic Interest	0.15	0.46	0.39	-0.42	-0.01	0.27	0.30	-0.75
Investigative Interest	0.54	0.29	0.18	0.39	0.37	0.03	0.04	0.65
Artistic Interest	-0.03	-0.14	0.58	0.30	-0.08	0.18	0.31	-0.01
Social Interest	0.14	-0.52	-0.33	0.12	0.13	-0.64	-0.39	-0.12
Enterprising Interest	-0.44	0.22	-0.19	0.35	-0.20	0.20	-0.09	0.28
Conventional Interest	-0.19	0.47	-0.08	0.07	-0.11	0.20	-0.15	0.18
Realistic Self-Efficacy	0.19	0.28	0.29	-0.27	0.02	-0.04	0.14	-0.28
Investigative Self-Efficacy	0.58	0.39	0.04	0.19	0.74	0.41	-0.24	0.08
Artistic Self-Efficacy	-0.13	-0.19	0.56	0.29	-0.12	-0.61	0.50	0.27
Social Self-Efficacy	0.06	-0.28	-0.11	0.07	0.32	-0.27	0.05	-0.37
Enterprising Self-Efficacy	-0.28	0.14	-0.11	0.22	-0.46	0.20	-0.31	0.26
Conventional Self-Efficacy	-0.22	0.34	-0.09	0.14	-0.37	0.33	0.05	-0.09

Table 41. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales, Interest Profiler, and Career Confidence Inventory Domain Scales Examining College Major.

	Function			
	1	*2*	*3*	*4*
Arts	-.61	-.44	.76	.19
Business	-1.06	.68	-.42	.15
Community Services	.51	-.44	-.48	-.23
Education	-.07	-1.04	-.25	-.43
Engineering/Technology	.51	1.05	.39	-.50
Science/Math	1.33	.23	-.09	.54
Social Sciences	.01	-.46	.00	.07

Table 42. Discriminant Function Results for Basic Level Predictor Sets Examining College Students' Major.

Sets of Predictors	*Hit Rate %*	*Jack Knife %*	*Squared Canonical Correlations*[a]	*Wilks's λ*[b]	*1-Wilks's λ*[c]	*# of Significant Discriminants*
Personality	33.6	23.9	.138	.625	.375	3
Personality + Interests	63.0	51.3	.456	.122	.878	6
Personality + Self Efficacy	58.1	46.1	.436	.173	.827	6
Personality + Interests + Self Efficacy	68.9	51.7	.480	.078	.922	6

Notes: N = 878. Personality = IPIP NEO-FFI; Interests = Basic Interest Markers; Self-Efficacy = Career Confidence Inventory.
[a] The squared canonical correlation is the proportion of variance of the unstandardized first discriminant function scores that is explained by the differences in groups.
[b] Wilks's lambda provides a significance test for the discriminant function.
[c] 1-Wilks's λ is the percentage of variance in discriminant scores explained by group membership.
* $p < .001$

Table 43. Incremental Validity Results for Basic Level Predictor Sets Examining College Major.

	McNemar χ^2	*Significance*
H2b. p + i vs. p	173.34	.000
H2c. p + se vs. p	128.76	.000
H2d. p + i + se vs. p + i	18.78	.000
H2d. p + i + se vs. p + se	44.46	.000

Notes. N = 878. p = Personality facets (IPIP NEO-PI-R Facet Scales); i = Basic Interests (Basic Interest Markers); SE = Basic Self-Efficacy (Career Confidence Inventory).

Table 44. Discriminant Structure Matrix and Standardized Canonical Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales Examining College Major.

	Structure Matrix			*Standardized Canonical Function Coefficients*		
	Function			*Function*		
	1	*2*	*3*	*1*	*2*	*3*
N1: Anxiety	0.16	0.02	0.09	0.21	-0.06	-0.23
N2: Anger	0.04	-0.19	0.32	0.18	-0.27	0.24
N3: Depression	-0.15	0.07	0.22	-0.32	0.36	0.10
N4: Self-Consciousness	-0.07	-0.01	0.04	-0.09	-0.09	0.04
N5: Immoderation	0.09	-0.07	0.35	0.25	0.00	0.29
N6: Vulnerability	0.11	0.02	0.12	-0.20	0.11	-0.23
E1: Friendliness	0.46	0.10	-0.13	0.52	-0.02	-0.64
E2: Gregariousness	0.32	-0.11	0.30	0.13	-0.38	0.85
E3: Assertiveness	0.15	0.01	0.03	0.18	0.06	-0.32
E4: Activity Level	-0.01	-0.05	0.05	-0.12	-0.01	-0.13
E5: Excitement-Seeking	-0.15	-0.06	0.21	-0.55	-0.03	-0.31
E6: Cheerfulness	0.21	0.21	0.09	-0.06	0.21	0.09
O1: Imagination	-0.10	0.29	0.15	0.07	-0.06	-0.01
O2: Artistic Interests	0.08	0.70	0.39	0.02	0.52	0.56
O3: Emotionality	0.28	0.37	0.18	0.20	0.01	0.15
O4: Adventurousness	-0.06	0.22	0.18	0.06	0.02	0.10
O5: Ideas	-0.46	0.38	0.01	-0.48	0.05	-0.10
O6: Values	-0.22	0.44	0.10	-0.09	0.33	0.01
A1: Trust	0.19	0.21	-0.28	-0.14	0.06	-0.33
A2: Morality	0.29	0.39	-0.20	0.10	0.23	-0.19
A3: Altruism	0.40	0.50	-0.10	0.45	0.44	-0.12
A4: Cooperation	0.23	0.24	-0.19	-0.05	-0.35	0.04
A5: Modesty	0.24	0.11	-0.11	0.37	-0.07	-0.09
A6: Sympathy	0.17	0.49	-0.10	-0.22	0.07	-0.12
C1: Self-Efficacy	0.00	0.10	-0.09	-0.25	0.02	-0.05
C2: Orderliness	0.16	0.04	-0.03	-0.01	-0.07	-0.05
C3: Dutifulness	0.21	0.25	-0.15	-0.19	-0.09	0.24
C4: Achievement-Striving	0.10	0.06	0.09	-0.23	-0.33	0.27
C5: Self-Discipline	0.22	0.09	0.10	0.41	0.25	0.38
C6: Cautiousness	0.09	0.25	-0.34	0.02	0.29	-0.37

Table 45. Group Centroids for Discriminant Analyses of the IPIP NEO PI-R Facet Scales Examining College Major.

	Function		
	1	*2*	*3*
Arts	-.10	.16	.55
Business	.06	-.55	.14
Community Services	.41	-.11	-.11
Education	.78	-.01	-.28
Engineering/Technology	-.74	-.23	-.31
Science/Math	-.07	.39	-.21
Social Sciences	-.06	.42	.00

Table 46. Discriminant Structure Matrix and Standardized Canonical Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales and the Public Domain Basic Interest Markers Examining College Major.

	Structure Matrix						*Standardized Canonical Function Coefficients*					
	Function						*Function*					
	1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
N1: Anxiety	-0.04	-0.06	0.01	0.11	0.13	-0.01	0.03	0.12	0.24	0.34	0.13	-0.05
N2: Anger	0.08	-0.09	-0.10	0.10	0.09	-0.01	0.08	-0.14	0.01	0.08	-0.09	-0.01
N3: Depression	0.02	0.00	-0.13	-0.04	0.09	0.06	-0.15	0.01	-0.05	-0.32	0.00	0.02
N4: Self-Consciousness	-0.01	0.05	-0.04	0.06	0.12	-0.01	0.10	0.06	0.09	-0.04	-0.01	0.15
N5: Immoderation	0.05	-0.07	0.00	0.01	0.17	-0.05	0.04	-0.16	0.02	-0.03	0.17	-0.05
N6: Vulnerability	-0.03	-0.07	-0.06	0.11	0.10	0.03	-0.01	0.15	-0.14	0.09	-0.02	-0.05
E1: Friendliness	-0.08	-0.13	0.25	0.02	-0.07	-0.01	-0.15	-0.08	0.25	0.18	-0.34	-0.16
E2: Gregariousness	0.07	-0.14	0.20	-0.02	0.04	0.04	0.21	-0.11	0.07	0.08	0.22	0.18
E3: Assertiveness	-0.01	-0.07	0.05	0.01	-0.03	0.03	-0.19	0.18	0.00	0.25	0.03	0.07
E4: Activity Level	0.02	0.00	-0.02	0.03	0.03	-0.02	0.10	0.02	-0.23	-0.16	-0.10	-0.02
E5: Excitement-Seeking	0.07	0.03	-0.03	-0.10	0.07	-0.03	-0.02	0.03	-0.31	-0.12	-0.09	0.22
E6: Cheerfulness	-0.06	-0.06	0.15	-0.12	0.08	0.00	0.00	0.20	0.10	-0.23	0.05	-0.18
O1: Imagination	-0.05	0.00	-0.09	-0.11	0.10	0.09	0.06	0.03	0.02	0.07	-0.10	-0.11
O2: Artistic Interests	-0.17	-0.10	-0.06	-0.19	0.28	0.26	-0.09	0.01	-0.07	-0.01	-0.02	-0.01
O3: Emotionality	-0.11	-0.17	0.03	-0.09	0.08	0.04	0.01	-0.03	-0.07	-0.05	0.06	-0.14
O4: Adventurousness	-0.02	0.03	0.05	-0.15	0.11	0.13	0.05	0.00	0.22	0.03	0.15	0.04
O5: Ideas	-0.05	0.17	-0.14	-0.23	0.05	0.22	0.08	0.07	0.16	-0.14	0.28	0.03
O6: Values	-0.07	0.05	-0.08	-0.23	0.06	0.20	0.10	0.06	-0.02	-0.02	0.06	-0.08
A1: Trust	-0.13	0.02	0.17	0.03	0.02	0.05	-0.09	0.09	0.03	0.00	0.08	0.14
A2: Morality	-0.18	-0.06	0.12	0.04	0.02	0.17	-0.07	0.01	0.08	0.21	0.01	0.30
A3: Altruism	-0.19	-0.14	0.17	-0.12	0.01	0.05	-0.02	-0.11	0.17	-0.18	-0.10	0.01
A4: Cooperation	-0.13	-0.02	0.13	0.02	0.05	0.01	0.12	0.08	-0.01	0.10	0.02	-0.23
A5: Modesty	-0.10	-0.02	0.13	0.08	0.13	-0.06	-0.11	-0.01	0.11	0.28	0.21	-0.07
A6: Sympathy	-0.17	-0.08	0.03	-0.10	-0.01	0.14	0.07	0.13	-0.20	-0.02	-0.13	0.17
C1: Self-Efficacy	-0.03	0.03	0.06	-0.08	-0.02	-0.01	-0.03	-0.01	-0.10	-0.04	0.01	-0.20
C2: Orderliness	-0.04	-0.03	0.09	0.03	0.02	0.01	-0.02	-0.02	0.03	-0.01	0.02	0.05
C3: Dutifulness	-0.11	-0.05	0.12	-0.02	-0.04	0.10	0.20	-0.14	-0.14	-0.15	0.01	0.23
C4: Achievement-Striving	-0.02	-0.02	0.06	0.03	0.11	0.06	0.10	0.13	-0.04	0.04	0.27	-0.09
C5: Self-Discipline	-0.03	-0.08	0.09	0.02	0.06	0.06	-0.09	-0.19	0.11	0.10	0.04	0.17
C6: Cautiousness	-0.13	0.01	0.04	-0.01	-0.10	0.03	-0.22	0.06	-0.04	-0.10	-0.13	-0.10

Table 46. (Continued).

	Structure Matrix						*Standardized Canonical Function Coefficients*					
	Function						*Function*					
	1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
Athletic Coaching BIM	0.03	-0.01	0.21	0.02	0.08	-0.31	0.01	-0.14	0.14	-0.02	0.29	-0.27
Business BIM	0.57	0.01	0.11	-0.06	-0.17	0.10	0.35	-0.11	-0.04	0.40	-0.10	0.11
Creative Arts BIM	-0.08	-0.12	-0.27	-0.17	0.46	0.37	-0.03	-0.25	-0.15	-0.24	0.60	0.32
Creative Writing BIM	-0.07	-0.26	-0.18	-0.15	0.18	0.32	0.31	-0.10	0.02	0.03	0.27	0.18
Engineering BIM	0.16	0.46	-0.50	0.07	-0.04	0.00	-0.01	0.19	-0.82	0.26	0.49	0.03
Family Activity BIM	-0.15	-0.23	0.05	0.03	0.10	0.01	0.02	-0.04	-0.23	-0.01	0.01	-0.09
Finance BIM	0.50	0.15	0.12	-0.04	-0.33	0.07	0.31	-0.12	0.33	0.03	-0.27	0.23
Human Relations Mgmt BIM	0.25	-0.13	0.12	-0.25	-0.24	0.07	0.11	0.01	0.02	-0.42	0.12	0.09
Information Technology BIM	0.22	0.30	-0.29	0.01	-0.18	0.07	0.02	0.02	-0.12	-0.05	-0.29	0.15
Law BIM	0.10	-0.06	-0.05	-0.31	-0.21	0.11	0.09	-0.24	-0.13	-0.18	-0.05	0.23
Life Science BIM	-0.30	0.53	0.09	-0.14	0.03	0.35	0.03	0.43	0.39	0.25	0.13	0.83
Management BIM	0.42	0.01	0.09	-0.08	-0.26	0.03	0.31	0.17	0.46	-0.05	-0.07	-0.27
Manual Labor BIM	0.00	0.21	-0.09	0.08	0.00	-0.01	-0.09	-0.15	0.59	0.10	0.12	0.39
Mathematics BIM	0.05	0.54	-0.18	0.11	-0.17	0.14	-0.01	0.42	-0.01	0.19	-0.18	0.21
Medical Service BIM	-0.38	0.34	0.30	-0.35	0.01	-0.01	-0.36	0.37	0.28	-0.31	0.01	-0.42
Outdoor-Agriculture BIM	-0.14	0.32	-0.12	0.06	-0.02	0.01	0.01	0.00	-0.34	0.03	-0.27	-0.32
Office Work BIM	0.25	-0.01	0.11	0.00	-0.10	0.01	0.01	0.18	0.08	0.13	0.20	-0.24
Performing Arts BIM	-0.04	-0.12	-0.14	-0.07	0.08	0.30	0.08	0.05	0.04	0.07	-0.41	0.23
Personal Service BIM	-0.02	-0.21	0.10	-0.11	0.25	0.02	-0.11	0.00	-0.07	0.00	0.43	-0.17
Physical/Risk Taking BIM	-0.03	0.24	-0.08	-0.12	0.00	-0.07	-0.04	0.20	0.13	0.23	-0.17	-0.03
Physical Science BIM	-0.17	0.54	-0.13	-0.11	0.02	0.24	-0.16	-0.01	0.11	-0.14	0.18	-0.13
Politics BIM	0.07	-0.10	-0.10	-0.10	-0.16	0.05	-0.14	0.09	-0.08	0.20	0.02	-0.25
Profess. Advising BIM	0.15	-0.09	0.07	-0.23	-0.27	0.05	0.02	0.20	-0.13	-0.39	-0.03	-0.12
Protective BIM	0.04	0.15	-0.12	-0.16	-0.14	-0.11	0.06	-0.14	-0.07	-0.17	0.14	-0.11
Religious Act. BIM	-0.10	-0.11	0.00	0.08	0.03	-0.11	0.16	0.04	0.04	0.17	0.16	-0.26
Sales BIM	0.44	0.00	0.10	-0.08	-0.10	0.13	0.23	0.06	0.01	-0.18	-0.03	0.39
Skilled Trades BIM	0.10	0.38	-0.40	0.07	-0.08	-0.12	0.14	0.11	-0.28	-0.12	-0.41	-0.41
Social Science BIM	-0.26	-0.13	-0.07	-0.51	-0.23	0.21	-0.20	-0.21	-0.45	-0.64	-0.55	-0.02
Social Service BIM	-0.26	-0.29	0.17	-0.23	-0.09	0.01	-0.08	-0.24	0.27	0.09	-0.03	-0.08
Teaching BIM	-0.24	-0.29	-0.01	0.12	-0.27	0.23	-0.61	-0.45	-0.10	0.82	-0.45	0.51
Technical Writing BIM	0.11	0.18	-0.25	0.03	-0.12	0.00	-0.27	-0.10	0.00	0.00	0.07	-0.49

Table 47. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales and the Public Domain Basic Interest Markers Examining College Major.

	Function					
	1	*2*	*3*	*4*	*5*	*6*
Arts	.33	-.53	-.60	-.03	.96	.27
Business	1.63	-.11	.51	.15	-.28	.07
Community Services	-.51	.04	.69	-.14	.47	-1.0
Education	-1.13	-1.21	-.01	1.19	-.42	.06
Engineering/Technology	.08	1.30	-.97	.33	-.28	-.27
Science/Math	-.96	1.05	.78	-.05	.17	.64
Social Sciences	-.43	-.55	-.27	-.95	-.5	.05

Table 48. Discriminant Structure Matrix and Standardized Canonical Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales and the Career Confidence Inventory Basic Scales Examining College Major.

	Structure Matrix						*Standardized Canonical Function Coefficients*					
	Function						*Function*					
	1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
N1: Anxiety	0.00	-0.09	0.06	-0.05	-0.18	0.04	0.16	0.07	0.02	-0.14	-0.42	-0.08
N2: Anger	-0.13	-0.04	0.12	-0.03	-0.10	-0.02	-0.16	-0.05	0.04	-0.17	0.02	-0.02
N3: Depression	-0.04	-0.01	0.12	0.14	0.02	0.00	0.07	0.07	-0.09	0.33	0.17	0.00
N4: Self-Consciousness	0.02	0.01	0.10	0.05	-0.15	0.00	-0.03	0.00	-0.18	0.06	-0.13	0.15
N5: Immoderation	-0.08	-0.06	0.01	0.07	-0.17	-0.08	-0.09	-0.19	-0.01	0.10	-0.09	0.05
N6: Vulnerability	-0.03	-0.09	0.12	-0.04	-0.10	0.06	0.04	0.11	0.23	-0.11	0.18	0.07
E1: Friendliness	0.04	-0.15	-0.25	-0.17	-0.03	0.08	0.12	0.00	-0.19	-0.60	0.00	0.11
E2: Gregariousness	-0.10	-0.08	-0.25	-0.03	-0.13	0.06	-0.27	-0.08	-0.06	0.19	-0.21	0.25
E3: Assertiveness	-0.02	-0.05	-0.07	-0.06	0.01	0.06	0.25	0.04	0.07	-0.14	-0.27	0.28
E4: Activity Level	-0.02	0.00	0.03	0.00	-0.04	-0.02	-0.08	0.08	0.15	0.04	0.12	-0.17
E5: Excitement-Seeking	-0.04	0.06	-0.01	0.15	-0.02	-0.11	0.04	0.22	0.32	0.01	0.12	-0.21
E6: Cheerfulness	0.05	-0.11	-0.18	0.09	-0.05	-0.01	0.19	0.11	-0.14	0.23	-0.10	-0.24
O1: Imagination	0.03	-0.06	0.07	0.20	0.07	0.04	-0.01	0.06	-0.07	-0.18	0.02	0.02
O2: Artistic Interests	0.07	-0.24	0.06	0.38	0.02	0.22	0.00	-0.05	0.15	0.10	0.21	0.02
O3: Emotionality	0.02	-0.23	-0.05	0.07	0.06	0.04	-0.04	-0.08	0.01	0.00	0.13	-0.27
O4: Adventurousness	0.03	-0.01	-0.09	0.24	-0.02	0.08	0.01	-0.03	-0.19	0.08	-0.21	0.14
O5: Ideas	0.10	0.10	0.10	0.37	0.19	0.12	-0.09	0.12	-0.04	0.36	-0.10	0.03
O6: Values	0.08	-0.02	0.02	0.32	0.18	0.12	0.13	-0.03	-0.11	0.23	0.23	0.01
A1: Trust	0.14	-0.06	-0.11	-0.06	-0.10	0.14	0.11	0.08	0.02	0.04	-0.08	0.11
A2: Morality	0.13	-0.16	-0.06	-0.05	-0.03	0.29	0.10	-0.09	0.07	-0.08	-0.07	0.45
A3: Altruism	0.12	-0.24	-0.19	0.02	0.08	0.10	0.02	-0.17	-0.21	-0.06	0.21	-0.04
A4: Cooperation	0.12	-0.11	-0.08	-0.04	-0.09	0.08	-0.08	0.08	0.07	0.01	-0.11	-0.31
A5: Modesty	0.09	-0.10	-0.04	-0.06	-0.23	0.02	0.08	-0.08	0.01	-0.15	-0.44	0.06
A6: Sympathy	0.11	-0.17	-0.05	0.07	0.16	0.18	-0.08	0.18	0.16	0.02	0.21	0.10
C1: Self-Efficacy	0.06	0.00	-0.08	0.05	0.04	-0.03	-0.04	0.00	0.03	0.07	0.08	-0.20
C2: Orderliness	0.03	-0.05	-0.07	-0.05	-0.08	0.05	0.07	-0.05	-0.03	-0.03	0.04	0.08
C3: Dutifulness	0.08	-0.10	-0.11	-0.04	0.05	0.17	-0.31	-0.02	-0.02	0.19	0.17	0.14
C4: Achievement-Striving	0.01	-0.05	-0.02	0.03	-0.14	0.09	-0.06	0.08	0.14	0.19	-0.28	0.01
C5: Self-Discipline	0.00	-0.10	-0.08	-0.01	-0.09	0.10	-0.05	-0.18	-0.05	-0.05	-0.07	0.18
C6: Cautiousness	0.12	-0.05	-0.03	-0.07	0.12	0.09	0.24	0.01	0.04	-0.03	0.28	-0.15

Table 48. (Continued).

	Structure Matrix						*Standardized Canonical Function Coefficients*					
	Function						*Function*					
	1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
Mechanical Activities BCS	0.13	0.26	0.38	0.18	0.11	-0.17	-0.03	0.18	0.62	0.23	0.08	-0.67
Information Technology BCS	-0.13	0.32	0.35	0.05	0.14	0.00	0.09	0.19	0.68	-0.59	0.17	-0.23
Protective Services BCS	0.02	0.15	0.02	0.06	0.31	-0.11	-0.11	-0.10	-0.17	0.17	0.13	-0.25
Outdoors BCS	0.21	0.07	0.09	0.09	0.12	0.20	0.18	-0.03	0.00	-0.36	0.02	0.61
Science BCS	0.49	0.40	0.12	0.24	0.08	0.19	0.39	0.49	0.04	0.15	-0.13	0.36
Medical Science BCS	0.53	0.13	-0.16	0.23	0.04	0.01	0.43	-0.01	-0.41	0.13	0.04	-0.12
Math BCS	0.18	0.43	0.14	0.02	-0.03	0.15	0.19	0.18	0.04	-0.20	-0.07	0.14
Visual Arts & Design BCS	-0.16	-0.20	0.26	0.46	-0.12	0.22	0.10	-0.51	0.09	0.10	-0.14	0.26
Music BCS	-0.02	-0.06	0.18	0.20	0.19	0.25	-0.04	0.13	-0.03	-0.01	0.20	0.10
Dramatic Arts BCS	-0.14	-0.13	0.14	0.29	0.13	0.35	0.17	0.17	0.02	0.15	0.18	0.70
Writing BCS	-0.09	-0.24	0.01	0.22	0.12	0.09	-0.06	-0.39	0.00	0.05	-0.08	-0.51
Artistic Creativity BCS	-0.24	-0.11	0.23	0.39	-0.04	0.24	-0.46	-0.30	0.15	0.39	-0.66	-0.30
Helping BCS	0.13	-0.40	-0.21	-0.01	0.21	0.00	0.05	-0.33	-0.25	0.03	0.43	0.07
Teaching BCS	0.08	-0.10	0.09	-0.14	0.16	0.13	0.03	-0.54	0.54	-0.74	-0.03	0.30
Cultural Sensitivity BCS	0.03	-0.15	-0.07	0.14	0.21	0.13	0.01	0.00	0.05	-0.07	0.07	0.01
Human Resources & Training BCS	-0.07	-0.01	-0.21	-0.02	0.14	0.01	0.12	0.20	-0.07	0.07	0.14	-0.25
Medical Service BCS	0.37	-0.12	-0.20	0.11	0.05	-0.20	0.20	-0.15	-0.03	0.08	-0.29	-0.40
Marketing & Advertising BCS	-0.35	0.15	-0.05	0.20	0.00	0.15	-0.50	0.64	-0.13	0.11	0.24	0.20
Sales BCS	-0.27	0.15	-0.14	0.00	0.06	0.03	0.13	-0.24	0.01	-0.19	-0.08	-0.19
Management BCS	-0.29	0.20	-0.31	-0.02	0.08	0.04	-0.18	0.29	-0.31	-0.02	0.18	0.30
Entrepreneurship BCS	-0.28	0.26	-0.24	0.01	0.04	-0.03	-0.05	0.08	-0.16	-0.06	0.13	-0.25
Public Speaking BCS	0.00	-0.05	-0.06	0.00	0.19	0.01	0.05	0.04	-0.07	0.07	0.11	-0.18
Politics BCS	-0.11	0.00	0.00	-0.01	0.27	0.05	-0.05	0.02	0.10	-0.20	-0.09	0.14
Law BCS	-0.07	0.03	-0.11	0.12	0.42	0.04	-0.11	-0.15	0.02	0.13	0.44	0.12
Accounting & Finance BCS	-0.23	0.37	-0.20	-0.09	0.06	0.06	-0.34	0.12	-0.34	-0.03	-0.15	0.15
Office Management BCS	-0.11	0.02	-0.18	0.08	-0.13	0.04	0.16	0.05	-0.09	0.30	-0.68	-0.12
Personal Computing BCS	-0.07	0.25	0.17	0.19	0.15	0.06	-0.10	-0.06	-0.39	0.40	0.26	0.27

Table 49. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Facets and the Career Confidence Inventory Basic Scales Examining College Major.

	Function					
	1	*2*	*3*	*4*	*5*	*6*
Arts	-.84	-.63	.58	.63	-.35	.10
Business	-1.21	.75	-.57	-.22	-.11	.05
Community Services	.85	-.48	-.42	-.10	-.47	-.78
Education	.02	-1.16	.36	-1.05	.01	.35
Engineering/Technology	.46	1.17	.93	-.15	.18	-.22
Science/Math	1.46	.36	-.39	.26	-.22	.60
Social Sciences	.04	-.47	-.28	.28	.74	-.10

Table 50. Discriminant Structure Matrix and Standardized Canonical Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales, Public Domain Basic Interest Markers and Career Confidence Inventory Basic Scales Examining College Major.

	Structure Matrix						*Standardized Canonical Function Coefficients*					
	Function						*Function*					
	1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
N1: Anxiety	0.03	-0.06	0.02	0.08	0.11	0.03	0.02	0.17	-0.07	0.33	0.19	0.00
N2: Anger	-0.09	-0.08	0.09	0.04	0.08	0.01	-0.12	-0.12	0.05	0.11	-0.11	-0.04
N3: Depression	-0.02	-0.01	0.09	-0.09	0.05	0.07	0.13	0.03	-0.08	-0.27	-0.05	0.04
N4: Self-Consciousness	0.02	0.03	0.05	0.02	0.11	0.04	-0.07	0.05	-0.14	0.00	-0.02	0.11
N5: Immoderation	-0.06	-0.06	-0.02	-0.01	0.15	0.01	-0.06	-0.18	-0.09	-0.06	0.10	0.06
N6: Vulnerability	0.01	-0.08	0.07	0.06	0.08	0.05	0.02	0.10	0.23	0.03	0.00	-0.08
E1: Friendliness	0.06	-0.11	-0.21	0.12	-0.06	-0.03	0.14	-0.01	-0.11	0.36	-0.25	-0.25
E2: Gregariousness	-0.08	-0.09	-0.20	0.07	0.02	0.03	-0.23	-0.10	-0.05	0.03	0.11	0.31
E3: Assertiveness	0.00	-0.05	-0.05	0.04	-0.03	0.01	0.25	0.11	0.06	0.20	0.01	0.13
E4: Activity Level	-0.02	0.00	0.02	0.01	0.03	0.00	-0.13	0.01	0.15	-0.19	-0.09	-0.07
E5: Excitement-Seeking	-0.06	0.04	-0.01	-0.10	0.05	-0.01	0.05	0.04	0.29	-0.20	-0.10	0.05
E6: Cheerfulness	0.05	-0.05	-0.17	-0.05	0.04	0.02	0.06	0.24	-0.14	-0.14	0.11	-0.17
O1: Imagination	0.04	-0.02	0.03	-0.14	0.04	0.10	-0.04	0.04	-0.01	0.08	-0.07	-0.16
O2: Artistic Interests	0.13	-0.13	-0.03	-0.21	0.12	0.29	0.06	-0.02	0.12	0.02	-0.06	-0.03
O3: Emotionality	0.08	-0.16	-0.07	-0.08	0.03	0.05	0.01	-0.05	0.06	-0.11	0.05	-0.11
O4: Adventurousness	0.02	0.02	-0.10	-0.12	0.04	0.13	-0.03	-0.01	-0.20	0.11	0.12	0.10
O5: Ideas	0.06	0.13	0.06	-0.25	-0.04	0.20	-0.12	0.04	-0.19	-0.11	0.27	0.15
O6: Values	0.07	0.03	-0.01	-0.22	-0.03	0.18	-0.06	0.08	-0.05	-0.09	0.05	-0.08
A1: Trust	0.12	0.01	-0.11	0.09	0.00	0.06	0.08	0.10	-0.03	-0.03	0.00	0.13
A2: Morality	0.16	-0.08	-0.08	0.08	-0.02	0.15	0.12	-0.04	-0.02	0.20	-0.01	0.27
A3: Altruism	0.16	-0.14	-0.19	-0.04	-0.03	0.04	0.02	-0.08	-0.24	-0.06	-0.06	-0.01
A4: Cooperation	0.12	-0.03	-0.10	0.05	0.04	0.03	-0.13	0.08	0.06	0.05	0.08	-0.16
A5: Modesty	0.10	-0.03	-0.08	0.10	0.13	0.00	0.11	-0.04	0.02	0.27	0.20	0.02
A6: Sympathy	0.14	-0.09	-0.06	-0.07	-0.07	0.12	-0.08	0.09	0.21	-0.07	-0.16	0.09
C1: Self-Efficacy	0.04	0.03	-0.07	-0.04	-0.02	-0.02	0.00	-0.04	0.09	-0.06	0.00	-0.16
C2: Orderliness	0.03	-0.03	-0.07	0.06	0.02	0.01	0.07	-0.03	-0.03	0.02	-0.01	0.04
C3: Dutifulness	0.09	-0.05	-0.10	0.03	-0.07	0.07	-0.29	-0.14	0.09	-0.18	-0.06	0.18
C4: Achievement-Striving	0.02	-0.02	-0.04	0.04	0.08	0.08	-0.07	0.09	0.05	-0.07	0.26	0.04
C5: Self-Discipline	0.02	-0.07	-0.08	0.05	0.03	0.07	0.04	-0.13	-0.07	0.12	-0.02	0.14
C6: Cautiousness	0.12	-0.01	-0.03	0.02	-0.09	0.01	0.24	0.05	0.02	-0.10	-0.13	-0.15

Table 50. (Continued).

	Structure Matrix						*Standardized Canonical Function Coefficients*					
	Function						*Function*					
	1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
Athletic Coaching BIM	-0.01	0.01	-0.17	0.09	0.14	-0.22	0.03	-0.09	-0.15	0.04	0.33	-0.15
Business BIM	-0.51	0.13	-0.13	0.03	-0.14	-0.02	-0.23	-0.09	0.16	0.34	-0.06	0.00
Creative Arts BIM	0.04	-0.15	0.13	-0.29	0.24	0.43	0.16	0.06	0.10	-0.36	0.17	0.26
Creative Writing BIM	0.01	-0.25	0.06	-0.21	0.03	0.30	-0.28	0.14	-0.03	0.08	0.13	0.25
Engineering BIM	-0.10	0.38	0.48	-0.14	0.00	0.01	0.07	0.14	0.72	-0.12	0.46	0.08
Family Activity BIM	0.11	-0.22	-0.06	0.03	0.06	0.04	-0.03	-0.14	0.25	-0.01	0.00	-0.06
Finance BIM	-0.43	0.24	-0.11	0.07	-0.25	-0.07	-0.26	0.00	-0.21	0.07	-0.13	0.10
Human Relations Management BIM	-0.24	-0.04	-0.21	-0.11	-0.24	-0.05	-0.14	0.01	-0.19	-0.38	0.03	0.27
Information Technology BIM	-0.17	0.27	0.27	-0.09	-0.13	0.01	0.09	0.06	-0.19	-0.06	-0.27	0.04
Law BIM	-0.11	-0.02	-0.07	-0.24	-0.23	0.00	-0.13	-0.13	-0.01	-0.18	-0.06	0.03
Life Science BIM	0.34	0.40	-0.03	-0.10	-0.06	0.34	0.02	0.38	-0.12	0.29	0.03	0.77
Management BIM	-0.37	0.10	-0.11	0.02	-0.20	-0.08	-0.20	0.16	-0.40	0.15	0.15	-0.37
Manual Labor BIM	0.03	0.16	0.13	0.02	0.02	0.01	0.04	-0.15	-0.52	0.38	0.00	0.42
Mathematics BIM	0.02	0.45	0.26	0.03	-0.12	0.10	0.01	0.33	0.16	0.07	-0.13	0.07
Medical Service BIM	0.40	0.25	-0.29	-0.19	-0.03	0.03	0.25	0.14	-0.09	-0.12	-0.04	-0.01
Outdoor-Agriculture BIM	0.16	0.24	0.17	-0.01	0.00	0.04	-0.10	0.07	0.28	-0.19	-0.03	-0.35
Office Work BIM	-0.22	0.05	-0.10	0.06	-0.07	-0.04	0.08	0.13	0.07	0.17	0.17	-0.14
Performing Arts BIM	0.00	-0.12	0.07	-0.12	-0.02	0.25	-0.10	-0.10	-0.06	0.20	-0.31	-0.07
Personal Service BIM	0.00	-0.18	-0.15	-0.07	0.17	0.07	0.14	-0.03	0.10	-0.16	0.40	-0.08
Physical/Risk Taking BIM	0.06	0.19	0.06	-0.13	0.01	-0.04	-0.04	0.23	-0.02	0.22	-0.08	0.01
Physical Science BIM	0.22	0.42	0.15	-0.16	-0.03	0.25	0.06	-0.22	-0.10	-0.12	0.19	-0.08
Politics BIM	-0.08	-0.07	0.04	-0.10	-0.16	-0.02	0.04	0.02	0.17	0.20	0.23	-0.35
Professional Advising BIM	-0.15	-0.03	-0.14	-0.12	-0.25	-0.06	0.00	0.17	0.00	-0.37	-0.05	-0.17
Protective BIM	-0.02	0.14	0.07	-0.17	-0.10	-0.13	-0.04	0.02	-0.01	-0.14	0.15	-0.14
Religious Activities BIM	0.08	-0.11	0.02	0.06	0.04	-0.07	-0.18	0.07	0.02	0.13	0.16	-0.14
Sales BIM	-0.39	0.09	-0.13	0.00	-0.10	0.04	-0.19	0.17	-0.19	-0.20	0.10	0.38
Skilled Trades BIM	-0.05	0.32	0.40	-0.10	-0.01	-0.10	-0.11	-0.05	0.27	0.03	-0.40	-0.39
Social Science BIM	0.21	-0.15	-0.12	-0.42	-0.32	0.09	0.08	-0.27	0.15	-0.71	-0.65	-0.22
Social Service BIM	0.20	-0.27	-0.24	-0.11	-0.13	-0.03	0.08	-0.15	-0.17	0.29	0.01	-0.06
Teaching BIM	0.17	-0.29	0.03	0.12	-0.28	0.10	0.44	-0.51	0.31	0.66	-0.60	0.36
Technical Writing BIM	-0.09	0.16	0.24	-0.06	-0.08	-0.03	0.24	-0.06	-0.11	-0.07	0.11	-0.31
Mechanical Activities BCS	0.05	0.25	0.30	-0.16	0.04	-0.03	-0.10	0.21	0.17	-0.40	0.26	-0.12
Information Technology BCS	-0.17	0.18	0.34	-0.05	-0.07	0.04	0.04	0.03	0.72	0.27	-0.03	-0.21

Table 50. (Continued).

	Structure Matrix						*Standardized Canonical Function Coefficients*					
	Function						*Function*					
	1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
Protective Services BCS	-0.02	0.11	0.06	-0.13	-0.17	-0.09	0.01	-0.17	-0.05	-0.12	-0.11	0.03
Outdoors BCS	0.16	0.13	0.06	-0.05	-0.08	0.14	0.16	-0.13	0.02	0.23	-0.32	0.04
Science BCS	0.29	0.50	0.06	-0.10	-0.09	0.16	0.17	0.48	-0.05	0.07	0.00	0.16
Medical Science BCS	0.37	0.32	-0.20	-0.13	-0.03	0.02	0.16	0.03	-0.26	0.04	-0.09	-0.33
Math BCS	0.03	0.39	0.13	0.06	-0.09	0.08	0.13	0.00	-0.09	0.13	-0.15	0.06
Visual Arts & Design BCS	-0.06	-0.17	0.14	-0.22	0.25	0.38	0.12	-0.35	-0.24	0.27	0.10	0.27
Music BCS	0.03	-0.05	0.13	-0.14	-0.05	0.23	-0.06	0.14	0.03	-0.14	-0.14	0.06
Dramatic Arts BCS	-0.06	-0.14	0.10	-0.16	-0.01	0.35	0.14	0.25	-0.04	0.11	-0.11	0.55
Writing BCS	0.00	-0.20	-0.02	-0.17	0.04	0.15	0.08	-0.28	-0.05	-0.14	0.24	-0.35
Artistic Creativity BCS	-0.15	-0.15	0.16	-0.19	0.15	0.36	-0.36	-0.41	0.00	-0.39	0.47	-0.16
Helping BCS	0.21	-0.26	-0.21	-0.10	-0.05	-0.04	0.05	-0.04	-0.22	-0.25	-0.14	0.01
Teaching BCS	0.12	-0.06	0.07	0.04	-0.10	0.02	0.08	-0.33	0.31	0.29	0.30	-0.04
Cultural Sensitivity BCS	0.07	-0.11	-0.07	-0.14	-0.08	0.11	-0.02	0.06	0.06	0.18	0.08	-0.03
Human Resources & Training BCS	-0.06	-0.04	-0.13	-0.02	-0.12	-0.03	0.05	0.17	0.07	0.03	-0.06	-0.25
Medical Service BCS	0.31	0.07	-0.23	-0.13	0.04	-0.14	0.07	0.01	-0.05	-0.09	0.32	-0.21
Marketing & Advertising BCS	-0.33	-0.02	0.02	-0.07	-0.04	0.19	-0.43	0.28	0.18	0.04	-0.36	0.14
Sales BCS	-0.27	0.00	-0.04	0.01	-0.11	0.02	0.26	-0.25	0.10	0.13	0.02	-0.32
Management BCS	-0.31	0.03	-0.16	0.03	-0.18	0.00	-0.17	0.15	-0.12	0.06	-0.40	0.24
Entrepreneurship BCS	-0.32	0.09	-0.10	0.02	-0.14	-0.02	0.06	0.01	-0.07	-0.04	-0.18	-0.19
Public Speaking BCS	0.02	-0.05	-0.03	-0.06	-0.11	-0.02	0.03	0.12	-0.10	-0.14	0.06	0.03
Politics BCS	-0.08	-0.06	0.04	-0.06	-0.16	0.01	0.08	-0.05	0.08	-0.05	-0.23	0.19
Law BCS	-0.06	-0.02	-0.03	-0.18	-0.24	0.02	0.02	-0.09	0.05	-0.01	-0.10	0.23
Accounting & Finance BCS	-0.30	0.18	-0.06	0.10	-0.22	-0.01	-0.21	-0.06	-0.06	0.11	0.02	0.06
Office Management BCS	-0.11	-0.01	-0.14	0.01	0.04	0.06	-0.02	0.22	-0.17	-0.07	0.40	0.13
Personal Computing BCS	-0.12	0.16	0.17	-0.13	-0.08	0.11	-0.14	-0.10	-0.33	-0.24	-0.25	0.27

Table 51. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales, Public Domain Basic Interest Markers, and Career Confidence Inventory Basic Scales Examining College Major.

	Function					
	1	*2*	*3*	*4*	*5*	*6*
Arts	-.57	-.73	.46	-.43	.92	.57
Business	-1.71	.28	-.48	.44	-.27	-.05
Community Services	.75	.07	-.76	.03	.93	-.97
Education	.92	-1.61	.53	1.24	-.37	-.04
Engineering/Technology	.13	1.34	1.29	-.04	-.12	-.33
Science/Math	1.27	1.08	-.68	.24	-.06	.82
Social Sciences	.30	-.62	-.21	-.96	-.75	-.14

Table 52. Discriminant Function Results for Broad Level Predictor Sets Examining College Students' Occupational Aspirations.

Sets of Predictors	*Hit Rate %*	*Jack Knife %*	*Squared Canonical Correlations*[a]	*Wilks's λ*[b]	*1-Wilks's λ*[c]	*# of Significant Discriminants*
Personality	16.9	14.1	.081	.821	.179	3
Personality + Interests	32.7	26.8	.350	.351	.649	5
Personality + Self Efficacy	30.7	26.1	.296	.361	.639	5
Personality + Interests + Self Efficacy	35.7	28.8	.372	.262	.738	5

Notes: N = 878. Personality = IPIP NEO-FFI; Interests = Interest Profiler; Self-Efficacy = Career Confidence Inventory Domain Scales.
[a] The squared canonical correlation is the proportion of variance of the unstandardized first discriminant function scores that is explained by the differences in groups.
[b] Wilks's lambda provides a significance test for the discriminant function.
[c] 1-Wilks's λ is the percentage of variance in discriminant scores explained by group membership.
* $p < .001$

Table 53. Incremental Validity Results for Broad level Predictor Sets Examining Occupational Aspirations.

	McNemar χ^2	*Significance*
H3b. P + I vs. P	81.13	.000
H3c. P + SE vs. P	61.86	.000
H3d. P + I + SE vs. P + I	5.16	.023
H3d. P + I + SE vs. P + SE	13.39	.000

Notes. N = 939. P = Broad personality (IPIP NEO-PI-R Domain Scales); I = Broad Interests (Interest Profiler); SE = Broad Self-Efficacy (Career Confidence Inventory Domain Scales).

Table 54. Discriminant Structure Matrix and Standardized Canonical Discriminant Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales Examining Occupational Aspirations.

	Structure Matrix			*Standardized Canonical Function Coefficients*		
	Function			*Function*		
	1	*2*	*3*	*1*	*2*	*3*
Neuroticism	0.49	0.09	-0.11	0.41	0.64	0.03
Extraversion	-0.20	0.83	-0.14	-0.08	1.01	-0.46
Openness	0.83	0.10	0.14	0.87	-0.05	0.03
Agreeableness	-0.19	0.38	0.85	-0.10	0.25	1.11
Conscientiousness	-0.32	0.18	0.06	-0.12	0.07	-0.24

Table 55. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales Examining Occupational Aspirations.

	Function		
	1	*2*	*3*
Management/Finance	-0.54	-0.19	-0.09
Advert/Market/Legal	0.20	0.16	-0.35
General Business	0.14	0.30	-0.39
Engineering/Architecture	0.08	-0.48	-0.17
Math/Sciences	0.45	-0.38	0.25
Social Sciences	0.13	-0.05	0.25
Community & Social Services	0.17	0.19	0.27
Education	-0.10	0.14	0.12
Arts	0.45	0.11	-0.04
Doctors	-0.09	-0.03	0.03
Other Healthcare	-0.42	0.22	0.15
Technical/Protective	-0.11	0.03	-0.28

Table 56. Discriminant Structure Matrix and Standardized Canonical Discriminant Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales and the Interest Profiler Examining Occupational Aspirations.

	Structure Matrix					*Standardized Canonical Function Coefficients*				
	Function					*Function*				
	1	*2*	*3*	*4*	*5*	*1*	*2*	*3*	*4*	*5*
Neuroticism	0.03	-0.08	0.38	0.01	-0.13	0.14	-0.02	0.33	0.01	0.11
Extraversion	-0.16	-0.21	-0.19	0.08	0.30	0.10	-0.11	-0.18	-0.03	0.22
Openness	-0.06	-0.02	0.61	0.32	-0.13	0.07	-0.07	0.37	0.29	-0.04
Agreeableness	-0.25	0.05	-0.12	-0.10	-0.18	0.12	0.11	-0.02	-0.08	-0.40
Conscientiousness	-0.07	0.05	-0.23	0.03	0.31	0.10	0.15	0.00	0.02	0.43
Realistic Interest	0.50	0.44	0.14	-0.24	0.34	0.41	0.27	0.28	-0.60	0.80
Investigative Interest	0.07	0.64	0.05	0.56	0.00	-0.09	0.68	-0.22	0.88	-0.16
Artistic Interest	0.04	-0.11	0.69	0.13	-0.14	0.10	-0.17	0.63	-0.17	-0.31
Social Interest	-0.66	-0.16	0.00	0.01	0.11	-0.93	-0.04	-0.03	-0.26	0.26
Enterprising Interest	0.28	-0.60	-0.18	0.41	0.20	0.38	-0.64	-0.09	0.63	0.41
Conventional Interest	0.42	-0.06	-0.31	-0.10	-0.37	0.29	-0.03	-0.41	-0.27	-0.84

Table 57. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales and the Interest Profiler Examining Occupational Aspirations.

	Function				
	1	2	3	4	5
Management/Finance	1.01	-0.33	-0.68	-0.25	-0.25
Advert/Market/Legal	0.29	-0.92	0.10	0.50	0.14
General Business	0.29	-1.01	-0.16	0.49	0.18
Engineering/Architecture	1.31	0.63	0.26	-0.23	0.28
Math/Sciences	0.25	0.99	0.27	0.29	-0.64
Social Sciences	-0.57	0.02	0.12	0.20	-0.03
Community & Social Services	-0.79	-0.27	0.22	-0.27	-0.05
Education	-0.72	-0.13	0.10	-0.50	0.03
Arts	0.27	-0.48	0.58	0.04	-0.15
Doctors	-0.42	0.64	-0.16	0.55	0.11
Other Healthcare	-0.93	0.29	-0.57	-0.07	0.07
Technical/Protective	0.67	0.66	0.05	-0.25	0.39

Table 58. Discriminant Structure Matrix and Standardized Canonical Discriminant Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales and the Career Confidence Inventory Broad Scales Examining Occupational Aspirations.

	Structure Matrix					*Standardized Canonical Function Coefficients*				
	Function					Function				
	1	2	3	4	5	1	2	3	4	5
Neuroticism	-0.10	-0.04	0.21	0.28	0.03	-0.06	-0.01	0.20	0.13	0.36
Extraversion	-0.14	-0.15	-0.25	-0.18	0.35	0.02	0.06	-0.09	-0.16	0.41
Openness	-0.05	-0.14	0.09	0.65	0.15	-0.07	0.13	0.03	0.48	0.28
Agreeableness	0.08	-0.26	-0.17	-0.17	-0.24	-0.01	0.01	-0.07	-0.08	-0.33
Conscientiousness	0.07	-0.03	-0.13	-0.16	0.11	0.06	0.01	0.19	-0.04	0.30
Realistic Self-Efficacy	0.29	0.35	0.41	-0.04	0.25	0.22	0.28	1.06	-0.49	0.38
Investigative Self-Efficacy	0.65	0.25	-0.28	0.31	0.10	0.94	0.05	-0.70	0.51	0.13
Artistic Self-Efficacy	-0.23	-0.03	0.20	0.62	-0.08	-0.26	-0.14	0.37	0.66	-0.54
Social Self-Efficacy	-0.10	-0.41	-0.24	0.01	0.09	0.18	-1.24	0.01	-0.34	-0.05
Enterprising Self-Efficacy	-0.35	0.25	-0.33	0.07	0.31	-0.74	0.49	-0.65	0.20	0.99
Conventional Self-Efficacy	-0.13	0.42	-0.30	-0.02	-0.24	-0.17	0.67	-0.08	-0.24	-0.98

Table 59. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales and the Career Confidence Inventory Broad Scales Examining Occupational Aspirations.

	Function				
	1	*2*	*3*	*4*	*5*
Management/Finance	-0.36	1.03	-0.24	-0.52	-0.31
Advert/Market/Legal	-1.02	0.19	-0.47	0.30	0.29
General Business	-1.04	0.42	-0.38	0.08	0.36
Engineering/Architecture	0.61	0.90	0.61	0.16	0.02
Math/Sciences	1.04	0.12	-0.05	0.46	-0.16
Social Sciences	-0.02	-0.28	-0.15	0.11	-0.02
Community & Social Services	-0.15	-0.90	0.05	-0.11	0.02
Education	-0.22	-0.72	0.29	-0.28	-0.11
Arts	-0.70	-0.15	0.33	0.54	-0.20
Doctors	0.84	0.01	-0.43	0.25	0.07
Other Healthcare	0.72	-0.48	-0.46	-0.36	0.06
Technical/Protective	0.30	0.29	0.88	-0.47	0.65

Table 60. Discriminant Structure Matrix and Standardized Canonical Discriminant Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales, Interest Profiler, and Career Confidence Inventory Broad Scales Examining Occupational Aspirations.

	Structure Matrix					*Standardized Canonical Function Coefficients*				
	Function					*Function*				
	1	*2*	*3*	*4*	*5*	*1*	*2*	*3*	*4*	*5*
Neuroticism	0.03	-0.09	0.15	0.28	-0.07	0.16	-0.02	0.18	0.19	0.24
Extraversion	-0.13	-0.17	-0.14	-0.14	0.34	0.11	0.05	-0.01	-0.19	0.32
Openness	-0.07	-0.05	0.03	0.61	-0.07	0.12	-0.05	-0.08	0.35	0.04
Agreeableness	-0.23	0.02	-0.01	-0.15	-0.19	0.16	0.02	0.00	-0.04	-0.32
Conscientiousness	-0.07	0.05	-0.10	-0.15	0.25	0.08	0.09	0.15	0.03	0.43
Realistic Interest	0.44	0.38	0.34	0.08	0.21	0.29	0.13	0.28	0.16	0.22
Investigative Interest	0.03	0.55	-0.21	0.37	0.14	-0.09	0.28	-0.24	0.32	0.14
Artistic Interest	0.03	-0.14	0.18	0.61	-0.17	0.20	-0.04	0.18	0.12	-0.34
Social Interest	-0.62	-0.19	-0.10	-0.07	0.10	-0.75	-0.10	-0.16	-0.21	0.19
Enterprising Interest	0.31	-0.43	-0.42	0.04	0.21	0.27	-0.21	-0.39	0.26	0.36
Conventional Interest	0.41	0.00	-0.05	-0.25	-0.35	0.22	-0.02	0.33	-0.45	-0.41
Realistic Self-Efficacy	0.26	0.35	0.18	-0.01	0.36	0.17	0.15	0.64	-0.40	0.49
Investigative Self-Efficacy	0.04	0.64	-0.39	0.14	0.01	-0.15	0.67	-0.64	0.12	-0.14
Artistic Self-Efficacy	0.06	-0.21	0.08	0.58	-0.05	-0.17	-0.20	0.13	0.55	-0.09
Social Self-Efficacy	-0.32	-0.17	-0.06	0.05	0.04	-0.40	0.00	0.59	0.02	-0.14
Enterprising Self-Efficacy	0.19	-0.30	-0.38	0.00	0.25	0.28	-0.54	-0.48	-0.07	0.39
Conventional Self-Efficacy	0.28	-0.07	-0.37	-0.16	-0.19	0.26	0.04	-0.34	-0.14	-0.57

Table 61. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Domain Scales, Interest Profiler, and Career Confidence Inventory Broad Scales Examining Occupational Aspirations.

	Function				
	1	*2*	*3*	*4*	*5*
Management/Finance	1.18	-0.20	-0.24	-0.73	-0.29
Advert/Market/Legal	0.39	-1.02	-0.58	0.33	0.17
General Business	0.48	-1.05	-0.63	0.04	0.31
Engineering/Architecture	1.24	0.85	0.41	0.20	0.15
Math/Sciences	0.11	1.17	-0.01	0.38	-0.52
Social Sciences	-0.53	-0.08	-0.19	0.15	-0.03
Community & Social Services	-0.85	-0.37	0.33	-0.05	-0.07
Education	-0.74	-0.35	0.54	-0.22	-0.03
Arts	0.24	-0.67	0.29	0.62	-0.19
Doctors	-0.48	0.83	-0.63	0.23	0.12
Other Healthcare	-0.99	0.50	-0.31	-0.51	0.08
Technical/Protective	0.65	0.53	0.87	-0.21	0.68

Table 62. Discriminant Function Results for Basic Level Predictor Sets Examining College Students' Occupational Aspirations.

Sets of Predictors	*Hit Rate %*	*Jack Knife %*	*Squared Canonical Correlations*[a]	*Wilks's λ*[b]	*1-Wilks's λ*[c]	*# of Significant Discriminants*
Personality	23.3	12.5	.14	.53	.48	3
Personality + Interests	57.7	39.3	.48	.06	.94	8
Personality + Self Efficacy	50.7	31.6	.46	.11	.89	6
Personality + Interests + Self Efficacy	63.7	40.4	.52	.04	.96	8

Notes: N = 878. Personality = IPIP NEO-FFI; Interests = Interest Profiler; Self-Efficacy = Career Confidence Inventory Domain Scales.
[a] The squared canonical correlation is the proportion of variance of the unstandardized first discriminant function scores that is explained by the differences in groups.
[b] Wilks's lambda provides a significance test for the discriminant function.
[c] 1-Wilks's λ is the percentage of variance in discriminant scores explained by group membership.
* $p < .001$

Table 63. Incremental Validity Results for Basic Level Predictor Sets Examining College Students' Occupational Aspirations.

	McNemar χ^2	*Significance*
H4b. p + i vs. p	242.06	.000
H4c. p + se vs. p	182.96	.000
H4d. p + i + se vs. p + i	21.19	.000
H4d. p + i + se vs. p + se	62.02	.000

Notes. N = 939. p = Personality facets (IPIP NEO-PI-R Facet Scales); i = Basic Interests (Basic Interest Markers); SE = Basic Self-Efficacy (Career Confidence Inventory).

Table 64. Discriminant Structure Matrix and Standardized Canonical Discriminant Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales Examining Occupational Aspirations.

	Structure Matrix			*Standardized Canonical Function Coefficients*		
	Function			*Function*		
	1	*2*	*3*	*1*	*2*	*3*
N1: Anxiety	-0.16	-0.14	0.14	-0.10	0.01	-0.02
N2: Anger	0.02	0.12	0.29	-0.14	0.24	0.36
N3: Depression	0.18	-0.21	0.32	0.42	-0.22	0.52
N4: Self-Consciousness	0.09	-0.28	-0.07	0.24	0.08	0.00
N5: Immoderation	0.04	0.16	0.16	0.03	0.26	-0.18
N6: Vulnerability	-0.14	-0.19	0.16	0.03	-0.24	-0.12
E1: Friendliness	-0.44	0.27	0.11	-0.15	0.12	0.17
E2: Gregariousness	-0.29	0.48	0.28	-0.03	0.55	0.37
E3: Assertiveness	-0.15	0.37	0.17	-0.17	0.14	-0.03
E4: Activity Level	-0.02	0.31	-0.02	-0.05	0.15	0.00
E5: Excitement-Seeking	0.12	0.23	0.22	0.36	-0.22	-0.03
E6: Cheerfulness	-0.35	0.04	0.12	-0.14	-0.18	0.15
O1: Imagination	0.01	-0.15	0.32	0.09	0.20	0.13
O2: Artistic Interests	-0.28	-0.28	0.56	-0.14	-0.03	0.66
O3: Emotionality	-0.50	-0.22	0.24	-0.32	-0.11	-0.08
O4: Adventurousness	0.07	0.08	0.27	0.14	0.12	0.10
O5: Ideas	0.05	-0.34	0.35	0.40	-0.49	-0.17
O6: Values	0.29	-0.41	0.18	-0.08	-0.19	0.21
A1: Trust	-0.30	-0.07	-0.24	0.05	-0.13	-0.31
A2: Morality	-0.43	-0.33	-0.15	-0.12	-0.42	-0.04
A3: Altruism	-0.59	-0.19	0.03	-0.41	-0.08	-0.12
A4: Cooperation	-0.29	-0.25	-0.16	0.15	0.00	-0.02
A5: Modesty	-0.21	-0.16	-0.17	-0.24	0.26	-0.13
A6: Sympathy	-0.54	-0.41	0.09	-0.16	-0.17	0.05
C1: Self-Efficacy	0.01	0.15	-0.07	0.29	0.10	0.20
C2: Orderliness	-0.09	0.03	-0.22	0.03	-0.03	-0.27
C3: Dutifulness	-0.35	-0.14	-0.24	-0.09	0.06	-0.32
C4: Achievement-Striving	-0.08	0.16	-0.09	0.39	0.16	0.03
C5: Self-Discipline	-0.08	0.22	-0.16	-0.13	0.11	-0.05
C6: Cautiousness	-0.05	-0.17	-0.11	0.14	0.03	0.51

Table 65. Group Centroids for Discriminant Analyses of the IPIP NEO PI-R Facet Scales Examining Occupational Aspirations.

	Function		
	1	*2*	*3*
Management/Finance	0.16	0.37	-0.57
Advert/Market/Legal	0.15	0.48	0.63
General Business	0.06	0.44	0.45
Engineering/Architecture	0.88	-0.23	-0.22
Math/Sciences	0.41	-0.87	0.07
Social Sciences	-0.25	-0.51	-0.05
Community & Social Services	-0.62	-0.45	0.20
Education	-0.40	0.03	-0.13
Arts	0.07	0.05	0.48
Doctors	0.05	0.04	0.01
Other Healthcare	-0.51	0.19	-0.35
Technical/Protective	0.45	0.35	0.00

Table 66. Discriminant Structure Matrix and Standardized Canonical Discriminant Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales and the Public Domain Basic Interest Markers Examining College Occupational Aspirations.

	Structure Matrix								*Standardized Canonical Function Coefficients*							
	Function								*Function*							
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
N1	-0.04	-0.05	-0.02	0.05	0.06	-0.08	-0.09	-0.20	0.05	0.13	-0.08	-0.11	-0.11	0.10	-0.02	-0.10
N2	0.06	-0.10	-0.03	0.09	0.14	0.08	-0.06	-0.03	-0.06	-0.16	-0.16	0.13	0.13	0.12	0.09	0.15
N3	0.09	-0.06	0.06	0.17	0.06	-0.08	0.12	-0.18	0.12	-0.09	0.14	0.30	-0.15	0.23	0.39	-0.19
N4	0.01	0.01	0.13	0.01	0.09	-0.16	-0.04	-0.21	0.04	0.06	0.02	0.03	0.20	-0.04	0.05	0.20
N5	0.04	-0.05	-0.02	0.01	0.13	0.10	-0.01	0.00	0.07	0.09	0.01	-0.15	-0.01	0.16	0.04	0.07
N6	0.00	-0.12	0.02	0.05	0.15	-0.19	-0.13	-0.22	0.11	0.00	0.20	-0.10	0.21	-0.34	-0.32	0.02
E1	-0.16	-0.05	-0.20	-0.03	-0.02	0.16	-0.06	0.10	-0.10	-0.01	0.03	0.05	-0.04	0.34	0.14	0.00
E2	-0.04	-0.05	-0.31	0.00	0.06	0.15	-0.12	0.19	0.14	0.01	-0.22	-0.06	0.22	-0.02	-0.06	0.21
E3.	-0.06	-0.04	-0.13	0.01	0.04	0.23	-0.03	0.29	-0.13	0.02	0.18	-0.06	0.22	0.00	0.01	0.14
E4	-0.01	0.04	-0.07	-0.04	0.04	0.21	-0.09	0.12	0.09	0.02	-0.15	0.09	0.02	0.02	0.01	-0.02
E5	0.05	0.04	-0.07	0.12	0.03	0.21	-0.01	0.10	-0.06	-0.06	-0.07	0.29	-0.18	-0.10	-0.04	0.03
E6	-0.16	-0.01	-0.12	0.04	0.01	0.04	-0.07	0.05	-0.12	0.16	0.02	0.03	0.06	-0.11	0.01	0.03
O1	-0.03	-0.01	0.01	0.19	0.08	-0.01	0.09	-0.02	0.06	0.00	-0.10	-0.02	0.12	0.09	-0.13	0.06
O2.	-0.15	-0.07	-0.06	0.30	0.18	-0.12	0.07	-0.09	-0.06	-0.18	0.03	0.11	0.20	0.14	0.17	0.16
O3	-0.18	-0.11	-0.10	0.14	-0.08	-0.12	-0.11	-0.12	-0.02	-0.01	0.03	0.02	-0.15	-0.08	-0.06	0.00
O4	-0.02	0.07	-0.09	0.11	0.09	0.07	0.15	0.11	0.00	0.09	-0.09	-0.05	0.18	0.11	0.16	0.09
O5	0.00	0.15	0.10	0.22	-0.01	-0.22	0.17	0.16	0.01	0.16	0.07	0.04	-0.08	-0.20	-0.15	-0.04
O6	0.00	-0.01	-0.01	0.18	0.04	-0.23	0.18	-0.08	0.09	-0.02	0.02	0.00	-0.10	0.01	-0.03	-0.16
A1	-0.13	-0.01	-0.02	-0.14	-0.05	-0.11	-0.09	-0.03	0.05	-0.04	-0.03	-0.07	-0.01	-0.22	0.05	-0.06
A2	-0.21	-0.01	0.01	-0.04	-0.09	-0.15	-0.01	-0.24	-0.07	0.02	0.00	-0.02	0.02	-0.29	0.04	-0.26
A3	-0.25	-0.06	-0.11	0.04	-0.15	-0.04	-0.06	-0.16	0.06	0.00	-0.02	-0.16	-0.17	0.06	0.09	-0.20
A4	-0.14	-0.01	0.03	-0.03	-0.05	-0.13	-0.06	-0.16	0.11	0.01	0.12	0.03	0.07	0.12	0.04	-0.03
A5	-0.10	0.00	0.04	-0.07	0.01	-0.05	-0.05	-0.25	-0.06	-0.03	0.02	-0.12	0.15	0.06	-0.07	0.11
A6	-0.21	-0.06	-0.07	0.10	-0.17	-0.24	-0.12	-0.21	0.03	0.10	-0.07	0.08	-0.11	-0.11	-0.08	0.09
C1	-0.06	0.10	-0.03	0.01	-0.11	0.19	0.01	0.20	0.11	-0.10	0.04	0.15	-0.13	0.16	0.08	0.26
C2	-0.08	0.06	0.03	-0.11	-0.01	0.08	-0.07	-0.08	-0.10	0.00	0.10	-0.09	0.00	0.03	0.08	-0.06
C3	-0.17	0.00	0.00	-0.07	-0.17	-0.01	-0.04	-0.08	0.03	-0.18	0.00	0.00	-0.19	-0.02	-0.17	0.00
C4	-0.07	0.07	-0.03	-0.01	0.00	0.17	-0.11	0.06	0.09	0.24	0.09	0.09	0.02	0.22	-0.08	-0.11
C5	-0.04	0.05	-0.05	-0.07	-0.02	0.16	-0.13	0.04	0.07	-0.09	0.03	-0.15	0.08	-0.01	-0.14	-0.07
C6	-0.09	0.07	0.03	-0.03	-0.05	-0.07	0.14	0.03	-0.03	0.13	-0.10	0.26	0.19	0.10	0.40	0.20

Table 66. (Continued).

	Structure Matrix								*Standardized Canonical Function Coefficients*							
	Function								*Function*							
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Athletic Coaching BIM	-0.02	0.07	-0.05	-0.14	-0.02	0.29	-0.09	0.11	-0.06	-0.05	-0.02	0.05	-0.01	0.13	-0.11	0.00
Business BIM	0.45	0.07	-0.40	-0.07	0.01	-0.07	-0.06	0.23	0.30	-0.13	-0.47	0.30	0.75	-0.22	0.29	0.02
Creative Arts BIM	0.02	-0.07	0.01	0.45	0.31	-0.15	0.06	-0.08	0.02	0.03	-0.08	0.35	0.19	0.03	-0.29	-0.17
Creative Writing BIM	-0.04	-0.21	-0.12	0.39	0.16	-0.11	0.22	0.03	0.19	0.00	-0.24	0.12	0.19	0.12	0.16	-0.18
Engineering BIM	0.40	0.28	0.48	0.15	-0.02	-0.09	-0.02	0.18	0.40	0.07	0.86	0.79	0.19	0.01	-0.77	-0.28
Family Activity BIM	-0.20	-0.11	-0.04	0.00	0.02	0.08	-0.15	-0.06	0.11	0.21	0.16	-0.05	-0.13	0.08	0.07	0.00
Finance BIM	0.44	0.14	-0.22	-0.34	-0.14	-0.18	-0.08	0.13	0.35	-0.04	-0.09	-0.85	-0.25	-0.42	-0.22	-0.23
Human Resources Mgmt BIM	0.12	-0.06	-0.35	-0.02	-0.20	-0.05	-0.03	0.06	-0.01	0.27	-0.29	-0.12	0.04	0.26	0.26	-0.69
Information Tech. BIM	0.32	0.17	0.19	-0.01	-0.05	-0.19	0.14	0.09	-0.07	0.01	-0.06	-0.16	-0.11	-0.15	0.44	-0.25
Law BIM	0.08	0.07	-0.18	0.16	-0.24	0.08	0.27	0.31	0.15	-0.07	-0.11	0.21	-0.23	0.17	0.38	0.24
Life Science BIM	-0.22	0.42	0.20	0.02	0.17	-0.17	0.38	0.06	-0.06	0.15	-0.18	-0.05	0.47	0.08	0.33	-0.13
Mgmt BIM	0.31	0.03	-0.28	-0.09	-0.15	0.01	-0.06	0.38	0.07	0.27	-0.15	-0.23	-0.52	0.28	-0.13	0.72
Manual Labor BIM	0.12	0.07	0.28	-0.07	-0.06	0.14	0.20	0.03	-0.09	-0.09	-0.10	-0.25	-0.01	0.03	0.56	0.22
Math BIM	0.20	0.28	0.33	-0.10	0.05	-0.23	0.03	0.19	0.13	0.07	0.14	-0.02	0.16	0.02	0.08	0.13
Medical Service BIM	-0.47	0.51	-0.02	0.01	-0.02	-0.02	0.03	0.12	-0.62	0.75	-0.12	-0.19	0.02	0.05	-0.37	0.26
Outdoor-Agriculture BIM	0.01	0.16	0.30	-0.05	0.03	0.05	0.25	0.00	0.08	-0.16	0.08	-0.06	-0.16	-0.13	0.07	-0.23
Office Work BIM	0.17	-0.02	-0.16	-0.14	-0.05	0.00	-0.12	-0.02	-0.08	0.07	0.18	0.00	0.26	0.34	-0.17	-0.41
Personal Service BIM	-0.10	-0.09	-0.19	0.17	0.09	0.11	-0.15	0.02	0.21	-0.06	-0.04	-0.31	-0.19	-0.20	0.34	-0.07
Performing Arts BIM	0.03	-0.14	-0.05	0.21	0.10	-0.10	0.20	0.03	-0.15	0.06	0.12	0.27	0.14	0.08	-0.32	0.17
Physical/Risk Taking BIM	0.06	0.21	0.20	0.04	-0.01	0.19	0.23	0.02	0.16	-0.02	0.20	-0.28	0.34	-0.04	0.23	-0.22
Physical Science BIM	-0.01	0.39	0.34	0.05	0.11	-0.27	0.31	0.11	-0.13	0.15	0.04	-0.13	0.03	-0.30	0.21	0.00
Politics BIM	0.06	-0.10	-0.13	0.15	0.02	-0.01	0.21	0.37	-0.11	-0.01	0.06	0.01	0.45	-0.04	-0.04	0.26
Professional Advising BIM	0.05	-0.06	-0.25	0.01	-0.24	-0.15	-0.11	0.21	-0.05	0.11	0.00	0.25	-0.38	-0.38	-0.26	0.35
Protective BIM	0.13	0.16	0.21	0.03	-0.29	0.36	0.23	0.03	0.08	-0.02	0.23	0.17	-0.41	0.62	0.03	-0.40
Religious Activity BIM	-0.17	-0.13	0.00	0.05	-0.09	0.01	-0.18	0.01	-0.04	0.00	-0.01	-0.04	-0.09	0.11	-0.29	-0.07
Sales BIM	0.33	0.02	-0.34	0.00	-0.03	0.01	-0.09	0.19	0.20	-0.03	-0.15	0.15	-0.19	-0.02	-0.06	-0.07
Skilled Trades BIM	0.31	0.22	0.44	0.02	-0.12	0.05	0.05	0.21	0.06	0.15	-0.13	-0.16	-0.29	0.09	-0.13	0.56
Social Science BIM	-0.27	-0.03	-0.12	0.34	-0.31	-0.37	0.21	0.11	-0.11	0.00	0.05	0.43	-0.74	-0.47	0.18	0.26
Social Service BIM	-0.38	-0.20	-0.23	0.17	-0.16	-0.07	-0.16	-0.10	-0.14	-0.34	-0.30	0.21	0.19	-0.01	-0.15	-0.50
Technical Writing BIM	0.23	0.05	0.14	0.06	0.02	-0.16	0.03	0.22	-0.33	-0.99	0.56	-0.52	0.30	-0.09	0.07	0.40
Teaching BIM	-0.23	-0.41	0.03	-0.05	-0.03	-0.14	0.02	0.29	-0.16	-0.05	-0.07	0.07	0.11	-0.09	-0.15	0.29

Table 67. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales and the Public Domain Basic Interest Markers Examining Occupational Aspirations.

	Function							
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Management/Finance	1.50	0.22	-0.51	-1.12	-0.24	-0.07	-0.09	-0.23
Advert/Market/Legal	0.56	-0.44	-1.13	0.56	0.25	0.06	0.56	0.81
General Business	0.90	-0.14	-1.08	0.12	-0.09	0.14	-0.30	0.31
Engineering/Architecture	1.30	0.64	1.50	0.48	-0.05	-0.07	-0.46	0.30
Math/Sciences	0.08	0.69	0.61	-0.25	0.29	-0.96	0.92	-0.33
Social Sciences	-0.58	0.08	-0.22	0.57	-1.13	-0.46	0.12	0.10
Community & Social Services	-0.67	-0.66	-0.33	0.59	-0.39	-0.29	-0.23	-0.55
Education	-0.68	-1.48	0.55	-0.51	0.15	-0.01	0.00	0.18
Arts	0.54	-0.41	-0.26	0.77	0.72	0.13	-0.07	-0.46
Doctors	-1.04	1.31	-0.18	-0.14	0.44	0.02	0.14	0.20
Other Healthcare	-1.49	0.80	-0.16	-0.29	-0.03	0.34	-0.63	-0.11
Technical/Protective	0.19	0.21	0.69	0.12	-0.66	1.61	0.95	-0.30

Table 68. Discriminant Structure Matrix and Standardized Canonical Discriminant Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales and the Career Confidence Inventory Basic Scales Examining Occupational Aspirations.

	Structure Matrix						*Standardized Canonical Function Coefficients*					
	Function						*Function*					
	1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
N1: Anxiety	-0.02	-0.08	-0.01	0.07	-0.17	0.00	-0.15	0.17	-0.12	-0.05	0.06	0.11
N2: Anger	0.11	-0.07	-0.01	0.10	0.00	-0.03	0.10	-0.19	-0.03	0.13	0.11	0.07
N3: Depression	0.11	-0.02	0.10	0.18	-0.11	0.13	0.20	0.08	0.17	0.23	0.24	0.49
N4: Self-Consciousness	0.00	0.03	0.14	0.05	-0.21	-0.09	-0.03	0.00	-0.01	0.06	0.11	-0.17
N5: Immoderation	0.06	-0.03	-0.02	0.04	0.07	-0.09	-0.01	0.11	0.04	-0.14	0.23	-0.09
N6: Vulnerability	0.04	-0.12	0.04	0.08	-0.30	-0.10	0.14	0.02	0.12	0.01	-0.48	-0.36
E1: Friendliness	-0.11	-0.16	-0.21	-0.05	0.17	0.03	-0.08	-0.03	0.01	-0.06	0.23	0.09
E2: Gregariousness	0.00	-0.10	-0.34	0.02	0.15	-0.05	0.17	-0.01	-0.23	0.12	0.11	-0.22
E3: Assertiveness	-0.02	-0.08	-0.14	0.02	0.27	-0.03	-0.10	0.03	0.12	-0.05	0.26	-0.36
E4: Activity Level	-0.02	0.03	-0.09	-0.05	0.19	-0.05	0.10	0.00	-0.10	0.06	0.05	-0.05
E5: Excitement-Seeking	0.04	0.04	-0.08	0.12	0.20	0.09	0.06	0.03	0.10	0.20	-0.22	0.13
E6: Cheerfulness	-0.14	-0.12	-0.13	0.07	0.05	0.02	-0.24	0.10	0.04	0.14	0.00	0.00
O1: Imagination	-0.01	-0.05	0.03	0.24	0.01	0.07	0.04	0.01	-0.15	0.00	0.12	-0.10
O2: Artistic Interests	-0.09	-0.20	-0.02	0.41	-0.06	0.02	0.05	-0.19	0.00	0.31	0.12	-0.02
O3: Emotionality	-0.11	-0.23	-0.08	0.11	-0.18	0.18	-0.01	-0.05	0.01	-0.08	-0.07	0.17
O4: Adventurousness	-0.03	0.04	-0.09	0.20	0.18	-0.01	-0.04	0.06	-0.12	0.10	0.22	-0.17
O5: Ideas	-0.04	0.14	0.09	0.33	-0.08	0.12	0.01	0.20	0.09	0.11	-0.36	0.14
O6: Values	0.02	-0.02	0.02	0.26	-0.16	0.10	-0.05	-0.02	-0.04	0.07	-0.03	0.24
A1: Trust	-0.13	-0.07	-0.04	-0.13	-0.09	-0.11	0.04	0.01	-0.02	-0.10	-0.15	-0.19
A2: Morality	-0.20	-0.13	0.02	-0.06	-0.16	0.06	-0.17	-0.01	0.03	-0.01	-0.21	-0.06
A3: Altruism	-0.21	-0.21	-0.09	-0.02	-0.06	0.20	0.04	0.00	0.03	-0.23	-0.03	0.12
A4: Cooperation	-0.14	-0.08	0.04	-0.05	-0.15	0.01	0.09	0.07	0.14	-0.02	0.07	0.11
A5: Modesty	-0.11	-0.05	0.05	-0.08	-0.11	-0.04	-0.04	-0.06	-0.04	-0.06	0.18	-0.32
A6: Sympathy	-0.18	-0.18	-0.06	0.04	-0.33	0.28	0.01	0.09	-0.09	0.03	-0.25	0.29
C1: Self-Efficacy	-0.08	0.06	-0.05	-0.02	0.24	0.12	0.21	0.01	-0.01	0.07	0.21	0.32
C2: Orderliness	-0.10	0.02	0.02	-0.12	0.04	-0.03	-0.11	0.00	0.15	-0.15	-0.02	-0.03
C3: Dutifulness	-0.17	-0.09	0.00	-0.14	-0.02	0.10	0.13	-0.19	-0.02	-0.10	-0.04	0.12
C4: Achievement-Striving	-0.09	0.02	-0.05	-0.02	0.16	-0.03	0.00	0.17	0.04	0.08	0.32	-0.04
C5: Self-Discipline	-0.06	0.01	-0.07	-0.10	0.15	-0.05	0.10	-0.01	0.04	-0.11	-0.08	-0.09
C6: Cautiousness	-0.11	0.02	0.03	0.00	0.03	0.02	-0.06	0.10	-0.06	0.40	0.22	0.10

Table 68. (Continued).

	Structure Matrix						*Standardized Canonical Function Coefficients*					
	Function						*Function*					
	1	*2*	*3*	*4*	*5*	*6*	*1*	*2*	*3*	*4*	*5*	*6*
Mechanical Activities BCS	0.04	0.36	0.35	0.07	0.00	0.07	0.13	0.34	0.36	0.15	-0.14	0.28
Information Technology BCS	0.23	0.32	0.14	0.12	-0.07	-0.06	0.10	0.12	0.46	0.22	-0.16	0.03
Protective Services BCS	0.06	0.22	0.14	-0.17	0.42	0.25	0.12	0.13	0.13	-0.29	0.47	0.35
Outdoors BCS	-0.08	0.12	0.23	0.03	0.15	0.00	0.03	-0.19	0.33	-0.23	0.10	-0.17
Science BCS	-0.28	0.47	0.22	0.24	-0.05	-0.10	-0.11	0.45	0.15	0.26	-0.06	-0.02
Medical Science BCS	-0.55	0.31	-0.04	0.19	0.09	-0.08	-0.75	0.17	-0.47	0.14	-0.12	-0.30
Math BCS	0.01	0.42	0.14	-0.01	-0.21	-0.19	0.08	0.17	-0.01	0.06	-0.19	-0.16
Visual Arts & Design BCS	0.17	-0.05	0.03	0.47	-0.01	-0.11	-0.04	-0.17	0.36	-0.05	0.28	-0.36
Music BCS	0.08	-0.06	0.08	0.19	0.01	-0.06	0.13	0.09	0.01	-0.13	0.09	0.03
Dramatic Arts BCS	0.16	-0.15	-0.06	0.34	0.11	-0.09	-0.04	-0.15	0.14	-0.06	0.33	-0.21
Writing BCS	0.05	-0.21	-0.13	0.32	0.05	-0.11	-0.09	-0.13	-0.16	0.15	-0.05	-0.18
Artistic Creativity BCS	0.25	-0.05	-0.07	0.47	0.00	-0.08	0.18	0.02	-0.29	0.20	-0.88	0.40
Helping BCS	-0.26	-0.41	-0.17	0.03	-0.11	0.25	-0.16	-0.37	-0.20	0.09	-0.32	0.37
Teaching BCS	-0.04	-0.17	0.07	0.02	-0.01	-0.13	0.20	-0.83	0.63	-0.12	0.02	-0.47
Cultural Sensitivity BCS	-0.04	-0.18	-0.15	0.16	-0.05	0.07	0.04	-0.04	-0.07	-0.12	0.01	-0.03
Human Resources & Training BCS	-0.01	-0.08	-0.25	0.00	0.01	0.04	-0.13	-0.03	0.16	0.02	-0.43	0.35
Medical Service BCS	-0.48	0.02	-0.09	0.01	0.22	0.16	-0.35	-0.06	0.00	-0.04	0.26	0.18
Marketing & Advertising BCS	0.32	0.08	-0.34	0.31	0.04	-0.07	0.47	0.17	-0.45	0.74	0.70	-0.10
Sales BCS	0.27	0.05	-0.35	0.08	0.00	0.01	0.00	-0.20	0.02	-0.25	-0.42	0.14
Management BCS	0.19	0.13	-0.46	-0.08	0.07	0.01	0.15	0.30	-0.42	0.04	-0.04	0.10
Entrepreneurship BCS	0.20	0.24	-0.40	-0.12	-0.04	-0.02	0.01	0.23	-0.24	-0.20	-0.30	0.22
Public Speaking BCS	-0.03	-0.08	-0.12	0.02	0.11	-0.03	-0.15	0.18	-0.09	-0.21	-0.01	-0.01
Politics BCS	0.13	-0.07	-0.14	0.09	0.21	-0.05	0.11	-0.24	-0.03	0.17	0.17	-0.37
Law BCS	0.06	0.07	-0.15	0.05	0.28	0.20	0.13	0.06	0.00	0.13	0.26	0.36
Accounting & Finance BCS	0.20	0.29	-0.27	-0.33	-0.08	-0.17	0.12	-0.05	-0.22	-0.65	-0.14	-0.32
Office Management BCS	0.01	0.02	-0.27	0.02	0.00	-0.14	-0.29	0.26	0.00	0.16	0.36	-0.27
Personal Computing BCS	0.13	0.25	0.08	0.09	-0.04	-0.03	-0.05	-0.09	-0.23	-0.28	0.16	0.03

Table 69. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Facets and the Career Confidence Inventory Basic Scales Examining Occupational Aspirations.

	Function					
	1	*2*	*3*	*4*	*5*	*6*
Management/Finance	0.84	0.74	-0.52	-0.97	-0.09	-0.26
Advert/Market/Legal	0.98	-0.30	-0.97	0.67	0.61	-0.15
General Business	1.07	0.29	-1.18	0.12	-0.18	0.36
Engineering/Architecture	0.86	1.23	1.07	0.29	-0.24	0.06
Math/Sciences	-0.53	0.76	0.73	0.34	-0.57	-0.14
Social Sciences	-0.39	-0.22	-0.23	0.08	-0.17	0.67
Community & Social Services	-0.38	-0.88	-0.11	0.02	-0.67	0.69
Education	0.08	-1.19	0.56	-0.37	-0.03	-0.28
Arts	0.78	-0.59	0.00	0.65	0.11	-0.33
Doctors	-1.39	0.60	-0.22	0.28	0.24	-0.27
Other Healthcare	-1.79	0.10	-0.42	-0.23	0.04	-0.13
Technical/Protective	0.10	0.24	0.99	-0.44	1.46	0.86

Table 70. Discriminant Structure Matrix and Standardized Canonical Discriminant Function Coefficients for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales, Public Domain Basic Interest Markers and Career Confidence Inventory Basic Scales Examining Occupational Aspirations.

	Structure Matrix								*Standardized Canonical Function Coefficients*							
	Function								*Function*							
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
N1: Anxiety	-0.03	-0.05	-0.01	0.06	0.01	-0.10	-0.06	-0.03	-0.04	0.19	-0.06	-0.14	-0.11	0.14	-0.09	0.02
N2: Anger	0.08	-0.07	-0.02	0.08	0.09	0.03	-0.10	0.06	0.05	-0.18	-0.12	0.13	0.11	0.16	0.03	0.21
N3: Depression	0.10	-0.03	0.06	0.14	0.02	-0.05	0.11	0.02	0.14	-0.03	0.13	0.22	-0.03	0.31	0.32	-0.06
N4: Self-Conscientiousness	0.01	0.01	0.12	0.02	0.02	-0.19	0.00	-0.07	0.00	0.04	0.01	-0.01	0.15	-0.01	0.03	0.11
N5: Immoderation	0.05	-0.03	-0.02	0.01	0.11	0.05	-0.07	0.06	0.05	0.11	0.01	-0.17	0.01	0.17	0.02	0.02
N6: Vulnerability	0.03	-0.10	0.01	0.06	0.04	-0.24	-0.08	-0.04	0.13	0.03	0.16	0.00	0.03	-0.47	-0.23	-0.01
E1: Friendliness	-0.12	-0.09	-0.18	-0.02	0.02	0.15	-0.10	0.02	-0.09	-0.02	0.06	0.01	0.04	0.34	-0.01	0.10
E2: Gregarious.	-0.02	-0.04	-0.29	0.01	0.09	0.11	-0.16	0.07	0.17	0.02	-0.21	-0.03	0.25	-0.01	-0.05	0.14
E3: Assertiveness	-0.03	-0.05	-0.12	0.01	0.08	0.21	-0.11	0.15	-0.10	-0.02	0.16	-0.10	0.14	0.00	0.00	0.10
E4: Activity Level	-0.02	0.03	-0.06	-0.04	0.07	0.15	-0.15	0.03	0.11	0.03	-0.13	0.09	0.08	-0.03	-0.01	-0.08
E5: Excitement-Seeking	0.03	0.05	-0.05	0.10	0.07	0.19	-0.08	0.02	-0.05	-0.03	-0.01	0.32	-0.19	-0.08	-0.03	-0.07
E6: Cheerfulness	-0.14	-0.05	-0.11	0.06	0.02	0.03	-0.07	0.00	-0.19	0.15	0.09	0.03	0.06	-0.11	0.07	-0.02
O1: Imagination	-0.02	-0.03	0.02	0.17	0.06	0.01	0.06	0.05	0.04	0.01	-0.13	0.00	0.12	0.02	-0.17	0.11
O2: Artistic Interests	-0.11	-0.11	-0.05	0.29	0.13	-0.10	0.08	0.01	0.02	-0.24	-0.01	0.12	0.23	0.13	0.07	0.15
O3: Emotionality	-0.13	-0.14	-0.10	0.14	-0.11	-0.08	-0.04	-0.06	0.00	-0.03	0.02	0.03	-0.15	-0.05	-0.01	-0.08
O4: Adventurousness	-0.03	0.05	-0.07	0.10	0.13	0.09	0.09	0.08	-0.03	0.07	-0.09	-0.04	0.20	0.09	0.13	0.07
O5: Ideas	-0.03	0.12	0.09	0.21	-0.04	-0.09	0.20	0.17	0.00	0.13	0.09	0.08	-0.19	-0.15	-0.07	0.00
O6: Values	0.01	-0.01	0.00	0.17	-0.01	-0.13	0.22	0.09	0.04	0.05	0.00	0.00	-0.13	0.06	0.04	-0.09
A1: Trust	-0.11	-0.04	-0.03	-0.10	-0.06	-0.10	-0.03	-0.04	0.04	0.00	-0.07	-0.03	-0.08	-0.19	0.10	-0.03
A2: Morality	-0.19	-0.07	0.00	-0.02	-0.09	-0.13	0.07	-0.18	-0.15	0.00	0.02	-0.06	-0.02	-0.24	0.13	-0.17
A3: Altruism	-0.21	-0.12	-0.10	0.05	-0.13	0.00	0.01	-0.14	0.06	0.06	0.01	-0.18	-0.11	0.00	0.12	-0.24
A4: Cooperation	-0.13	-0.05	0.03	-0.02	-0.07	-0.13	0.01	-0.13	0.13	0.04	0.13	-0.04	0.05	0.10	0.01	-0.07
A5: Modesty	-0.10	-0.03	0.04	-0.06	0.00	-0.10	-0.01	-0.18	-0.01	-0.06	0.03	-0.09	0.13	0.01	-0.12	0.07
A6: Sympathy	-0.18	-0.11	-0.07	0.11	-0.22	-0.17	0.00	-0.07	0.00	0.11	-0.08	0.07	-0.15	-0.05	-0.06	0.17
C1: Self-Efficacy	-0.07	0.06	-0.02	0.00	-0.04	0.22	-0.03	0.04	0.17	-0.10	0.01	0.08	-0.08	0.32	0.02	0.29
C2: Orderliness	-0.08	0.02	0.03	-0.10	0.00	0.04	-0.08	-0.04	-0.10	-0.06	0.10	-0.10	-0.02	0.02	0.06	0.05
C3: Dutifulness	-0.16	-0.05	0.00	-0.06	-0.13	0.01	0.01	-0.12	0.12	-0.14	-0.02	0.08	-0.20	0.02	-0.13	-0.03
C4: Achievement-Striving	-0.08	0.03	-0.02	-0.01	0.04	0.12	-0.13	-0.05	0.00	0.23	0.09	0.05	0.06	0.23	-0.07	-0.20
C5: Self-Discipline	-0.05	0.02	-0.04	-0.07	0.02	0.11	-0.14	-0.05	0.11	-0.05	0.03	-0.11	0.05	-0.12	-0.14	-0.03
C6: Cautiousness	-0.09	0.03	0.03	-0.02	-0.03	-0.02	0.15	0.00	-0.06	0.12	-0.06	0.26	0.20	0.17	0.28	0.15

Table 70. (Continued).

	Structure Matrix								*Standardized Canonical Function Coefficients*							
	Function								*Function*							
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Athletic Coaching BIM	-0.04	0.05	-0.04	-0.13	0.06	0.22	-0.15	-0.07	-0.04	-0.07	0.00	0.06	0.08	0.08	-0.08	-0.12
Business BIM	0.37	0.22	-0.37	-0.06	0.05	-0.06	-0.03	0.07	0.21	-0.14	-0.33	0.22	0.76	-0.32	0.29	-0.19
Creative Arts BIM	0.05	-0.07	0.02	0.42	0.22	-0.15	0.08	0.01	-0.16	0.15	-0.07	0.39	0.11	-0.08	-0.19	-0.22
Creative Writing BIM	0.03	-0.19	-0.11	0.35	0.14	-0.04	0.23	0.04	0.19	0.11	-0.05	-0.01	0.23	0.27	0.14	0.08
Engineering BIM	0.29	0.34	0.44	0.12	-0.06	-0.07	0.00	0.09	0.30	0.15	0.78	0.71	0.04	-0.32	-0.65	-0.52
Family Activity BIM	-0.14	-0.15	-0.04	0.01	0.00	0.03	-0.16	-0.02	0.09	0.14	0.20	-0.07	-0.05	0.21	0.07	0.02
Finance BIM	0.33	0.28	-0.21	-0.31	-0.11	-0.16	0.00	0.02	0.27	0.10	0.00	-0.59	-0.25	-0.48	-0.05	-0.11
Human Resource Mgmt BIM	0.11	0.01	-0.33	-0.02	-0.14	0.03	0.04	-0.05	-0.09	0.31	-0.22	-0.13	0.23	0.22	0.32	-0.57
Information Technology BIM	0.24	0.25	0.18	-0.02	-0.05	-0.12	0.18	0.06	-0.26	0.00	-0.20	-0.32	0.04	-0.08	0.54	-0.07
Law BIM	0.06	0.09	-0.16	0.13	-0.10	0.24	0.26	0.08	0.15	0.01	-0.04	0.20	-0.08	0.31	0.25	-0.07
Life Science BIM	-0.29	0.26	0.22	0.04	0.17	-0.08	0.33	0.23	-0.06	0.07	-0.13	0.00	0.46	0.01	0.15	0.02
Management BIM	0.26	0.15	-0.27	-0.09	-0.10	0.08	-0.06	0.21	0.02	0.22	-0.13	-0.21	-0.53	0.48	-0.30	0.72
Manual Labor BIM	0.09	0.08	0.26	-0.10	-0.01	0.15	0.12	0.03	-0.01	-0.14	-0.15	-0.25	0.10	0.10	0.44	0.31
Math BIM	0.11	0.29	0.31	-0.08	-0.02	-0.19	0.04	0.23	0.07	0.06	0.19	-0.09	0.14	0.10	0.12	0.21
Medical Service BIM	-0.54	0.27	0.02	0.06	0.03	0.06	0.04	0.13	-0.46	0.31	0.01	-0.04	0.07	0.12	-0.26	0.28
Outdoor-Agriculture BIM	-0.03	0.12	0.29	-0.06	0.04	0.07	0.18	0.08	0.00	0.01	-0.06	-0.01	-0.19	-0.10	0.09	-0.16
Office Work BIM	0.14	0.05	-0.15	-0.13	-0.03	-0.03	-0.09	-0.09	-0.08	-0.03	0.23	-0.02	0.29	0.18	-0.30	-0.50
Performing Arts BIM	0.07	-0.11	-0.05	0.18	0.09	-0.04	0.20	0.06	0.22	-0.01	-0.09	-0.28	-0.26	-0.23	0.43	0.04
Personal Service BIM	-0.06	-0.11	-0.18	0.16	0.08	0.08	-0.17	0.04	-0.17	-0.02	0.16	0.31	0.00	0.05	-0.38	0.19
Physical/Risk Taking BIM	0.00	0.18	0.21	0.01	0.07	0.21	0.14	-0.01	0.14	0.05	0.12	-0.30	0.32	-0.13	0.12	0.00
Physical Science BIM	-0.10	0.31	0.33	0.07	0.07	-0.16	0.30	0.26	-0.12	0.00	0.03	-0.06	-0.03	-0.19	0.24	0.17
Politics BIM	0.09	-0.07	-0.13	0.13	0.06	0.08	0.18	0.19	-0.05	0.02	0.13	0.00	0.29	-0.20	-0.04	-0.01
Professional Advising BIM	0.06	-0.01	-0.26	0.03	-0.22	-0.04	-0.01	0.06	-0.01	0.09	-0.07	0.32	-0.54	-0.20	-0.09	0.19
Protective BIM	0.08	0.16	0.20	-0.02	-0.12	0.41	0.15	-0.12	0.06	0.05	0.20	0.22	-0.18	0.30	-0.19	-0.43
Religious Activity BIM	-0.11	-0.16	-0.02	0.05	-0.12	0.01	-0.15	-0.02	-0.03	0.02	-0.02	-0.02	-0.10	0.10	-0.23	-0.06
Sales BIM	0.28	0.14	-0.31	0.00	0.00	0.03	-0.07	0.07	0.07	0.19	-0.02	-0.03	0.00	0.01	-0.01	-0.24
Skilled Trades BIM	0.23	0.27	0.41	-0.01	-0.11	0.08	0.02	0.11	0.10	0.01	-0.19	-0.24	-0.21	0.37	-0.14	0.44
Social Science BIM	-0.22	-0.10	-0.12	0.34	-0.29	-0.10	0.35	0.10	-0.09	0.01	-0.06	0.47	-0.79	-0.07	0.38	0.09
Social Service BIM	-0.28	-0.27	-0.23	0.18	-0.18	-0.01	-0.08	-0.06	0.01	-0.33	-0.19	0.18	0.34	-0.12	-0.13	-0.19
Teaching BIM	-0.09	-0.41	-0.01	-0.03	-0.10	-0.08	0.02	0.26	0.00	-0.88	0.36	-0.52	-0.05	-0.17	-0.11	0.53
Technical Writing BIM	0.19	0.12	0.12	0.05	-0.02	-0.11	0.06	0.14	-0.12	-0.07	-0.14	0.09	-0.01	-0.05	-0.08	0.24
Mechanical Activities BCS	0.08	0.23	0.36	0.04	-0.06	0.03	-0.03	0.06	0.00	0.25	0.21	0.17	-0.10	-0.15	0.07	-0.18

Table 70. (Continued).

	Structure Matrix								*Standardized Canonical Function Coefficients*							
	Function								*Function*							
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Information Technology BCS	0.24	0.21	0.16	0.07	-0.01	-0.09	0.01	0.07	0.13	0.07	0.44	0.31	0.03	-0.03	-0.02	0.03
Protective Services BCS	0.08	0.15	0.14	-0.09	-0.09	0.40	0.12	-0.04	0.05	-0.02	0.02	-0.14	-0.10	0.37	0.12	-0.04
Outdoors BCS	-0.05	0.07	0.21	-0.03	0.06	0.09	0.16	0.03	0.12	-0.21	0.22	-0.15	0.01	0.07	0.14	0.05
Science BCS	-0.20	0.37	0.28	0.01	0.05	-0.14	0.17	0.26	-0.04	0.32	0.15	0.08	0.05	0.06	0.13	0.22
Medical Science BCS	-0.45	0.31	0.07	-0.01	0.08	-0.02	0.03	0.13	-0.37	0.10	-0.24	-0.15	0.01	-0.32	-0.06	-0.17
Math BCS	0.06	0.29	0.21	-0.09	-0.03	-0.21	-0.09	0.18	0.04	0.05	-0.12	0.09	-0.14	-0.16	-0.34	0.07
Visual Arts/Design BCS	0.13	-0.03	0.01	0.34	0.22	-0.07	-0.08	0.04	0.04	-0.23	0.29	-0.48	0.38	0.22	0.18	0.06
Music BCS	0.06	-0.06	0.05	0.13	0.09	-0.03	0.07	0.08	0.07	0.09	0.05	0.01	0.07	0.19	-0.15	0.09
Dramatic Arts BCS	0.11	-0.10	-0.10	0.25	0.17	0.00	0.10	0.02	-0.13	-0.12	0.06	-0.25	0.41	0.17	0.24	-0.34
Writing BCS	0.01	-0.12	-0.15	0.23	0.15	-0.09	0.14	-0.02	-0.09	-0.03	-0.10	0.09	0.02	-0.35	-0.07	-0.33
Artistic Creativity BCS	0.19	-0.03	-0.08	0.35	0.20	-0.07	-0.05	0.06	0.16	0.11	-0.33	0.49	-0.78	-0.62	-0.45	-0.23
Helping BCS	-0.28	-0.26	-0.19	0.12	-0.17	-0.01	-0.10	-0.05	-0.15	-0.01	-0.27	0.13	-0.31	-0.20	0.12	-0.05
Teaching BCS	-0.06	-0.15	0.04	0.00	0.04	-0.04	-0.01	0.16	0.11	-0.53	0.26	0.07	0.47	0.03	0.05	-0.10
Cultural Sensitivity BCS	-0.07	-0.11	-0.15	0.13	-0.01	-0.04	0.06	0.12	0.10	-0.05	-0.01	-0.24	0.09	0.12	-0.15	0.11
HR/Training BCS	-0.02	-0.04	-0.21	0.01	-0.03	0.04	-0.09	0.11	-0.06	-0.09	0.23	0.08	-0.17	-0.28	-0.16	-0.12
Medical Service BCS	-0.43	0.09	-0.02	0.00	-0.03	0.21	-0.15	-0.06	-0.22	0.05	0.03	-0.02	-0.06	0.23	-0.16	-0.23
Marketing/Advertising BCS	0.27	0.08	-0.28	0.22	0.12	-0.01	-0.09	0.18	0.24	0.05	-0.31	0.47	0.49	0.52	0.13	0.59
Sales BCS	0.22	0.05	-0.29	0.08	-0.01	0.02	-0.10	0.15	0.02	-0.26	0.08	-0.07	-0.36	-0.24	-0.02	-0.11
Management BCS	0.17	0.12	-0.36	-0.06	-0.03	0.10	-0.18	0.21	0.08	0.27	-0.22	-0.05	-0.11	0.07	-0.10	0.34
Entrepreneurial BCS	0.19	0.19	-0.28	-0.10	-0.08	0.01	-0.19	0.22	-0.11	0.13	-0.10	-0.08	-0.37	0.03	-0.22	0.30
Public Speaking BCS	-0.04	-0.05	-0.10	0.01	0.02	0.06	-0.01	0.11	-0.15	0.24	-0.05	-0.10	0.09	0.02	0.05	-0.22
Politics BCS	0.09	-0.06	-0.14	0.06	0.08	0.13	0.04	0.20	0.03	-0.23	-0.04	0.13	0.10	0.09	-0.13	0.31
Law BCS	0.04	0.07	-0.13	0.05	-0.06	0.23	0.19	0.13	0.03	0.02	-0.05	-0.07	0.03	0.06	0.17	0.21
Accounting/Finance BCS	0.21	0.21	-0.19	-0.27	-0.08	-0.09	-0.07	0.03	0.08	-0.10	-0.18	-0.28	0.02	-0.06	0.21	-0.31
Office Management BCS	0.00	0.05	-0.21	-0.01	0.05	-0.04	-0.13	0.08	-0.13	0.27	0.03	-0.03	0.26	-0.06	0.23	-0.07
Personal Computing BCS	0.14	0.17	0.11	0.06	-0.02	-0.06	0.01	0.03	0.04	-0.12	-0.25	-0.22	-0.15	0.12	-0.08	-0.06

Table 71. Group Centroids for Discriminant Analyses of the IPIP NEO-PI-R Facet Scales, Public Domain Basic Interest Markers, and Career Confidence Inventory Basic Scales Examining Occupational Aspirations.

	Function							
	1	2	3	4	5	6	7	8
Management/Finance	1.27	0.80	-0.60	-1.27	-0.15	-0.22	0.02	-0.44
Advert/Market/Legal	0.83	-0.23	-1.25	0.63	0.56	0.35	0.46	0.46
General Business	1.02	0.32	-1.24	0.15	-0.31	0.29	-0.51	0.80
Engineering/Architecture	1.20	1.05	1.59	0.55	-0.28	-0.14	-0.49	0.20
Math/Sciences	-0.32	0.77	0.78	-0.21	0.19	-0.83	1.09	0.26
Social Sciences	-0.55	-0.02	-0.37	0.64	-1.23	0.03	0.50	-0.05
Community & Social Services	-0.55	-0.79	-0.41	0.61	-0.61	-0.40	-0.07	-0.58
Education	-0.09	-1.85	0.49	-0.55	0.03	-0.07	-0.08	0.27
Arts	0.75	-0.43	-0.15	0.82	0.87	-0.16	-0.06	-0.53
Doctors	-1.51	0.99	-0.11	-0.09	0.53	-0.02	0.07	0.30
Other Healthcare	-1.94	0.44	-0.12	-0.22	0.00	0.16	-0.74	-0.30
Technical/Protective	0.17	0.16	0.97	-0.27	0.01	2.03	0.59	-0.41

Table 72. Incremental Validity Results for Basic Level Constructs Beyond Broad Level Constructs for College Major and Occupational Aspirations, and Comparison of Prediction for College Major and Occupational Aspirations.

	McNemar χ^2	*Significance*
H5a. P + I + SE vs. p + i + se (Major)	102.87	.000
H5b. P + I + SE vs. p + i + se (Occ. Asp.)	172.49	.000
H6a. P + I + SE (major) vs. P + I + SE (Occ. Asp.)	32.72	.000
H6b. p + i + se (major) vs. p + i + se (Occ. Asp.)	4.30	.038

Notes. H5a N = 878. H5b N = 939. H6a and H6b N = 871. P = Broad personality (IPIP NEO-PI-R Domain Scales); I = Broad Interests (Interest Profiler); SE = Broad Self-Efficacy (Career Confidence Inventory Domain Scales). p = Personality facets (IPIP NEO-PI-R Facet Scales); i = Basic Interests (Basic Interest Markers); se = Basic Self-Efficacy (Career Confidence Inventory).

Appendices

Appendix A: Basic Interest Marker Items (Liao, Armstrong, & Rounds, 2008)

Scale	Item
Athletic Coaching	
	Participate in competitive sports
	Play volleyball
	Play basketball
	Play softball
	Provide physical fitness training
	Teach people how to ski
	Play a racket sport
	Train for a 5K race
	Swim in a pool
	Watch a football game
	Coach a sports team
	Explain a sport to other people
	Referee a sporting event
	Take a course in athletic training
Business	
	Understand the qualities of an effective business
	Develop business systems
	Learn about the needs of the marketplace
	Think of ideas to increase the sales for a company
	Implementing quality review procedures in a company
	Develop strategies for advertising campaigns and sales promotions
	Set prices on goods based on forecasts of customer demand
	Plan the expansion of a company
	Set up an office in a new city
	Set up business transactions between companies
	Buy merchandise for resale to consumers
	Negotiate a business deal
	Develop relationship with external suppliers
Creative Arts	
	Sketch a picture
	Take a film-making course
	Design a creative work of art
	Make jewelry
	Design a piece of artistic furniture
	Design costumes for a movie or play
	Make a flower arrangement
	Participate in an art show
	Develop a portfolio of artwork
	Write an original musical piece
	Visit an art gallery
	Create a sculpture
	Study painting
Creative Writing	
	Write a news story
	Study creative writing
	Write a script for a TV drama
	Write a celebrity biography

	Write a novel
	Develop a script for a movie
	Edit a newspaper article
	Compose short stories
	Write a true-life story
	Write a play for a theater
	Be on a team of writers for a situational comedy
	Write children books
Engineering	
	Modify an equipment design to reduce sound level
	Develop more user-friendly machines
	Redesign an engine to improve fuel efficiency
	Maintain the main generator in a power plant
	Test a new cooling system
	Design electronic systems
	Improve the efficiency of an assembly process
	Design structures that can withstand heavy stresses
	Analyze problems in aircraft design
	Design a highway overpass
	Design a diagnostic routine for a power plant
Family Activity	
	Take care of children at home
	Redecorate the living room
	Play with your children
	Maintain the attractiveness of the house
	Prepare exciting meals for your family
	Meet the needs of my partner and children
	Arrange transportation for your child's and friend's play activities
	Provide a comfortable home for my family
	Take the family on a picnic
	Arrange play dates for your child
	Cook for your friends and family
	Take the family on a vacation
	Keep the home looking comfortable
	Read a story to your child
	Teach your child to play a game
	Create a family entertainment center
Finance	
	Understand economics principles
	Understand the role of finance in business
	Work with financial data
	Create a budget
	Study how to generate business profits
	Analyze financial information
	Project future expenditure
	Analyze a person's credit history
	Provide advice about investments in stock market
	Evaluate the quality of an investment
	Arrange business loans
	Learn about money management
Human Relations Management	
	Meet with workers to mediate disagreements

	Explain new company policies to workers
	Organize a diversity workshop for a company
	Assess employee opinions of the company
	Investigate employees' job satisfaction
	Direct activities to improve office communication
	Provide human relations training
	Facilitate relationships between management and employees
	Review organizational policy matters on equal employment opportunity
	Organize activities to raise employees' morale
	Negotiate worker compensation
	Structure an employee disciplinary action
Information Technology	
	Design a technology system for distance learning
	Acquire the latest electronic technology
	Maintain network hardware and software
	Maintain a website for an organization
	Keep up-to-date on the latest software
	Take a course on network administration
	Design a computer system for an organization
	Use computers to archive historical documents
	Create a computer database
	Educate new cell phone users
	Improve computer network efficiency
	Modify existing software
	Install a new computer system
Law	
	Research case law
	Find precedents related to a legal case
	Obtain a license to practice law
	Rule on the admissibility of evidence in court
	Work to improve the legal system
	Interpret the constitutionality of a law
	Gather evidence for a trial
	Present arguments to a jury
	Prepare legal documents
	Defend a client against a legal charge (in a courtroom)
	Arbitrate legal disputes between parties
Life Science	
	Learn about the life cycle of an animal species
	Breed animals in a laboratory
	Dissect an animal
	Track the migratory patterns of birds
	Study the diet of an animal species
	Investigate human gene structure
	Identify and classify bacteria
	Collect plant samples
	Study how plants grow
	Conduct research with growing bacteria
	Study methods to improve quality of food
Management	
	Serve as president of a company
	Direct the business affairs of a university

	Direct all sales activities for a company
	Plan and coordinate a convention for a professional association
	Administer city government
	Direct all activities in a electronics company
	Direct and coordinate the services and personnel of a hospital
	Plan and direct training and staff development for a business
	Serve as a president of a university
	Direct and coordinate the work activities of subordinates
	Coordinate the activities of all departments in a bank
	Direct the operations of a medium size company
Manual Labor	
	Load and unload freight materials
	Deliver office furniture
	Transport people's belongings from one place to another
	Drive a nail into wood
	Clean offices
	Stack lumber in piles
	Dig a hole for a fence
	Clean up trash or debris
	Feed items into a machine
	Separate items by weight or size
	Feed and groom livestock
	Use hands to lift, carry, and pull objects
	Use vacuums and shovels to clean working areas
Mathematics	
	Solve an algebraic equation
	Develop mathematical formulas
	Understand applications of calculus
	Learn about a new branch of mathematics
	Graph an equation
	Take a course in advance mathematics
	Solve geometric proofs
	Apply mathematical techniques to practical problems
	Calculate the probability of winning a contest
	Use mathematical theorems to solve problems
Medical Service	
	Research new drugs to cure cancer
	Explain how viruses infect the human body
	Determine the cause of an illness
	Perform surgery
	Learn how to perform CPR
	Provide physical therapy
	Diagnose mental illness
	Examine a patient in a clinic
	Provide first aid
	Prescribe medication to relieve pain
	Fill a tooth cavity
	Treat injured animals
Outdoor-Agriculture	
	Protect crops from diseases and pests
	Feed and water animals in a zoo
Appendix A continued: Basic Interest Marker Items (Liao, Armstrong, & Rounds, 2008)	

	Raise livestock on a farm
	Learn about soil and climate requirements of specialty crops
	Work on a dairy farm
	Install a crop irrigation system
	Harvest trees for timber
	Care for and plant trees
	Work on a commercial fishing vessel
	Work in the outdoors
Office Work	
	Perform office work
	Develop procedures to improve office efficiency
	Operate commonly-used office machines
	Improve a system for handling employee reimbursements
	Order and maintain an inventory of office supplies
	Provide customer service
	Design an office filing system
	Record meeting minutes
	Schedule, maintain, and update appointments
	Organize files and documents
	Prepare payrolls
Performing Arts	
	Study one of the performing arts
	Participate in a musical performance
	Act in a television commercial
	Sing on a stage
	Perform magic tricks on stage
	Act in a play
	Appear in a talent show
	Direct the performance of actors
	Conduct an orchestra
	Take a screen test for a movie
	Act in a movie
Personal Service	
	Wait on tables in a neighborhood restaurant
	Shop for clothes and personal accessories for customers
	Plan the food and drinks for a business meeting
	Provide personal services to airplane passengers
	Serve beverages in a club
	Provide a client with a manicure
	Greet guests and answer questions about activities in a hotel
	Arrange travel plans and accommodations
	Style hair in a salon
	Plan parties for weddings and other special occasions
	Help a client plan an exercise program
	Help people be comfortable on an airline flight
	Help a client plan a vacation to Europe
	Lead a tour to points of interest in a large city
	Fit and alter clothes for a customer
	Work with clients to meet romantic partners
Physical/Risk Taking	
	Do work that is dangerous and exciting

Appendix A continued: Basic Interest Marker Items (Liao, Armstrong, & Rounds, 2008)

	Do physically risky work
	Discover uncharted territories
	International travel to countries where there is armed conflict
	Scuba-dive among unexplored coral reefs
	Have some adventure during every work day
	Participate in high-speed chases
	Parachute jump from an airplane
	Rescue someone stranded on a mountain
	Participate in extreme sports
Physical Science	
	Study the laws of gravity
	Investigate the molecular structure of substances
	Search for new solar systems
	Study the nature of quantum physics
	Measure the speed of electrons
	Study the movement of planets
	Test chemical reactions
	Study rock and mineral formations
	Describe the structure of an organic compound
	Study why earthquakes occur
	Use meteorological information to predict the weather
	Take a course in the physical sciences
Politics	
	Persuade people to vote for your candidate
	Work in a political campaign
	Influence voters to support your ideas
	Debate the merits of political candidates
	Argue for or against an idea
	Give a speech supporting your candidate
	Run for a political office
	Debate ideas
	Become president of your club
	Write legislation
Professional Advising	
	Advise people in meeting their professional goals
	Assist people in planning for retirement
	Conduct a workshop on time management
	Coach people to prepare them for an interview
	Provide consultation for colleagues
	Apply professional skills in a consulting role
	Provide skill development training
	Conduct career planning workshops
	Assess organizational development needs
	Recommend changes in how a company operates
Protective	
	Search for explosives in an airport
	Make inspections to be sure that laws are not broken
	Patrol an area to maintain security
	Direct traffic after an accident
	Investigate a crime scene
	Take a person into custody on an arrest warrant
	Guard a government building

	Patrol borders to stop illegal immigration
	Respond to emergency calls for help
	Conduct surveillance of suspects
	Escort individuals for their own protection
	Learn fire-fighting techniques
Religious Activities	
	Read a religious text
	Help children understand religious teachings
	Provide spiritual guidance
	Develop my spirituality
	Train to be a member of a religious ministry
	Interpret religious writings
	Conduct religious ceremonies
	Participate in a prayer group
	Attend a religious ceremony
	Explain a religious text to people
	Pray
	Take a class about religion
Sales	
	Describe features and benefits of a product or service you sell
	Increase sales in your sales territory
	Work in a position that offers a commission based on sales
	Convince people about the usefulness of a new gadget
	Promote sales of medical equipment to physicians
	Sell services and equipment
	Determine customer needs
	Explain products to customers
	Persuade customers to spend money
	Sell commercial property
	Sell a new product to consumers
	Learn new sales tactics
	Be a sales representative for a retail business
Skilled Trades	
	Install the piping and fixtures of a drainage system
	Use tools to repair factory equipment
	Repair the engine of an automobile
	Construct wooden cabinets
	Diagnose malfunctions in automotive engines
	Maintain manufacturing equipment in an industrial plant
	Install the electrical wiring in a house
	Refurbish antique furniture
	Replace defective telephone lines
	Learn how to operate power tools
	Use building materials to construct a wall
	Weld together metal components of products
Social Science	
	Learn about human behavior
	Develop a theory about human behavior
	Investigate cultural practices
	Conduct social science experiments
	Study child-rearing problems
	Compare cultural differences among groups

	Analyze the effects of discrimination on minority groups
	Review the interpersonal relationship literature
	Study class structures of a society
	Observe small-group processes
Social Service	
	Assist people with disabilities to find employment
	Help families to adopt a child
	Counsel families in crisis
	Help the homeless find shelter
	Help people find community resources
	Provide childcare services
	Organize a social support group
	Volunteer for a community service center
	Help children from disadvantaged background adjust to school
	Counsel clients with personal problems
	Answer telephones at a crisis line
	Provide services to individuals with disabilities
	Help people overcome social problems
Teaching	
	Develop materials that enhance learning
	Develop a lecture
	Design tests to evaluate students' learning
	Take a teacher development workshop
	Create an effective classroom atmosphere
	Interact with students in a classroom setting
	Facilitate students' discussions
	Design an active learning activity
	Conduct seminars
	Offer feedback on student papers
	Supervise high school students' research projects
Technical Writing	
	Write complex technical information in an understandable way
	Write instructional manual for a piece of equipment
	Write directions for how to operate a VCR
	Plan and edit technical manuals
	Write a manual on how to operate a cell phone
	Write instructions on how to assemble a toy
	Prepare a manual for a computer program
	Write a user guide on practically anything
	Prepare written interpretations of medical studies for the public
	Put technical information into easily understandable language
	Create manufacturer's catalogs
	Write operating documents for an organization

Appendix B: IPIP NEO-PI-R Facet Items (Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger, & Gough, 2006)

Facet Scale	Positively Loaded	Negatively Loaded
N1: Anxiety		
	Worry about things.	Am not easily bothered by things.
	Fear for the worst.	Am relaxed most of the time.
	Am afraid of many things.	Am not easily disturbed by events.
	Get stressed out easily.	Don't worry about things that have already happened.
	Get caught up in my problems.	Adapt easily to new situations.
N2: Anger		
	Get angry easily.	Rarely get irritated.
	Get irritated easily.	Seldom get mad.
	Get upset easily.	Am not easily annoyed.
	Am often in a bad mood.	Keep my cool.
	Lose my temper.	Rarely complain.
N3: Depression		
	Often feel blue.	Seldom feel blue.
	Dislike myself.	Feel comfortable with myself.
	Am often down in the dumps.	Am very pleased with myself.
	Have a low opinion of myself.	
	Have frequent mood swings.	
	Feel desperate.	
	Feel that my life lacks direction.	
N4: Self-Consciousness		
	Am easily intimidated.	Am not embarrassed easily.
	Am afraid that I will do the wrong thing.	Am comfortable in unfamiliar situations.
	Find it difficult to approach others.	Am not bothered by difficult social situations.
	Am afraid to draw attention to myself.	Am able to stand up for myself.
	Only feel comfortable with friends.	
	Stumble over my words.	
N5: Immoderation		
	Often eat too much.	Rarely overindulge.
	Don't know why I do some of the things I do.	Easily resist temptations.
	Do things I later regret.	Am able to control my cravings.
	Go on binges.	Never spend more than I can afford.
	Love to eat.	Never splurge.
N6: Vulnerability		
	Panic easily.	Remain calm under pressure.
	Become overwhelmed by events.	Can handle complex problems.
	Feel that I'm unable to deal with things.	Know how to cope.
	Can't make up my mind.	Readily overcome setbacks.
	Get overwhelmed by emotions.	Am calm even in tense situations.
E1: Friendliness		
	Make friends easily.	Am hard to get to know.
	Warm up quickly to others.	Often feel uncomfortable around others.
	Feel comfortable around people.	Avoid contacts with others.
	Act comfortably with others.	Am not really interested in others.
	Cheer people up.	Keep others at a distance.
E2: Gregariousness		
	Love large parties.	Prefer to be alone.

	Talk to a lot of different people at parties.	Want to be left alone.
	Enjoy being part of a group.	Don't like crowded events.
	Involve others in what I am doing.	Avoid crowds.
	Love surprise parties.	Seek quiet.
E3: Assertiveness		
	Take charge.	Wait for others to lead the way.
	Try to lead others.	Keep in the background.
	Can talk others into doing things.	Have little to say.
	Seek to influence others.	Don't like to draw attention to myself.
	Take control of things.	Hold back my opinions.
E4: Activity Level		
	Am always busy.	Like to take it easy.
	Am always on the go.	Like to take my time.
	Do a lot in my spare time.	Like a leisurely lifestyle.
	Can manage many things at the same time.	Let things proceed at their own pace.
	React quickly.	React slowly.
E5: Excitement-Seeking		
	Love excitement.	Would never go hang gliding or bungee jumping.
	Seek adventure.	Dislike loud music.
	Love action.	
	Enjoy being part of a loud crowd.	
	Enjoy being reckless.	
	Act wild and crazy.	
	Willing to try anything once.	
	Seek danger.	
E6: Cheerfulness		
	Radiate joy.	Am not easily amused.
	Have a lot of fun.	Seldom joke around.
	Express childlike joy.	
	Laugh my way through life.	
	Love life.	
	Look at the bright side of life.	
	Laugh aloud.	
	Amuse my friends.	
O1: Imagination		
	Have a vivid imagination.	Seldom daydream.
	Enjoy wild flights of fantasy.	Do not have a good imagination.
	Love to daydream.	Seldom get lost in thought.
	Like to get lost in thought.	Have difficulty imagining things.
	Indulge in my fantasies.	
	Spend time reflecting on things.	
O2: Artistic Interests		
	Believe in the importance of art.	Do not like art.
	Like music.	Do not like poetry.
	See beauty in things that others might not notice.	Do not enjoy going to art museums.
	Love flowers.	Do not like concerts.
	Enjoy the beauty of nature.	Do not enjoy watching dance performances.
O3: Emotionality		
	Experience my emotions intensely.	Seldom get emotional.
	Feel others' emotions.	Am not easily affected by my emotions.

	Am passionate about causes.	Rarely notice my emotional reactions.
	Enjoy examining myself and my life.	Experience very few emotional highs and lows.
	Try to understand myself.	Don't understand people who get emotional.
O4: Adventurousness		
	Prefer variety to routine.	Prefer to stick with things that I know.
	Like to visit new places.	Dislike changes.
	Interested in many things.	Don't like the idea of change.
	Like to begin new things.	Am a creature of habit.
		Dislike new foods.
		Am attached to conventional ways.
O5: Intellect		
	Like to solve complex problems.	Am not interested in abstract ideas.
	Love to read challenging material.	Avoid philosophical discussions.
	Have a rich vocabulary.	Have difficulty understanding abstract ideas.
	Can handle a lot of information.	Am not interested in theoretical discussions.
	Enjoy thinking about things.	Avoid difficult reading material.
O6: Liberalism		
	Tend to vote for liberal political candidates.	Believe in one true religion.
	Believe that there is no absolute right or wrong.	Tend to vote for conservative political candidates.
	Believe that criminals should receive help rather than punishment.	Believe that too much tax money goes to support artists.
		Believe laws should be strictly enforced.
		Believe that we coddle criminals too much.
		Believe that we should be tough on crime.
		Like to stand during the national anthem.
A1: Trust		
	Trust others.	Distrust people.
	Believe that others have good intentions.	Suspect hidden motives in others.
	Trust what people say.	Am wary of others.
	Believe that people are basically moral.	Believe that people are essentially evil.
	Believe in human goodness.	
	Think that all will be well.	
A2: Morality		
	Would never cheat on my taxes.	Use flattery to get ahead.
	Stick to the rules.	Use others for my own ends.
		Know how to get around the rules.
		Cheat to get ahead.
		Put people under pressure.
		Pretend to be concerned for others.
		Take advantage of others.
		Obstruct others' plans.
A3: Altruism		
	Make people feel welcome.	Look down on others.
	Anticipate the needs of others.	Am indifferent to the feelings of others.
	Love to help others.	Make people feel uncomfortable.
	Am concerned about others.	Turn my back on others.
	Have a good word for everyone.	Take no time for others.
A4: Cooperation		
	Am easy to satisfy.	Have a sharp tongue.
	Can't stand confrontations.	Contradict others.

	Hate to seem pushy.	Love a good fight.
		Yell at people.
		Insult people.
		Get back at others.
		Hold a grudge.
A5: Modesty		
	Dislike being the center of attention.	Believe that I am better than others.
	Dislike talking about myself.	Think highly of myself.
	Consider myself an average person.	Have a high opinion of myself.
	Seldom toot my own horn.	Know the answers to many questions.
		Boast about my virtues.
		Make myself the center of attention.
A6: Sympathy		
	Sympathize with the homeless.	Am not interested in other people's problems.
	Feel sympathy for those who are worse off than myself.	Tend to dislike soft-hearted people.
	Value cooperation over competition.	Believe in an eye for an eye.
	Suffer from others' sorrows.	Try not to think about the needy.
		Believe people should fend for themselves.
		Can't stand weak people.
C1: Self-Efficacy		
	Complete tasks successfully.	Misjudge situations.
	Excel in what I do.	Don't understand things.
	Handle tasks smoothly.	Have little to contribute.
	Am sure of my ground.	Don't see the consequences of things.
	Come up with good solutions.	
	Know how to get things done.	
C2: Orderliness		
	Like order.	Often forget to put things back in their proper place.
	Like to tidy up.	Leave a mess in my room.
	Want everything to be "just right."	Leave my belongings around.
	Love order and regularity.	Am not bothered by messy people.
	Do things according to a plan.	Am not bothered by disorder.
C3: Dutifulness		
	Try to follow the rules.	Break rules.
	Keep my promises.	Break my promises.
	Pay my bills on time.	Get others to do my duties.
	Tell the truth.	Do the opposite of what is asked.
	Listen to my conscience.	Misrepresent the facts.
C4: Achievement-Striving		
	Go straight for the goal.	Am not highly motivated to succeed.
	Work hard.	Do just enough work to get by.
	Turn plans into actions.	Put little time and effort into my work.
	Plunge into tasks with all my heart.	
	Do more than what's expected of me.	
	Set high standards for myself and others.	
	Demand quality.	
C5: Self-Discipline		
	Get chores done right away.	Find it difficult to get down to work.
	Am always prepared.	Waste my time.
	Start tasks right away.	Need a push to get started.

	Get to work at once.	Have difficulty starting tasks.
	Carry out my plans.	Postpone decisions.
C6: Cautiousness		
	Avoid mistakes.	Like to act on a whim.
	Choose my words with care.	Rush into things.
	Stick to my chosen path.	Do crazy things.
	Jump into things without thinking.	Act without thinking.
	Make rash decisions.	Often make last-minute plans.

Appendix C: Career Confidence Inventory Items (Betz & Borgen, 2006; Borgen & Betz, 2008)

Scale	Item
Mechanical Activities	
	Construct a patio deck
	Fix things around the house
	Build a cradle
	Identify the causes of mechanical problems
	Assemble office furniture
	Help build a house with Habitat for Humanity
	Repair mechanical equipment
	Install drapery rods
	Analyze environmental hazards
Information Technology	
	Design a computer database
	Determine computing needs for an organization
	Coordinate software for an organization
	Design computer graphics
	Design a web site
	Write technical manuals for a computer company
	Set up a new personal computer
	Use the latest electronic technology
Protective Services	
	Fight fires
	Work as a police officer
	Provide security at an airport
	Work for the FBI
	Catch drug violators
	Work undercover in an intelligence agency
Outdoors	
	Hike on a mountain trail
	Raise agricultural products
	Work as a forest ranger
	Serve as a park director
	Work as a staff member at the city zoo
	Write articles about pets or nature
	Care for injured wildlife
	Do the landscaping for a city park
Science	
	Understand the structure of atoms
	Keep up with new scientific discoveries
	Pass a course in Physics
	Critique a scientific study
	Pass a course in Plant Biology
	Analyze scientific knowledge
	Work with hazardous chemicals
Medical Science	
	Identify the chambers of the heart
	Investigate the cause of a disease
	Conduct a study on the effects of new medications
	Understand the scientific basis of a medical breakthrough

	Assist in a medical laboratory
	Operate medical equipment
Math	
	Solve math word problems
	Solve algebraic equations
	Calculate the dollar savings from an item on sale
	Solve problems using calculus
	Pass a course in Statistics
	Determine the number of yards of carpet needed for a room
	Calculate how long it will take to drive between two cities at 65 mph
Visual Arts & Design	
	Paint a landscape
	Identify famous works of art
	Sculpt a clay figure
	Create a work of art
	Envision an artistic creation
	Design novel sets for a play
	Create a new logo for a company
	Design new fashions
	Prepare brochures and ads using a graphics program
	Draw house plans
Dramatic Arts	
	Direct a play
	Develop new TV programs
	Write a movie review
	Design novel sets for a play
	Produce movies/films
Music	
	Play in an orchestra
	Play in a rock or jazz band
	Identify well-known pieces of classical music
	Sing in the chorus of a musical
	Write a song
Writing	
	Write letters or reports for your supervisor
	Write a movie review
	Write a weekly column for a newspaper
	Communicate your ideas through writing
	Write an interesting story
	Write articles about travel adventures
	Write a book report
Artistic Creativity	
	Create an advertisement for a consumer product
	Create a new logo for a company
	Develop new TV programs
	Produce movies/films
	Invent a new product
	Prepare brochures and ads using a graphics program
	Design new fashions
	Design novel sets for a play
	Envision an artistic creation
	Design a web site

	Create a work of art
	Write a song
Helping	
	Console a grieving person
	Counsel a distressed person
	Serve as a mentor for Big Brothers/Sisters
	Care for young children
	Lead a scout or church group for kids
	Work with troubled teens
Teaching	
	Simplify a complex explanation for beginners
	Give good examples to explain a challenging topic
	Help a classmate with course material
	Teach classes
	Teach on-the-job skills to new employees
	Be a college professor
Cultural Sensitivity	
	Provide diversity training to employees
	Understand religious differences
	Socialize with people from another culture
	Plan a multicultural holiday party
	Recognize cultural differences
	Promote racial harmony
	Develop new views about gender roles
Human Resources & Training	
	Provide diversity training to employees
	Orient new employees
	Motivate others to tackle challenging assignments
	Inspire others through your leadership
	Evaluate and hire new employees
	Assign office tasks to a group of workers
	Assertively present an argument
	Teach on-the-job skills to new employees
	Prepare a group presentation
Medical Service	
	Evaluate the symptoms of a patient
	Provide first aid to an injured person
	Rescue accident victims
	Care for physically ill patients
	Provide emergency medical assistance
	Comfort the family members of a dying patient
Marketing & Advertising	
	Create a new logo for a company
	Create an advertisement for a consumer product
	Conduct market research
	Market a new product
	Demonstrate a product to a potential customer
	Promote sales of the products of your new company
	Explain the advantages of your product to potential buyers
	Prepare brochures and ads using a graphics program
	Develop a clever TV commercial
Sales	

	Market a new product
	Demonstrate a product to a potential customer
	Promote sales of the products of your new company
	Explain the advantages of your product to potential buyers
	Sell a product door-to-door
	Sell products on commission
	Call people on the phone to sell them a product or service
	Keep making sales calls in the face of many rejections
Management	
	Evaluate and hire new employees
	Determine important business objectives
	Manage a restaurant or clothing store
	Manage a business
	Manage a large hotel
	Discuss unsatisfactory work with an employee or co-worker
Entrepreneurership	
	Evaluate and hire new employees
	Determine important business objectives
	Manage a restaurant or clothing store
	Manage a business
	Manage a large hotel
	Discuss unsatisfactory work with an employee or co-worker
Public Speaking	
	Assertively present an argument
	Share your opinions at a city council meeting
	Explain your work to a high school class
	Speak at your class reunion
	Give a talk in front of your fellow club/team members
Politics	
	Run for public office
	Influence political changes in your community
	Persuade others to support a political candidate
	Go door to door on behalf of a political candidate
Law	
	Prosecute people accused of crimes
	Fairly judge legal cases
	Defend people accused of crimes
	Do legal research on a particular case
	Assist a legislator
Accounting & Finance	
	Review the budget for your school system
	Evaluate applicants for bank loans
	Create a budget for a company's fiscal year
	Record and analyze financial data
	Record and analyze financial data
	Audit a company's books
	Use a personal finance software program
	Handle money for a bank
Office Management	
	Assign office tasks to a group of workers
	Manage an office
	Prepare and organize purchase orders

	Plan the details of a trip to Europe or Africa
	File information in an organized system
	Be in charge of the arrangements for a family reunion
	Develop a timeline to complete a project
	Schedule work to meet deadlines
	Be in charge of banquet arrangements for a school prom or club/team
	Make handouts for a meeting
Personal Computing	
	Download computer software from the Internet
	Learn a new computer program
	Edit photographs using a computer
	Set up a new personal computer
	Use the latest electronic technology

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