RELIGIOUS BELIEFS ABOUT MINISTERIAL AND NON-MINISTERIAL WORK
AS A MODERATOR OF THE RELATIONSHIP BETWEEN PERSON-
ENVIRONMENT FIT AND COLLEGE MAJOR SATISFACTION

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Michael Peter Benoit

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RELIGIOUS BELIEFS ABOUT MINISTERIAL AND NON-MINISTERIAL WORK
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Michael Peter Benoit

Dissertation

Approved: _______________________________  Accepted: _______________________________

Advisor
Linda M. Subich, Ph.D.

Department Chair
Paul E. Levy, Ph.D.

Committee Member
Kevin P. Kaut, Ph.D

Dean of the College
Ronald F. Levant, Ph.D.

Committee Member
Sandra L. Perosa, Ph.D.

Dean of the Graduate School
George R. Newkome, Ph.D.

Committee Member
John E. Queener, Ph.D.

Date

Committee Member
David M. Tokar, Ph.D.
ABSTRACT

This research sought to examine the influence of religious beliefs on work related behavior among religiously committed college students. Specifically, this research intended to measure the extent to which individuals maintained a belief in the differing significance of ministerial work and non-ministerial work (ordinary work) and the effect of this belief on the relationship between person-environment congruence and college major satisfaction.

Anecdotal evidence exists (Schuurman, 2004) that among some committed Christians, there is a subtle devaluation of ordinary work in favor of privileging ministry occupations based on the understanding that God is best served only in the latter. Additionally, there is in the history of Christianity, disagreement about the role of ordinary work and its divine importance (Placher, 2005; Schuurman, 2004; Veith, 2002), which may be taught in a church or educational environment and may influence students’ thinking about the value of their intended work. It was therefore hypothesized that for those religiously committed Christian students who were not preparing for the ministry, greater devaluation of ordinary work would result in weaker associations between fit with their college major environment (congruence) and satisfaction with their major.
Major congruence was measured by Euclidian distance and angular distance between a student's UNIACT (Swaney, 1995) and ICA-R (Tracey, 2002; Tracey & Ward, 1998) interest inventory scores and the location of their college major on the World of Work Map (Swaney, 1995). College major satisfaction was measured by a modification of Hopock's Job Satisfaction Blank (1935) and a single-item measure of college major satisfaction.

Significant congruence to satisfaction correlations were observed in the sample of men while no support for a congruence to satisfaction relationship was observed in the sample of women. Additionally, no moderation effect was evident for either gender. However, devaluation of ordinary work in relation to ministerial work was found to have a small but significant negative effect on college major satisfaction for both genders. Suggestions for future research and implications for career counseling with a Christian college population are discussed.
DEDICATION

In loving memory of my proud grandmothers:

Rose A. Benoit
June 3, 1924 – May 19, 2005

Mary L. Carlson
April 11, 1920 – May 7, 2007
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My sincere thanks to my advisor, Dr. Linda Subich, whose perfect balance of encouragement and gentle motivation I intend to emulate professionally. I also wish to thank my committee members, Dr. Kevin Kaut, Dr. Sandra Perosa, Dr. John Queener, and Dr. David Tokar for their insight, which improved this project, and their sense of humor, which made meetings a delight.

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I am grateful for the support of my family during this project and throughout graduate school. Thank you to my parents, Joe and Linda, my sister Michelle and my brother Ben for their support and for tolerating me for the duration. Thank you to my daughter Hannah who had to learn the term “dissertation” at too early an age and asked me to finish it quickly so that she could have her “real daddy” back. I hope you will forgive me for being grumpy sometimes. Thanks also to my son Jack, whose birth toward
the end of this project gave me the final impetus to complete the work. Finally, and most importantly, neither this project nor my graduate education would have been possible if not for the love and support of my wife Sara. Her patience and endurance are beyond description and I am extraordinarily grateful. I love you, Sara.

Lord God, Heavenly Father, grant me diligence and attention to all of my callings, that with the gifts You have given, I may serve others joyfully. Grant this through Jesus Christ our Lord, who lives and reigns with You and the Holy Spirit, One God, world without end. Amen.

Michael P. Benoit
On the 524th birthday of Dr. Martin Luther
November 10, 2007
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Interest in the spirituality of the workplace has increased in the past decade (Bloch & Richmond, 1997; Gockel, 2004; Looby & Sandhu, 2002; Ottaway, 2003) and empirical research has begun to investigate the role of spirituality and religiousness in the work lives of individuals (Duffy & Blustein, 2005; Milliman, Czaplewski & Ferguson, 2003). Generally, spirituality receives more attention than does religion, based on the particular nature of the latter. That is, because religious beliefs differ widely across groups that fall under the general rubric of Christian, for example, researchers have been reluctant to study individual beliefs. Therefore, very little research is available on the influence of particular religious beliefs on workplace behavior.

There are good reasons, however, to think that religious beliefs may play a role in how people approach their work. Max Weber’s The Protestant Ethic and the Spirit of Capitalism (1958) hypothesized that the Calvinist belief in the doctrine of predestination led to the development of the American work ethic, largely through the Puritan influence in the United States (Davidson & Caddell, 1994). Since religions teach about what behaviors are morally acceptable and directly teach about how one ought to live, it seems
appropriate to investigate the psychological role that various quantifiable beliefs play in the daily workplace behavior of individuals.

One way that religious beliefs may influence behavior involves the value placed on certain occupations. Specifically, religious teaching about which careers are valuable and worthy for adherents to pursue could influence the vocational behavior of those responsive to such teaching. As such, occupational prestige may be localized to a particular church or denomination. Although religious values may encourage participation in religious occupations, this study examines the role of religious beliefs on satisfaction in non-religious occupations. That is, this study investigates the role that differential evaluation of religious and non-religious occupations plays in religiously committed college students’ satisfaction with their majors. Satisfaction is hypothesized to be the result of numerous factors, not least of which is fit between a person’s career personality and their environment (Holland, 1985). This research examines whether differential evaluation of religious and non-religious occupations serves as a moderator of the relationship between person/environment congruence and an individual’s satisfaction with his or her college major.

There is anecdotal evidence that among students at Christian colleges and universities, there is a subtle devaluation of non-religious majors compared to religious majors (Schuurman, 2004). Some students feel that if they follow their inclinations into a science or technology field, they will not be serving God as they ought. They feel bad about following their interests and may even try to pursue an ill-fitting college major because of the emphasis that their church or denomination places on doing “ministry”
work. Students may be challenged to find meaning in a non-religious field of study if they believe that ministry occupations are more pleasing to God than are other occupations. Indeed, religious occupations are often thought to be direct callings from God, and non-religious occupations are seen as necessary but not sacred in nature. Alternatively, there are religiously committed college students who have been taught that all work is equally pleasing to God when performed faithfully and “as for the Lord” (Colossians 3:23). This differential evaluation of religious (sacred) and non-religious (secular) careers may be measurable and meaningful to an understanding of the career behavior of religiously committed college students.

Christianity and Work

Theologically, there has been disagreement in the Christian religion on the understanding of work. During the medieval period, a line of thought developed that held that the contemplative life of service to God, which included performance of religious works, was superior to the work of the common people. Priests, monks, nuns and other “religious” were considered to have a vocation (Latin, calling) from God to live a life of service to Him. The life of contemplation and religious duties was held to be holier than the labor of the common people, which was considered to be necessary, but worldly (Veith, 2002). This terminology persists to the modern day within the Roman Catholic Church; the term vocation is used as a technical term to refer to the divine call to the priesthood or other religious orders (Catholic Church, 2000). Although the Vatican has officially given recognition of the worth of other occupations (Pope John Paul II, 1981), a
perceptual difference between laity and clergy persists in common usage and Roman Catholic theology.

Another strain of theological thinking regarding work emerged from the sixteenth-century Protestant Reformation and particularly the writings of the reformers Martin Luther and John Calvin. Their thoughts did much to replace the medieval Roman Catholic view of vocation with an understanding of the sacredness of ordinary work (Schuurman, 2004). The Lutheran doctrine of vocation states that people in their ordinary occupations serve as God’s hands, through which He cares for His creation (Veith, 2002). Calvin and Luther did not devalue the office of the ministry, but elevated other occupations as avenues of real divine importance, not simply worldly necessity. Luther and Calvin retained a high respect for the call to shepherd (Pastor) God’s people, but their teaching is substantially different from the Roman Catholic doctrine that priests are considered to receive an “indelible spiritual character” (Catholic Church, 2000, para. 1582) upon their soul at ordination. Ministers of Reformation churches were seen as having a God-ordained duty to care for His people, but were not considered to be any holier than the laity by virtue of their office alone. The Lutheran and Calvinist reformers did not abolish the role of clergy, but instead recognized the sacred (holy) nature of the everyday occupations of the people.

Os Guinness (1998) highlighted the differences that exist among Christians in regard to thinking about the value of religious and non-religious occupations. He warned against a view that only clergy have a calling from God and the related error of viewing non-religious occupations as merely a job without any spiritual importance. Among
American Christians it seems that a strong perception of distinction continues to exist between the clergy or “full-time Christian ministry” occupations and ordinary work in terms of differential value placed on “sacred” occupations, over and above “secular” occupations (Christopherson, 1994; Schuurman, 2004).

This religiously related prestige variable differs significantly from prestige as it is commonly studied in the literature (Chartrand, Dohm, Dawis, & Lofquist, 1987; Gottfredson, 1996). Ordinarily, prestige and status refer to salary, influence and complexity (Gottfredson, 1996), but in this case the value placed on church-related occupations has to do with religious beliefs of the status of the occupation before God, rather than perceptions of ministry occupations as well-paying, or influential in the community. Which occupations are valuable to God and therefore ought to be pursued most likely is taught in an individual’s religious environment. Most Christian adherents are likely taught that ministry occupations are important and valuable, but these individuals’ perceptions of “ordinary” work in relation to ministry occupations may differ based on their specific religious beliefs. For those religiously committed students engaged in non-ministry related studies, those who hold a belief that places a premium on ministry occupations in relation to non-religious occupations may experience less satisfaction for their majors, over and above that attributable to the fit of their personality to their major environment.

Occupational Satisfaction

Beginning with Parsons’ (1909) seminal work on career guidance, the Person-Environment correspondence (P-E fit) paradigm has dominated vocational psychology.
According to P-E fit theory, positive psychological outcomes, such as job satisfaction, result from congruence between person variables such as personality and vocational interests, and environmental variables such as specific duties and requirements. The dominant theory within the P-E fit paradigm in the last thirty years has been John Holland’s (1973, 1985, 1997) model of vocational interests.

Holland (1973) identified six occupational types or clusters of job environments that he called Realistic, Investigative, Artistic, Social, Enterprising and Conventional (RIASEC). Holland (1973) postulated that an individual’s interest in these areas could serve as a marker for their person variables. From preliminary research, Holland (1973) arranged these job types in a hexagonal structure. According to Holland (1973) interest types that are closer (adjacent on the hexagon) share more in common psychologically than do types that are across the hexagon from one another.

Interest inventories began to be developed to characterize an individual’s interests in terms of these six occupational clusters and Holland (1997) hypothesized that correspondence between an individual’s interests (usually operationalized as his or her top three interest areas in order of strength) and his or her work environment (similarly coded) result in job satisfaction and job involvement. Holland (1997) called this match between the person and the environment on this RIASEC hexagon, congruence. Holland further indicated that certain conditions make it more likely for congruence to lead to satisfaction. In particular, he stated that this hypothesis holds true best for those with a consistent profile in terms of having high interests on adjacent rather than opposite points on the hexagon. For this reason, when measuring congruence between a person and his or
her environment, the pattern of interests, not just the type of interest most similar to the
person’s occupation is taken into consideration. Further, according to Holland, the
congruence hypothesis is more likely to be evident for those with a differentiated pattern
of occupational interests, as opposed to those who are similarly interested in all
occupational types. Finally, those with a high vocational identity, or “clear and stable
picture of one’s goals, interests and talents” (p. 37) are hypothesized to have more
predictable vocational behavior in terms of the influence of congruence on satisfaction.

Congruence has been operationalized by many different formulae in the thirty
years since the beginning of RIASEC theory. Additionally, multiple measures of
vocational personality (Holland code) and workplace satisfaction have been used
(Assouline & Meir, 1987). Despite, or perhaps because of these efforts, the strength of
the link between congruence and satisfaction has been found to be quite low and perhaps
non-existent. Some researchers see the weight of the evidence as arguing against the
hypothesis that congruence between interests and environment, as measured by the
Holland hexagon, is related to satisfaction (Tinsley, 2000; Young, Tokar & Subich,
1998).

Other researchers have begun to try to understand under what circumstances, and
for whom the congruence-satisfaction link is most evident (Chartrand & Walsh, 1999;
Spokane, Meir, & Catalano, 2000). As Chartrand and Walsh (1999) pointed out, there are
many reasons for the congruence/satisfaction link to be modest, including restriction of
range due to incongruent individuals leaving ill-fitting environments (attrition), and the
fact that most studies are conducted at a single point in time and do not follow individuals
in their movement to more congruent occupations (longitudinal studies). Chartrand and Walsh (1999) also pointed out that satisfaction is dependant upon variables beyond interest congruence, such as values congruence. Swaney and Prediger (1985) reported increasing the strength of the congruence/satisfaction relationship when applying screens to remove data noise due to individuals’ low interest clarity, low career salience and the low value that some individuals placed on their work lives. Moderator studies, which examine congruence across other hypothesized variables, can help to elucidate the nature of the congruence/satisfaction link.

Studies of moderators include variables beyond vocational interests that may influence a person who has a good personality fit with her occupation to be dissatisfied and vice versa. The belief that one’s occupation is not as important to God or to the religious community may be one such moderating variable. Committed Christian college students who believe that non-religious occupations are of secondary worth in the eyes of God and to the Christian community may experience cognitive dissonance if they find themselves interested in career fields other than the ministry. This differential evaluation may serve as a moderating variable between congruence and satisfaction such that students who follow their interests into non-religious college majors may find themselves less satisfied because of their religious convictions. This spiritual dimension may play a large role in choosing a college major, as Colozzi and Colozzi (2000) estimated that three-quarters of the students with whom they worked “indicate that spirituality…is important to them in their career decision-making process” (p. 63).
Purpose Statement

This research seeks to examine one aspect of Christian belief in relation to the congruence-satisfaction relationship for students in Christian colleges and universities. Specifically, the relationship between the congruence of students’ college major choice to their personality and their satisfaction with their major is assessed. Then, a moderator analysis is conducted to determine if differential evaluations of religious and non-religious occupations moderates the relationship between college major congruence and satisfaction.

A Christian college population has been selected because for such a population, religious commitment is likely to be high and beliefs about the value of work will likely be particularly salient to this population. By looking at the differential evaluation of religious and non-religious occupations while vocational development is underway, the distinction may be able to be observed without the influence of other satisfaction-related variables. This study aims at providing information for career counselors who work vocationally with Christian students.
CHAPTER II
REVIEW OF THE LITERATURE

This chapter reviews the previous work done on the link between vocational interest/choice congruence and job or college major satisfaction, as well as tests of moderators of this relationship. It also reviews the professional debate in theology about the importance of ordinary work and the literature related to religious influence on occupational decision-making.

Interest-Environment Congruence and Satisfaction

John Holland’s (1973, 1985, 1997) theory of occupational personality posits that, “vocational satisfaction, stability, and achievement depend on the congruence between one’s personality and the environment in which one works” (Holland, 1985; p. 10). In the last thirty years, this statement has been investigated using Holland’s RIASEC hexagon to compare individuals’ vocational personality and their work environments. Holland (1997) identified six occupational types that represent work-relevant personality traits, namely Realistic, Investigative, Artistic, Social, Enterprising and Conventional. According to Holland (1985), someone with a Realistic personality will prefer, “activities that entail the explicit, ordered, or systematic manipulation of objects, tools, machines, and animals and to [have] an aversion to educational or therapeutic activities” (p. 19).
Similarly, he stated that an Investigative person will have “a preference for activities that entail the observational, symbolic, systematic, and creative investigation of physical, biological, and cultural phenomena in order to understand and control such phenomena; and to an aversion to persuasive, social, and repetitive activities” (p. 19-20). The Artistic person will have, “a preference for ambiguous, free, unsystematized activities that entail the manipulation of physical, verbal, or human materials to create art forms or products, and an aversion to explicit, systematic, and ordered activities” (p. 20). The Social individual will have “a preference for activities that entail the manipulation of others to inform, train, develop, cue, or enlighten; and an aversion to explicit, ordered, systematic activities involving materials, tools, or machines” (p. 21). The Enterprising person has “a preference for activities that entail the manipulation of others to attain organizational goals or economic gain; and an aversion to observational, symbolic, and systematic activities” (p. 21). Finally, the Conventional person will have “a preference for activities that entail the explicit, ordered, systematic manipulation of data, such as keeping records, filing materials, reproducing materials, organizing written and numerical data according to a prescribed plan, operating business machines and data processing machines to attain organizational or economic goals; and an aversion to ambiguous, free, exploratory, or unsystematized activities” (p. 22).

Holland (1997) also categorized work environments in terms of the dominant vocational personality characteristics of those who hold particular job titles. For example, “carpenter” is seen as a predominantly Realistic occupation title, based on both the manual nature of the work as entailing manipulation of things and based on the
personality of the preponderance of individuals who become carpenters. In other words, the Holland type of a work environment can be determined by observing the work itself and by determining the dominant personality type represented in that occupation. Holland’s statement that “vocational satisfaction, stability, and achievement depend on the congruence between one’s personality and the environment in which one works” (Holland, 1985; p. 10) implies that individuals who have Realistic vocational personalities are more likely to be satisfied as carpenters than are those with predominantly Social personalities. Although intuitively obvious, this assumption has come under intense scrutiny over the years (Tsabari, Tziner & Meir, 2004; Tranberg, Slane & Ekeberg, 1993; Hoeglund & Hansen, 1999; Young, Tokar & Subich, 1998).

Because individual studies of the congruence hypothesis sometimes generated conflicting results, the first major meta-analytic test of the hypothesis was conducted by Assouline and Meir (1987) as a follow-up to a major literature review by Spokane (1985) that identified the relatively weak “magic .30 correlational plateau” (p. 335) between congruence and measures of satisfaction. Meta-analysis combines the results of several studies to estimate the overall strength of an association. Assouline and Meir identified 41 studies with a total of 74 congruence correlations, including nine unpublished Israeli studies from Tel Aviv University and the Hebrew University that tested the hypothesis that job satisfaction is related to congruence between vocational personality and environment type. Assouline and Meir hypothesized that the specific environment to which an individual’s personality would be compared would influence the correlation:

Six kinds of environmental references have been used in congruence studies: (a) Occupation: Whether the subject’s occupation fits his/her vocational interests
(according to an appropriate combination of occupational classification and interest inventory). (b) Specialty within occupation: Whether the subject’s chosen specialty within his/her occupation fits the appropriate specialty interests (according to an adequate within-occupation interest inventory). (c) Others’ personality types: Whether the subject’s personality type fits the modal personality type in his/her environment. (d) Major studies: Whether the subject’s major studies fit his/her personality type. (e) Educational institution: Whether the subject studies in an institution whose characterization is identical with his/her personality type. (f) Educational or vocational intentions: Whether the subject expresses the intention to study a subject or work in a career which fits his/her interests. (Assouline & Meir, 1987, p. 320-321)

In addition to these six ways that environment had been operationalized in congruence studies, Assouline and Meir (1987) also identified 16 different ways that researchers had calculated congruence levels. These included both crude, single-letter matching methods and more complicated congruence indices, which take the hexagonal structure of Holland’s (1985) theory into account. For instance in a crude measure of congruence a Social person working in a Realistic work environment would be considered just as incongruent as a Social person working in an Artistic environment. In more sophisticated congruence calculations, the fact that Social and Artistic types are adjacent on the Holland hexagon would be taken into consideration and the incongruence would be deemed more moderate. In this meta-analysis, 12 of the 74 correlations were between the participant’s highest interest, their first-letter code, and the most prominent code of the environment. An additional 25 of the 74 correlations were between the first letters of both the participants and the environments, but the distance between the two on the Holland hexagon was taken into account. There were 14 other methodologies for
calculating congruence noted by the authors, many of which were used in a single existing study. This variability in the way that congruence is calculated is a theme in the literature on congruence and has been criticized as a serious problem (Tinsley, 2000).

The authors used a broad definition of the outcome variable of occupational well-being (satisfaction, stability in occupation or achievement) in order to include as many studies as possible. They noted the lack of consistency in the measurement of satisfaction (single item, established inventory, new scale, or unreported) along with the various methods of measuring congruence. Finally, the authors did not discuss which interest inventories were used to assess an individual’s occupational personality, nor was there discussion of what method was used to generate Holland codes for the various environments, other than that in some cases it was based on the modal vocational personality of co-workers (Assoline & Meir, 1987).

Methodologically, the meta-analysis was patterned after the recommendations of Hunter, Schmidt and Jackson (1982); however, the correlations were not corrected for unreliability, as congruence indices are based on the reliability of both the vocational personality measure and the measure of occupation type. Also, they reported that the reliability of many of the dependent variables was unreported or impossible to determine, based on the use of a single item measure of satisfaction. They were also not corrected for restriction of range, because most studies did not include this information and because of the assumption that estimates would be misleading, reasoning that people would remove themselves from the most incongruent environments and move toward more congruent environments.
The authors found a very modest .21 correlation overall between interest/environment congruence and the criterion of satisfaction. The correlations between congruence and the other criterion variables, stability and achievement were lower still. When congruence to college major was used as the criterion of environment (6 correlations, 2138 participants), the correlation between congruence and satisfaction sagged to a mere .098 with a 95% confidence interval of .01 to .18. Studies that used congruence between a person’s personality and the modal personality type of co-workers reached .29, with a 95% confidence interval of .20 to .38.

Assouline and Meir (1987) also identified the compatibility index of Wiggins and Moody (1981) as the method of establishing congruence that had the highest correlations to satisfaction. They noted that first letter comparisons had low correlations with satisfaction. The authors called for more research, particularly attempts to overcome the unreliability of the measures of personality and environment, and the restriction of range problem.

A second meta-analysis was conducted by Tranberg, Slane and Ekeberg (1993), and it sought to replicate the findings of Assouline and Meir (1987) while leaving out the 9 unpublished studies included in the previous study and adding 6 additional studies done in the interim between the meta-analyses. Among the studies available they identified 5 correlations between congruence and choice of college major. This meta-analysis revealed an overall correlation between satisfaction and congruence of .17, with a 95% confidence interval of -.07 to .42. When considering only job satisfaction, the correlation rose to .20, and when considering only academic satisfaction, the correlation dropped to
.095. None of these correlations had confidence intervals that did not include zero, indicating that no conclusion of significance could be reached.

Tranberg, Slane and Ekeberg (1993) also examined possible moderators of the congruence-satisfaction relationship. They hypothesized that the congruence relationship may be different for different Holland types, and found that the relationship was strongest for Social types \( r = .33 \) and weakest for those with a Realistic personality \( r = .05 \). They also hypothesized, based on Camp and Chartrand’s (1992) research that the method of determining congruence would influence the strength of the correlation. They found that studies which used two-letter agreement to determine congruence resulted in the highest correlations \( r = .45 \), however even this method did not differ reliably from zero. They also coded the studies according to methodological rigor and found that the less sophisticated measurement (single item measures of satisfaction for example) resulted in the highest correlations \( r = .33 \), which was a significant finding (95% confidence interval .01 - .65). The authors concluded that, “Interest congruence alone does not predict satisfaction” (p. 261). Additionally, the authors called for future research on the congruence/satisfaction relationship to include potential moderating variables.

More recently, Tsabari, Tziner and Meir (2004) conducted a third meta-analysis of the relationship between congruence and satisfaction and included the potential moderating variables of culture and age. They hypothesized that in more individualist cultures, a severe restriction of range for the satisfaction variable will result from strongly dissatisfied workers leaving their jobs to find more satisfactory employment, but in more collectivist cultures factors beyond personal fit may influence a person to stay in a non-
satisfying position. They also hypothesized that the congruence-satisfaction link would be stronger in younger people because for older individuals, satisfaction would be based on a broader scope of variables such as “adjustment, skill utilization, burnout, experience, advancement opportunities, compensation, status, social acceptance, and so on” (p. 220). The authors identified 53 usable correlations generated between 1988 and 2003 for inclusion in the meta-analysis. Following the Hunter and Schmidt (1990) procedure for conducting meta-analysis, they removed the seven samples with fewer than 60 respondents and they also excluded about 10% of extreme findings in both directions for a final sample of 41 correlations (5,805 individuals). Additionally, correction was performed to attenuate for unreliability among interest inventories and satisfaction questionnaires. Finally, they corrected for linear bias attenuation factor, but did not correct for range restriction because standard deviations were not reported in some studies.

They found an overall correlation of .166 between congruence and satisfaction, with a confidence interval from -.091 to .424. Only one study included in this meta-analysis used college major as the participant’s environment, and this study produced null results. As in Tranberg, Slane and Ekeberg (1993), two-letter agreement was found to be the best predictor of satisfaction with a mean \( r \) of .353 across 4 studies. Regarding the vocational interest inventory used in the studies, 17 used the General Occupational Themes from the Strong Interest Inventory (mean \( r = .091 \), 13 used the Self Directed Search (mean \( r = .197 \)) and 8 studies used the Vocational Preference Inventory (mean \( r = .209 \)). The authors were able to identify preliminary evidence that culture acted as a
moderating variable across samples from the United States (individualist, mean r = .126, 29 studies) and Israel (collectivist, mean r = .225, 9 studies); however, they found contradictory evidence regarding their age hypothesis. They found that data from younger participants did indeed confirm the congruence/satisfaction hypothesis more than did data from older participants, supporting the hypothesis that older workers have a broader range of variables that may contribute to their satisfaction beyond match with their interests. They also found, however, that data from those with tenure over 10 years better supported the congruence-satisfaction hypothesis than those with fewer than ten years of tenure, which would argue against this hypothesis. The authors noted that these findings “raise doubt as to whether either age or tenure does, in fact, function as a moderating variable in congruence studies” (p. 229).

On the whole, these meta-analyses have shown a quite modest overall effect of congruence on satisfaction and other outcome variables. Because of the disappointing results, the authors of these meta-analyses have called for investigation of the tools used to measure vocational interests, as well as investigation into the myriad of ways that congruence is calculated. They have also called for attention to be paid to other variables that may serve as moderators in the relationship between congruence and job satisfaction.

*Validity of Interest Inventories.* Savickas, Taber and Spokane (2002) compared five major interest inventories to one another to determine if they measured similar constructs and exhibited convergent and divergent validity. The authors sampled 118 individuals who took the following five interest inventories: the Campbell Interest and Skills Survey (CISS; Campbell, Hyne, & Nilsen, 1992), the Kuder Occupational Interest
Survey–Form DD (KOIS; Kuder & Zytowski, 1991), the Self-Directed Search (SDS; Holland, Fritzschke & Powell, 1994), the Strong Interest Inventory (SII; Harmon, Hansen, Borgen, & Hammer, 1994), and the Revised Unisex Edition of the American College Testing Interest Inventory (UNIACT; Swaney, 1995). Using a multi-trait, multi-method matrix, the authors found that the RIASEC scales on these instruments correlated moderately with one another (median scale correlation r = .59), and that the instruments had discriminant validity in that correlations between dissimilar scales were low. The authors indicated that, “findings revealed a moderate to high degree of convergent validity among the five interest inventories despite substantially different items, scaling, and norming” (Savickas et al., 2002; p. 178).

This finding gives psychometric support to the use of these interest inventories to measure the RIASEC constructs, however, in a follow-up report, Savickas and Taber (2006) noted substantial differences in the Holland codes generated within individuals. That is, only 19 of 99 participants in their study had very similar (correlations in the .90s) or quite similar (correlations in the .80s) profiles across the five inventories they completed. For example, an individual whose 5 interest inventory results generated Holland codes of SEA, CRA, CSE, CES, and SER would have a correlation of .14 among the codes, as 14 individuals did in their sample. This information complicates congruence calculation because the rank ordering of interests is fundamental to calculating an individual’s Holland code. While the various tools to measure vocational interests cohere highly with one another in factor structure, they lack the ability to assign a consistent RIASEC profile to an individual. Although rank ordering vocational interests sacrifices
information for interpretability, doing so might be acceptable if various instruments were shown to be able to consistently assign a RIASEC profile to an individual. Lacking this consistency, however, it appears that using all of the data generated by an interest inventory would provide a clearer picture of an individual’s true interests. For example, clearly differentiated profiles (large gap between first and second most endorsed type) are ranked the same as profiles that have very little differentiation between types. This loss of magnitude data may be partially responsible for different instruments generating different rank orderings. If someone were very high on both Artistic and Social interests, but the items on one of the instruments were more attuned than the other to the particular Artistic interests of the individual, the assigned rank order could change from SAI to ASI. While this difference might not amount to much in clinical use, as users are generally encouraged to look at occupations in and around their code types, it could influence research that relies on rank order to calculate congruence.

Congruence calculation. Another area of concern addressed by the authors of the meta analyses (Assouline & Meir, 1987; Tranberg, Slane and Ekeberg, 1993; Tsabari, Tziner and Meir, 2004) was the methods used to calculate congruence. They noted that such methods of calculation differed in their level of mathematical and theoretical sophistication. Young, Tokar and Subich (1998) examined 11 different methods of calculating congruence that have been used in the literature, namely dichotomous first-letter agreement, first-letter agreement based on the hexagon, two-letter agreement (Healy & Mourton, 1983), Z-S index (Zener & Schnuelle, 1976), three-level congruence index (Wolfe & Betz, 1981), the compatibility index (Wiggins & Moody, 1981), the
ranked comparison congruence scale (Robbins, Thomas, Harvey, & Kandefer, 1978), Iachan’s (1984) M index, the Sb index (Gati, 1985), the K-P index (Kwak & Pulvino, 1982) and the C index (Brown & Gore, 1994). Young and colleagues (1998) used the Self Directed Search (Holland, 1985) to generate interest inventory scores for a sample of 483 employed adults. They assigned job codes to each participant’s current occupation based on the *SDS Professional Manual* (Holland, 1985) and the *Occupations Finder* (Holland, 1989a), and job satisfaction was measured using the Hoppock Job Satisfaction Blank (JSB; Hoppock, 1935) and an additional single-item measure of job satisfaction. They found that, with the exception of the Sb index (Gati, 1985), all of the congruence indices correlated highly with one another, but none of the 11 were correlated significantly with job satisfaction by either operationalization. The authors concluded that the choice of a congruence index was not likely to influence the correlation between congruence and satisfaction greatly. Again, however, as Tinsley (2000) has pointed out, the creation of codes (which is a necessary step in calculating congruence) necessarily throws away potentially useful data in the calculation of congruence. More robust findings may be available if the reliance on ranking types were eliminated.

Since the various interest inventories do seem to be measuring meaningful constructs and have moderately high correlations with one another, yet fail to consistently identify a participant with a common Holland code, and since most congruence indices produce very similar results, yet fail to predict job satisfaction in line with Holland’s (1997) theory, a different method of conceptualizing congruence that avoids these pitfalls is necessary. Prediger’s (1982; Prediger and Vansickle, 1992) People/Things, and
Data/Ideas dimensions are helpful in this regard. Prediger has argued that there are two dimensions which underlie the six Holland types such that every occupation and each individual’s interest inventory results can be located in two dimensional space (Figure 1). Using these dimensions, all the data from an interest inventory can be reduced to a single point, rather than forming a code based on the rank order of endorsed scales. This point can then be compared to the World of Work map (WWM, Swaney, 1995), a two-dimensional representation of 26 career clusters based on interest inventory data of over 110,000 individuals (p. 4). Congruence can then be defined as the nearness of the points representing an individual’s interest inventory results and the career cluster of his or her occupational environment, in two-dimensional space.

Figure 1. The Holland RIASEC hexagon with Prediger’s (1982) People/Things and Data/Ideas dimensions.

Tracey and his colleagues (Tracey, 2003; Tracey, Robbins & Hofsess, 2005; Tracey & Robbins, 2006) have initiated research using Prediger’s (1982) People/Things
and Data/Ideas dimensions and utilizing the UNIACT as the interest inventory. Tracey and Robbins (2006) found two methods of determining congruence from the World of Work Map to be useful. The Euclidian distance (a length of a straight line) between the coordinates of college student’s interests on the World of Work map and the coordinates of his or her college major were found to correlate moderately with the angle formed by connecting each of these points to the origin (0,0; Figures 2 & 3). Correlations between these two measures ranged from .28 to .40. The Euclidian distance measurement and the angular distance were found to predict college grade point averages (GPA) beyond ACT standardized test scores. Although the Euclidian distance measurement was found to remain more consistent than angular distance across three years of college, both were important in predicting college GPA and the likelihood of a student leaving college (persistence). Tracey (2006), using the same method, found that the hypothesized moderator of overall interest level influenced the congruence-persistence relationship such that, for college students with low overall interests, congruence was predictive of a higher likelihood of persisting through graduation ($R^2 = .057$). It appears that this methodology holds promise for future congruence research in that it utilizes all available data while remaining theoretically consistent with Holland’s (1997) spatial typology.
Figure 2. The dotted line represents the measure of the Euclidian distance between two points in two-dimensional space.

Figure 3. The dotted arc represents the measure of the angular distance in degrees between two points in two-dimensional space.
Moderation Studies

In addition to the meta-analyses reviewed above, Spokane, Meir and Catalano (2000) reviewed the extant literature on the person-environment congruence hypothesis as conceptualized by Holland’s (1959) theory. They identified two “generations” (p. 139) of this literature:

First-generation studies, crude in method and assumption, correlated rough indicators of fit (for example, first letter Holland code), using college students and future career choices, with an array of concurrent measures of various vocational or educational outcomes (for example, stability of major or job performance, satisfaction, etc.). Second-generation studies employed more sophisticated congruence indicators, more often examined working adults, incorporated moderator variables such as Holland RIASEC type, age, and job seniority, or group importance, and examined changes in congruence over time, each of which represented a substantive improvement in methodology (Spokane, 1985). These second-generation studies used mathematical indices to calculate congruence, based upon independent measures of person and environment. (p. 139)

The authors go on to call for a third generation of congruence research that would utilize experimental, longitudinal, multidimensional, and moderator designs, as well as using “a more comprehensive, contemporary definition of congruence.” Baron and Kenny (1986) have indicated that moderator variables are often used to try to explain weak or inconsistent correlations supporting a theory. Moderator variables would answer the question “when” or “for whom” (Frazier, Tix & Barron, 2004) does congruence predict job satisfaction. Since the meta-analytic reviews have produced consistently weak correlations, moderator variables have been sought to clarify the relationship between congruence and career outcomes. Spokane (1985) has argued that even with a powerful measure of congruence, moderate correlations are expected between congruence and outcome variables, based on the level of abstraction of the variables being measured.
That is, there are many influences on satisfaction over and above one’s personality fit with the work environment such that global job satisfaction measurement or other job behaviors are fairly abstract outcome variables for personality match to predict with a great deal of accuracy. Given the multiple contributing factors to job satisfaction, it would make sense to determine under what conditions congruence is more likely to predict satisfaction. Several studies are reviewed chronologically below as identified by Spokane, Meir and Catalano (2000) along with another moderation study conducted after 2000.

Healy and Mourton (1985) performed a study to investigate the relationship between congruence and the outcome variables of career knowledge, career decision-making, career maturity and anxiety. Their sample of 136 community college students completed the Self Directed Search (SDS; Holland, 1973) and congruence was calculated using participants’ declared occupational choice, coded as congruent or not congruent based on first letter agreement. For men, no significant results were found, but for women congruence was related to lower anxiety. For women (n = 84), Vocational Identity as measured by the Vocational Identity Scale (Holland, Daiger, & Power, 1980) moderated the relationship between congruence and career decision making and knowledge such that congruent women with high vocational interests scored significantly higher on decision making and career knowledge than did either incongruent women or women with low Vocational Identity. The authors did not calculate an overall effect for congruence in their sample, however. This study’s dichotomous division of present and not present (p. 442) congruence is exemplary of the lack of sophistication in
operationalizing congruence in the literature. Yet, even with this lack of sophistication, identity was found to moderate an important relationship. The lack of a similar finding for men may also point to the importance of gender as a variable in congruence research.

Amerikaner, Elliot and Swank (1986) sought to investigate the Adlerian construct of social interest as a moderator between students’ vocational personality as measured by the Vocational Preference Inventory (Holland, 1978) and job satisfaction as measured by the Job Descriptive Index (Smith, Kendall and Hulin, 1969). They measured social interest using the Early Recollections Questionnaire and Early Recollection Rating Scale (Baruth & Eckstein, 1981). Congruence was calculated by ranking each participant’s vocational interests from highest to lowest based on their VPI results, assigning a Holland code to their current job and performing Spearman’s rank order correlation on the resulting ranks. Congruence between interests and environments for this sample of 80 college seniors and graduate students was significant (r = .44) but congruence did not correlate well with general job satisfaction (r = .18, p > .05) or specific job satisfaction (r = .17, p > .05) scales of the JDI. The authors found a significant correlation (r = .43, p < .001) between social interests and general job satisfaction and between social interests and specific job satisfaction (r = .41, p < .001). Multiple regression was used to predict general and specific job satisfaction using congruence, social interest and gender as predictors. Twenty one percent of the variance in general job satisfaction was explained by the full model (R = .46) and only social interest contributed significantly to the prediction (R² = .20). Similarly, when predicting specific job satisfaction, the entire model accounted for 20% of the variance (R = .44) with social interests contributing
17%. The authors tested a moderation hypothesis by entering the interaction of social interests and congruence into the regression equation, but it was not supported. Thus, they determined that social interest alone, not as a moderator, accounted for significant variance in job satisfaction. Spokane, Meir and Catalano (2000) noted that the small $n$ and lack of information reported on the gender and vocational personality type distributions are “serious limitation[s]” (p. 163) to this study.

Meir, Keinan and Segal (1986) investigated the hypothesis that group importance might moderate the relationship between congruence and job satisfaction in a sample of 1,137 participants. The authors defined group importance as, “the extent to which members in a group perceive as personally significant and essential their membership and status within it” (Meir, Keinan & Segal, 1986; p. 61). They measured group importance with a 13-item scale on which participants rated from low (1) to high (9) their perceptions, such as “To what extent is it important to you that the group members care about the quality of your family life?” (p. 64). Interests were measured with the Israeli version of the Self Directed Search (Holland, 1973) and satisfaction was measured on 20-point scale from “Not at all satisfied” to “Very highly satisfied.” Congruence was determined by first averaging the SDS scores within a particular group to determine the environment type and then assigning congruence scores based on “the gap between his or her personality type and the environmental type” (p. 65), but the exact method used to accomplish this was not detailed in the study. The researchers found that group importance, across members of the group, correlated significantly with the correlation between congruence and satisfaction for those group members ($r = .68$, $p < .01$). Thus,
for groups whose members considered group membership to be more important, the
congruence between interests and environment was more likely to result in satisfaction.
Although this study may have lost important data by comparing groups rather than
individual data, it does point to a likely moderating effect of group importance on the
relationship between congruence and satisfaction.

Rounds (1990) examined the relative contribution of both occupational interests
and values in the prediction of job satisfaction among employed adults. He measured
vocational interests using the GOT scales of the SCII (Campbell & Hansen, 1981) and
measured work values with the Minnesota Importance Questionnaire (MIQ; Rounds,
Henly, Dawis, Lofquist, & Weiss, 1981). The criterion variable, job satisfaction, was
measured using the Job Satisfaction Blank (JSB; Hoppock, 1935). Rounds hypothesized
that after accounting for congruence between interest and environment, additional
prediction could be obtained from considering the level of correspondence between a
person’s occupational values and their environment’s reinforcers. He found inconsistent
results across men and women, with interests and values being almost completely
unrelated and with values contributing uniquely to the prediction of job satisfaction in the
male sample. In the female sample, interests and values correlated moderately but each
significantly predicted job satisfaction. Interest congruence was found to predict job
satisfaction more poorly for men than for women in his sample. Although it is possible,
based on the correlations found in the female sample, that values correspondence
moderated the relationship between congruence and job satisfaction, the interaction term
was not included in the analysis and therefore moderation was not directly tested (cf., Baron & Kenny, 1986).

Carson and Mowsesian (1993) undertook an examination of Holland’s concepts of differentiation, consistency and identity as moderators between congruence and satisfaction. Differentiation is the extent to which an individual’s interest profile displays distinct high and low interests, versus a profile in which the various RIASEC types are endorsed roughly equivalently. Consistency refers to spatial representation of the RIASEC types across the hypothesized hexagon. A profile with high interests in Social and Artistic domains would be seen as a consistent profile, whereas a profile with high interests in Social and Realistic domains, which are across from each other on the hexagon, would be considered an inconsistent profile. Finally, Holland identified identity as an influential variable in his theory, which he defined as a “clear and stable picture of one’s goals, interests and talents” (Holland, 1997, p. 37).

The authors operationalized interests as scores on the General Occupational Themes of the Strong Interest Inventory (Hansen & Campbell, 1985), job satisfaction as scores on a second revision of the Job Satisfaction Scale of Hoppock (1935) and vocational identity as scores on the Vocational Identity Scale (VI; Holland, Daiger, & Power, 1980). Congruence was determined using Iachan’s (1984) calculation and the respondent’s job code from the Dictionary of Holland Occupational Codes (DHOC; Holland, 1989b). A zero-order correlation between congruence and satisfaction of $r = .18$ ($p = .03$) was observed but “neither differentiation, consistency, nor vocational identity moderated the strength of the congruence-satisfaction relationship” (p. 137). The authors
also noted that their results did not replicate those of Mount and Muchinsky (1978) who noted that Socially typed individuals had weaker congruence-satisfaction relationships than did other vocational interest types. For men in their sample, being older was related to a greater congruence-satisfaction relationship, but cautioned that sample size required a follow-up investigation of this tentative finding.

Meir, Tziner and Glanzner (1997) performed a study similar to that of Meir, Keinan and Segal (1986) in which group importance was examined as a moderator between congruence and job satisfaction. In this case, a longitudinal design allowed the researchers to examine congruence with the environment and group importance at two different times, roughly 6 months apart. Interests were measured by the SDS (Holland, 1973) while environment type was assessed by asking participants to select which of six short job environment descriptions best described their own work environment. Each of the six descriptions was three or four lines long and was compiled by 10 experts to represent the RIASEC types. Thus, work environment was assessed by a single Holland type or single letter code. Congruence was determined by distance between the self-reported environment code and the subject’s SDS high letter. Interestingly, congruence at time one was related to turnover, in that only 64% of low congruence participants were still working at their jobs 6 months later, compared to 93% of the high congruence group. The study did not find group importance (at either administration) to moderate the relationship between congruence and satisfaction, but group importance did contribute uniquely at the second administration to the prediction of satisfaction as measured by the Job Satisfaction Inventory (Meir & Yaari, 1988).
Tracey (2003) investigated interest traitedness (defined as “the extent to which any one trait is consistently demonstrated across situations) as a moderator of the relationship between congruence and career certainty in 12th grade students. He operationalized traitedness in several ways—-as the variance among items in the respondent’s high point scale, as the average item variance within each RIASEC scale, as the correlation between a student’s profile and his or her profile as predicted by the Holland hexagon, and as the difference between a student’s profile and the predicted profile. He calculated congruence using Euclidian distance and angular distance between an individual’s interests and selected occupation in two-dimensional space (Things/People & Data/Ideas; Prediger, 1982; Prediger & Vansickle, 1992). Tracey used multiple regression and entered certainty as the criterion and congruence and traitedness variables as predictors in the first step, and an interaction term of the predictors in a second step. The change in $R^2$ from step one to step two was significant in all cases and ranged from .007 to .013 across the eight combinations of congruence method and traitedness variable, indicative of a small effect size. Since the outcome variable in this case was a student’s predicted certainty of career choice on a three-point scale, this study may deserve to be repeated in a situation in which a present, rather than hypothetical environment is the dependent variable.

In sum, various moderators have been logically proposed and tested to determine under what circumstances and for whom Holland’s congruence hypothesis best predicts satisfaction. In regard to gender, satisfaction and career knowledge may be predicted from congruence better for women than for men (Healy & Mourton, 1985; Rounds, 1990)
though age may combine with gender to reverse this relationship (Carson & Mowsesian, 1993). There are also conflicting findings regarding the moderating effect of having a dominant S type on the RIASEC scale (Carson & Mowsesian, 1993; Mount & Muchinsky, 1978; Tranberg et al., 1993). Additionally, group importance may (Meir, Keinan & Segal, 1986) or may not (Meir, Tziner & Glazner, 1997) influence the effects of person-environment congruence. Hypothesized moderators of social interest (Amerikaner et al., 1988), differentiation, consistency and identity (Carson & Mowsesian, 1993) have not received empirical support.

As suggested by Spokane and colleagues (2000), additional research on the congruence to outcome relationship ought to utilize a different strategy than the traditional correlational research using interest inventories. Prediger’s (1982; Prediger & Vansickle, 1992) two-dimensional model and Tracey’s (2003; Tracey & Robbins, 2006) methodology for calculating congruence based on it appear to be a promising avenue for continued research. Theoretical rationale for a moderator based on religious beliefs that has not previously been investigated is detailed below.

Beliefs about Work among Christian Theologians

Duffy and Blustein (2005) argued that during the process of identity exploration and formation in late adolescence, career development may be influenced by a person’s spirituality and religiousness. They investigated the role of spirituality and religiousness in the career adaptability of students at a Roman Catholic university and found a modest relationship between intrinsic religiosity and spiritual awareness on the one hand and career self-efficacy on the other. Particular beliefs about work, as influenced by religious
teaching, may be another variable that could influence career behavior during late adolescence. For people whose religious beliefs and commitments are an integral part of their personal identity, religious beliefs about work may play a role in career choice.

There exists a diversity of understanding about the role of “ordinary” occupations for the Christian believer, based on different streams of thought and teaching. This difference may be thought of as a continuum from valuing all occupations equally to valuing ordinary occupations less than ministry occupations.

In the Medieval Catholic understanding of occupation, to remove oneself from the world by entering the priesthood or a monastery for a life of contemplation and service to God was considered the highest and holiest use of one’s life. Walter Rauschenbusch (2005) summarized the Medieval Catholic understanding as follows: “A few professions were marked off as holy, just as in past stages of religion certain groves and temples were marked out as holy ground where God could be sought and served” (p. 384). Those who worked in ordinary, worldly occupations were considered to have a secondary level of spirituality as a result.

In the sixteenth century, the Protestant Reformation brought with it a different understanding of vocation. Reformed and Lutheran families of Christianity typify this stream of thought, commonly called the “classic protestant” (Schuurman, 2004, p. x) understanding of vocation, which has experienced a recent revival and “flurry of recent writings in North America” (Jensen, 2006, p. 36). This stream of thought and teaching argues that, although ministry work is important to God, so too is ordinary work. Teaching along this stream holds that God works in the world primarily through other
people as agents, mediating the care of creation through individuals’ service to one another in their various vocational and social roles (Placher, 2005). From this perspective, the ordinary work of a banker or farmer is important, not only insofar as he or she is able to share his or her faith with co-workers, but as a means through which God works in the world.

From this perspective, ordinary work can properly be called a divine calling (Veith, 2002). Fox (2003) in her review of the career guidance literature from the 1960s through the early part of the 2000s found a recurring theme of the honor of ordinary occupations before God, reflecting this line of thought. Redekop and Bender (1988) summarized as follows the vocational teaching of Martin Luther, the man who revolutionized the dominant thinking about work:

1. Every act in life can be an act of worship if directed toward God; therefore, work can be considered as a position or setting in which God has placed man so he can glorify God.
2. Love of God and love of neighbor are the same and inseparable. If work is seen as an act of devotion to God, it must also be seen as an act of love for one’s neighbor.
3. Human work tends to lead toward two consequences for man: a temptation and snare to serve personal ambition and a burden to humble and lead to repentance. (p. 46)

Indeed, Luther was fond of saying that the work of monks, thought to be of greatest value in Medieval Catholicism, was actually useless because it did nothing to serve other people and only vainly sought to serve God, who needs nothing (Wingren, 1957). Luther’s understanding of vocation became dominant in Lutheran and Calvinistic (Reformed) strains of protestant thought. Puritan minister Richard Steele (1684)
summarized 1 Corinthians 7:20 in the opening chapter of his *A Tradesman’s Calling* as follows:

> No Man [sic] should think, that God likes him either the better or the worse, meerly [sic] for his *outward* Calling and therefore let every Man contentedly abide in the same *earthly* Calling, provided it be a lawful one, wherein his *Heavenly* Calling found him.” (p. 2, emphases in original)

In this quote, Steele indicated that the earthly calling or career that one has undertaken is the result of the will of God. Additionally, he followed Luther in distinguishing between the general heavenly calling to belief in Jesus, from the calling to a particular occupation.

The classic protestant view of work has been criticized by some modern protestant theologians, among them Gary Badcock (1998), Jacques Ellul (1972), and Stanley Hauerwas (1983), who have argued that this classic protestant understanding is unbiblical and incorrectly sanctifies ordinary life (Schuurman, 2004). This alternative understanding of ordinary work holds that ministry occupations are important service to God and to God’s work in humanity, but ordinary work is simply a necessity and does not have divine importance. Although not a complete recapitulation of the Medieval Catholic understanding of work, this teaching does return to a sacred/secular distinction between types of work. This revised understanding recently has been expressed most clearly by protestant theologian Stanley Hauerwas in this critique of John Paul II’s *Laborem Exercens* in which the Pope spoke of the importance and divine character of work:

> Work gives us the means to survive, be of service to others, and, perhaps most of all, work gives us a way to stay busy. For while work may not be ultimately fulfilling, it is at least a great gift – a hedge against boredom. Attributing greater significance to work risks making it demonic as work then becomes an idolatrous
activity through which we try to secure and guarantee our significance, to make “our mark” on history. (Hauerwas, 48).

Jacques Ellul is another significant protestant thinker who has espoused a similar understanding, saying, “[W]ork has no ultimate value, no transcendental meaning. Before God, it is that which draws us to survive and characterizes us as human beings” (cited in Schuurman, 2005, p. 83). Badcock (1998) argued that work is an important response to God. He also stated, over and against the classic protestant understanding of vocation, that there are those who are called distinctly into ministry vocations and others who have a great deal of freedom to select fitting occupations for themselves rather than trying to discover a single occupation to which God has called them. This thinking, although not specifically elevating the work of ministers over ordinary work, would seem to subtly diminish the spiritual importance of ordinary work. In speaking of a friend’s claim that God called him to be fireman, Badcock stated:

I am however, unable to agree with his claim that God called him to be a fireman. The call of God in the Bible is the call to do something that can be directly characterized as religious in quality – for example, some action to which the Word of God directs us. (p. 106).

The teaching of the modern Roman Catholic Church appears to be somewhat ambiguous in regard to the value of ordinary work. Jensen (2006) said of the Medieval monastic ideal:

Though the spiritual classics of this period are rarely as crass as to suggest that contemplation is to be valued above all other kinds of work, most writings devoted to contemplatives assume degrees of progress away from the active life into ever-deeper communion with God. (p. 32)
However, Placher (2005) says that following the protestant reformation a blurring of the distinction between sacred and secular occupations has occurred:

Catholics retained the medieval ideal of “vocation” as a call to be a priest, a nun, or a monk; Protestants insisted that any job could equally be a vocation. Those sharp lines have recently grown fuzzier. Many protestant denominations lack enough people going into ordained ministry and are looking for ways to emphasize that particular kind of vocation. Far more dramatically, on the Catholic side, in 1965 the Second Vatican Council declared that in “even the most ordinary everyday activities” people can “justly consider that by their labor they are unfolding the Creator’s work, consulting the advantages of their brother men, and contributing by their personal industry to the realization in history of the divine plan….Hence, the norm of human activity is this: that in accord with the divine plan and will, it should harmonize with the genuine good of the human race, and allow men as individuals and as members of society to pursue their total vocation and fulfill it.”

Catholic doctrine, however, continues to draw a strong distinction between clergy and laity. The official teaching of the Roman Catholic Church is summarized in the *Catechism of the Catholic Church* (Catholic Church, 2000), which defines Holy Orders as:

> The Sacrament of Apostolic Ministry by which the mission entrusted by Christ to his Apostles continues to be exercised in the Church through the laying on of hands. This sacrament has three distinct degrees or ‘orders’: deacon, priest, and bishop. All three confer a *permanent, sacramental character*” (p. 890, emphasis added).

This sacramental character described above is considered permanent, that is, a priest cannot ever cease to be a priest, even in death. Badcock (1998) noted:

> “Certainly as early as Cyprian (ca. 200-258) in the West, the idea had developed that the clergy have a relationship with Christ that differs from that of other people: the clergy have become a separate class of human mediators, in the sense that without them there is no sacramental access to God.” (p. 102)

This understanding clearly distinguishes the person of the priest, rather than the office of the priesthood (as in the classic protestant understanding) as that which is
special and holy. Again, the definition of Holy Orders does not address ordinary occupations, but does reinforce the distinction between sacred and secular occupations.

Going even beyond the statements about work made by the second Vatican counsel and Pope John Paul II in his *Laborem Exercens*, the Opus Dei prelature places special emphasis on the divine importance of ordinary work. Similar to a movement beginning in the late 14th century called *Devotio Moderna* (“New Devout”; Placher, 2005) Opus Dei teaches that ordinary work is a venue for service to God (Allen, 2005). The emphasis on ordinary work among the members of this small group within Roman Catholicism may reflect the lack of importance and esteem for ordinary work in Roman Catholic theology since the time of the protestant reformation in the 16th century.

These disparate views of which occupations constitute service to God and which do not are likely to influence the laity. Although it would be difficult to measure the teaching about work that is implicitly or explicitly communicated from within an individual’s church or faith community, there is anecdotal evidence that such communication is indeed received by college students and influences how they think about the worth of their careers (Schuurman, 2004). Christopherson (1994) quoted an evangelical minister regarding the sense he gets from his congregation:

> They would never call you a priest to save their little lives, but if you want to clear out the debris and the labels, that is what you do. You are a go-between, you are a special representative of God, and boy I’ll tell you it is a mixed blessing, but it is a blessing, it is a privilege, an honor, a holy responsibility… (p. 227).

Mackenzie (1997) indicated that “ordained pastoral ministry or missionary service is elevated by Christians above other vocations and they feel the need to pursue these even when they don’t seem to fit” (p. 3). Clearly some Christians regard the ministry as a
higher, more God-pleasing occupation and may select career paths based on this belief, and others believe that all career options are pleasing to God.

Research on religious views of work

Very little research has been done on the influence of religious beliefs on the work lives of adherents. Some academic interest in the religious concept of work began with Max Weber’s (1958) sociological treatise *The Protestant Ethic and the Spirit of Capitalism*. In this work, Weber expounded on the idea that the “Protestant work ethic” in the United States, which led to the dominance of capitalism, was the result of the Calvinist doctrine of Predestination. According to Weber, those who inherited the Calvinistic doctrine of Predestination, including the Presbyterian, Reformed, Methodist and Baptist traditions were interested in proving that they were among the elect of God.

The Reformed doctrine of Predestination (also known as double predestination) is the teaching that God has, from eternity, elected some people to eternal life and others to damnation without regard to any act or belief of the part of the individual. Further, those whom God has elected, He regenerates by the Holy Spirit and thus they will inevitably come to have faith in Jesus. Weber argued that through the influence of this doctrine, some began to think that temporal success was an indication of God’s favor on them. Therefore, to prove to themselves that they were among the elect, they developed a strong work ethic of achievement, which became known as the Protestant Work Ethic.

Davidson and Caddell (1994) attempted to test this hypothesis by comparing the attitudes toward work of people from Calvinist and non-Calvinist traditions. They assumed that those in Calvinist traditions would be more likely to view their occupations
as a divine calling. They had participants indicate which of the following definitions best fit their occupational situation:

Work as a calling: My work has special meaning because I have been called to do what I’m doing regardless of how much time it takes or how little money I earn; I was put on this earth to do what I am doing.

Work as a career: I am pursuing a lifelong career which I feel is important; I chose to do this kind of work throughout my life; I might change where I work, but I’m not likely to change the kind of work I do.

Work as a job: I am paid to perform a service; I have been paid to do other things at other times, and I am willing to do other types of work in the future if the pay and security are better. (p. 139)

Denominational affiliation (Calvinist or non-Calvinist) was not found to be predictive of whether a person viewed their work as a divine calling, but they found that people’s personal faith as measured by religious salience, participation in religious services and social justice beliefs did contribute to a person’s conception of their career as a calling. Fifteen percent of their sample of churchgoers viewed their work as a calling according to the definitions above. Davidson and Cattell (1994) found that those who worked with people (which would include ministry work) were more likely to say that their work was a divine calling than were those who worked with things.

Wrzesniewski and colleagues (1997) also studied the relationships between conceptions of job, career and calling. They used the following vignettes to measure the distinction between job, career and calling, requiring participants to indicate whether each of the following vignettes were “very much,” “somewhat,” “a little,” or “not at all like me.”
Job
Mr. A works primarily to earn enough money to support his life outside of his job. If he was financially secure, he would no longer continue with his current line of work, but would really rather do something else instead. Mr. A’s job is basically a necessity of life, a lot like breathing and sleeping. He often wishes the time would pass more quickly at work. He greatly anticipates weekends and vacations. If Mr. A lived his life over again, he probably would not go into the same line of work. He would not encourage his friends and children to enter his line of work. Mr. A is very eager to retire.

Career
Mr. B basically enjoys his work, but does not expect to be in his current job five years from now. Instead, he plans to move on to a better, higher level job. He has several goals for his future pertaining to the positions he would eventually like to hold. Sometimes his work seems like a waste of time, but he knows that he must do sufficiently well in his current position in order to move on. Mr. B can’t wait to get a promotion. For him, a promotion means recognition of his good work, and is a sign of his success in competition with his coworkers.

Calling
Mr. C’s work is one of the most important parts of his life. He is very pleased that he is in this line of work. Because what he does for a living is a vital part of who he is, it is one of the first things he tells people about himself. He tends to take his work home with him and on vacations, too. The majority of his friends are from his place of employment, and he belongs to several organizations and clubs relating to his work. Mr. C feels good about his work because he loves it, and because he thinks it makes the world a better place. He would encourage his friends and children to enter his line of work. Mr. C would be pretty upset if he were forced to stop working, and he is not particularly looking forward to retirement.

They also had participants respond to 18 true or false items such as “I view my job primarily as a stepping stone to other jobs” which were taken from the above descriptions. Finally, participants rated their life, health and job satisfaction as well as their health and social status. Their findings indicated that although job and calling were inversely related to one another (related to endorsement of statements about fulfillment or lack of fulfillment), the concept of career was independent of both job and calling (related to endorsement of statements about advancement). The authors were able to
determine that even within a single occupation title, administrative assistant, all three work-orientations were represented. This research highlights the fact that individuals within similar work environments place different meaning upon their occupations. This study did not include religious commitment as a variable, but seems to indicate that people attach different subjective meaning to their work lives. The crude measurement of job conception and the overlap between predictor and criterion variables are serious limitations of this study.

More recently, Gupta and Tracey (2005) investigated the influence of cultural values (i.e., Dharmic values) on congruence across samples of Asian Indian American (Asian Indian/East Indian, and other South Asian countries) participants and participants who self-identified as White/Caucasian. The Inventory of Children’s Activities-Revised (ICA-R; Tracey, 2002; Tracey & Ward, 1998) was used to measure interests. Congruence was found to be lower for Indians than for Whites. Additionally, in multiple regression, ethnicity was found to predict level of congruence, but the addition of a measure of Dharmic values and an interaction term between ethnicity and Dharmic values did not significantly increase the prediction of congruence. Thus, Dharmic values were not found to moderate the relation between ethnicity and major congruence. Gupta and Tracey did not investigate a moderator of the congruence to satisfaction relationship, but this study is nevertheless interesting in that it investigated the role of a religio-cultural variable on student’s selection of college majors.

Finally, Duffy and Blustein (2005) recently examined the role of spirituality in career development. They theorized that, particularly during late adolescence, spirituality
and religion may play a role in coping with and adapting to vocational challenges. They examined career self-efficacy (“the degree to which individuals believe that they can successfully complete tasks that are necessary in making career decisions”, p. 430) and students’ tendency to foreclose prematurely on a career choice. Their sample of 144 students at a Roman Catholic university completed the Commitment to Career Choices Scale (CCCS; Blustein et al., 1989) and the Career Decision Self-Efficacy scale (Taylor & Betz, 1983), along with a Spiritual Assessment Inventory (Hall & Edwards, 1996) and Religious Motivation Scale (Gorsuch & McPherson, 1989). Results indicated that Intrinsic Religiousness and Spiritual Awareness “each served as significant predictors of career decision self-efficacy” (p. 437). They did not find a connection between religiousness and spirituality and commitment to occupational choices, however. The authors explicitly called for more research on the connection between religion/spirituality and career variables, stating:

Additional research in this area needs to address the specific way that an individual’s spiritually [sic] and religiousness may influence their career development. Studies need to be completed addressing the impact that high and low levels of spirituality and religiousness might have on specific career choices. (p. 438)

From the scant research on the relevance of religious beliefs on work, it appears that people give different subjective meaning to their work lives (Wrzesniewski et al., 1997), which may be related to religious commitment or beliefs (Davidson and Caddell, 1994). It also appears that religious commitment may influence important career behaviors (Duffy & Blustein, 2005), though the mechanism for this relationship has not been established. An attempt to measure the influence of the specific religio-cultural
belief of Dharmic values (Gupta & Tracey, 2005) did not support the authors’ moderation hypothesis, but provides an example of research that addresses a specific nuance of belief on career behavior.

**Summary and Hypotheses**

Holland’s (1997) theory that congruent vocational choices are related to positive outcomes such as job satisfaction has been studied extensively and found to be supported, but only by very modest correlations. This has prompted researchers to improve their instrumentation and methodology, including investigating potential moderators of the relationship. The intent of the present research is to examine a potential moderating variable of the person-environment congruence to satisfaction relationship while addressing some of the methodological concerns raised by Spokane, Meir and Catalano (2000).

In particular, this study attempts to measure religiously committed individuals’ beliefs about the value of religious and non-religious occupations, to see if this variable moderates the relationship between congruence and college major satisfaction. From the recent resurgence in emphasis on the classic protestant understanding of vocation from some theologians, it appears that there are distinctly different beliefs held at present by Christian adherents in regard to the meaning of their work lives. For some, the work of those in ministry may be emphasized to the denigration of “ordinary work” but others may embrace a theology that values religious and non-religious occupations equally as areas of importance to God.
Based on the reviewed literature, two hypotheses are forwarded. First, in accordance with Holland’s (1997) theory, students who choose a college major that accords well with their vocational interests are expected to experience greater satisfaction with their majors. The results of previous research on the congruence/satisfaction relationship often have been weak, sometimes to the point of non-significance, and this has led scholars to suggest that methodological concerns may be to blame (Spokane et al., 2000). Consequently, in the present research, interests and satisfaction each will be measured with two different methods. This diversity is intended to allow for a more thorough treatment of the variables of interest by using different methods to ensure adequate coverage of the concepts. Additionally, for the same reason (i.e., previous methodological weaknesses) congruence will be calculated via two different mathematical formulae. It is therefore hypothesized:

**Hypothesis 1:** Congruence (calculated in each of two different ways) between students’ vocational interests (measured by two different instruments) and college majors is associated significantly with students’ greater satisfaction with their college majors (measured by two different instruments).

Additionally, based on the previously presented arguments, regarding the importance of examining moderators of the congruence/satisfaction relationship and the implications for individuals of different religious beliefs about the value of different types of work, it is argued that, for those with a deeply held faith, believing one’s current educational activities and intended career is of minimal importance to God is detrimental to satisfaction with those choices. Specifically, it is hypothesized:

**Hypothesis 2:** A measure of devaluation of ordinary work moderates the relationship between congruence and satisfaction such that more devaluation is associated with weaker correlations between congruence and major satisfaction.
CHAPTER III

METHOD

Participants

Participants were recruited from Christian colleges and universities via email. Students from Christian colleges with both Protestant and Catholic historic affiliations were solicited for participation. The offer to be entered into a drawing for a USB flash drive, and MP3 player, each worth about $50, was used as an inducement for participation.

A power analysis was conducted prior to data collection to determine the number of participants necessary to find an effect when alpha is set at .05 and a power level of .80 is desired. Given the “magic .30 correlational plateau” (Spokane, 1985; p. 335) that has been observed in the literature, an $R^2$ of .09 was used for the zero-order correlation between congruence and satisfaction. Because there is no existing research on the effects of religious values on the congruence satisfaction relationship, and because a .02 increment in $R^2$ is considered small yet meaningful (Cohen & Cohen, 1983), an $R^2$ increase of .02 was used for estimation of the second (direct effect of the proposed moderator) and third (interaction effect) steps of the multiple regression. This regression
configuration, when analyzed by power analysis, resulted in a required sample size of 350 participants.

A total of 720 participants completed the majority of the survey instrument. One hundred forty-seven participants were excluded from data analysis because they indicated that they intended to enter full-time ministry occupations following graduation. Another 109 participants were excluded from analysis because they claimed a religious affiliation other than Christian (e.g., stated they were Jewish, N = 17 participants), had a low religious commitment score (i.e., RCI-10 < 20, N = 76 participants), or were not sufficiently certain about graduating in their current major (i.e., Certainty < 3, N = 16 participants). Data analysis was conducted on the remaining sample of 464 participants among whom 337 (72.6%) were women and 126 (27.2%) were men. One participant did not report his or her gender.

In regard to ethnicity, 404 (87.1%) participants identified as Caucasian, 17 (3.7%) identified as African American, 14 (3.0%) identified as Asian-American or Pacific Islander, 9 (1.9%) identified as Latino/Hispanic, 1 identified as Native American (0.2%), and 7 (1.5%) identified as Multiracial. Other racial identifications claimed by respondents included “Asian Indian/Anglo,” “Lebanese,” “Black/African,” “Peruvian/Italian” and “Caucasian of Hispanic decent.” Three participants did not report an ethnic identification. Because of insufficient numbers of participants identifying with ethnicities other than Caucasian in this sample, data were collapsed across ethnic identification.

The mean age of participants was 20.29 (standard deviation = 2.09 years) with a range of 18 to 47 years. In regard to class standing, 93 participants (20%) reported first
year status, 120 participants (25.9%) reported sophomore status, 140 participants (30.2%) reported junior status and 105 participants (22.6%) reported senior status; only 6 participants (1.3%) failed to report their current class status.

Students reported their current GPA as follows: 120 (25.9%) stated it was between 3.6 and 4.0, 114 (24.6%) reported it as between 3.3 and 3.6, 96 (20.7%) stated it was between 3.0 and 3.3, 94 (20.3%) reported it was between 2.6 and 3.0, 25 (5.4%) stated it was between 2.3 and 2.6, 12 (2.6%) reported it was between 2.0 and 2.3, and 2 (.4%) reported a GPA below 2.0; one participant did not report current GPA. Finally, participants espoused a variety of denominational affiliations, which are detailed in Table 1. Among those eschewing denominational affiliation, the following were reported: “a Jesus follower,” “Follower of Christ not manmade doctrine,” “Follower of Jesus? Denominations are just divisions in the Body of Christ...,” “I do not apply myself to a denomination of any sort,” “I love Jesus,” “I'm a Christian, not a denomination [sic],” “Love,” “Personal relationship with Jesus Christ,” “The word of God, the truth has no limitations,” “Protestant,” “I believe that salvation comes from Christ and He [sic] and in God's Word the Bible...,” “grew up Catholic, attend non-denominational church also now; not directly religiously affiliated as of now,” and “Christian but not church of Christ.”
Table 1  
Denominational Affiliations of Participants

<table>
<thead>
<tr>
<th>Denomination</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglican (Anglican Mission in America)</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Baptist (American Baptist)</td>
<td>12</td>
<td>2.5%</td>
</tr>
<tr>
<td>Baptist (Southern Baptist)</td>
<td>37</td>
<td>7.8%</td>
</tr>
<tr>
<td>Baptist (Other)</td>
<td>39</td>
<td>8.2%</td>
</tr>
<tr>
<td>Bretheren</td>
<td>4</td>
<td>0.8%</td>
</tr>
<tr>
<td>Calvary Chapel</td>
<td>2</td>
<td>0.4%</td>
</tr>
<tr>
<td>Catholic (Roman Catholic)</td>
<td>52</td>
<td>11.0%</td>
</tr>
<tr>
<td>Church of Christ (UCC)</td>
<td>2</td>
<td>0.4%</td>
</tr>
<tr>
<td>Church of God, Indiana</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Christian and Missionary Alliance</td>
<td>5</td>
<td>1.1%</td>
</tr>
<tr>
<td>Conservative Congregational</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Episcopal</td>
<td>3</td>
<td>0.6%</td>
</tr>
<tr>
<td>Evangelical Free</td>
<td>5</td>
<td>1.1%</td>
</tr>
<tr>
<td>Friend (Quaker)</td>
<td>3</td>
<td>0.6%</td>
</tr>
<tr>
<td>Grace Bretheren</td>
<td>2</td>
<td>0.4%</td>
</tr>
<tr>
<td>Mennonite</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Methodist (United Methodist)</td>
<td>34</td>
<td>7.2%</td>
</tr>
<tr>
<td>Methodist (Free Methodist)</td>
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<td>0.8%</td>
</tr>
<tr>
<td>Mormon (LDS)</td>
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<td>Lutheran (ELCA)</td>
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<tr>
<td>Lutheran (LCMS)</td>
<td>7</td>
<td>1.5%</td>
</tr>
<tr>
<td>Lutheran (Other)</td>
<td>7</td>
<td>1.5%</td>
</tr>
<tr>
<td>Nazarene</td>
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<td>3.8%</td>
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<tr>
<td>Non-Denominational</td>
<td>103</td>
<td>21.8%</td>
</tr>
<tr>
<td>Orthodox (Eastern, Russian, Greek)</td>
<td>2</td>
<td>0.4%</td>
</tr>
<tr>
<td>Pentecostal (Assemblies of God)</td>
<td>19</td>
<td>4.0%</td>
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<tr>
<td>Pentecostal (Other)</td>
<td>11</td>
<td>2.3%</td>
</tr>
<tr>
<td>Presbyterian (PCUSA)</td>
<td>10</td>
<td>2.1%</td>
</tr>
<tr>
<td>Presbyterian (Other)</td>
<td>15</td>
<td>3.2%</td>
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<tr>
<td>Reformed Church in America</td>
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<tr>
<td>Salvation Army</td>
<td>1</td>
<td>0.2%</td>
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<tr>
<td>Wesleyan</td>
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<td>0.4%</td>
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<tr>
<td>Not Sure</td>
<td>16</td>
<td>3.4%</td>
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<tr>
<td>Not Religiously Affiliated</td>
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<td>(Eschewed a Denominational Label)</td>
<td>13</td>
<td>2.7%</td>
</tr>
<tr>
<td>Other (Unspecified)</td>
<td>6</td>
<td>1.3%</td>
</tr>
<tr>
<td>Multiply Affiliated</td>
<td>1</td>
<td>0.2%</td>
</tr>
</tbody>
</table>
Instruments

UNIACT-College/Adult. Vocational interests were measured using the 2006 revision of the revised unisex ACT interest inventory (UNIACT; Swaney, K. B. 1995), which was revised for use with college students and adults. The UNIACT-College/Adult (Appendix A) consists of 72 items that require participants to rate their preference for work-related activities. Response options of like, indifferent, and dislike are respectively coded as 3, 2, and 1, yielding scores that range from 12 to 36 for each of the six career areas subscales, Technical (Realistic), Science & Technology (Investigative), Arts (Artistic), Social Service (Social), Administration and Sales (Enterprising) and Business Operations (Conventional). Each subscale is comprised of 12 items.

Swaney (1995) reported reliability estimates between .77 (Enterprising) and .90 (Investigative & Artistic) for adult men and between .83 (Realistic) and .91 (Investigative, Artistic and Conventional) for adult women on the 90-item version of the UNIACT. Additionally, retest coefficients over 2 ½ years for college-bound seniors retested as college sophomores ranged from .60 to .69 for men and .55 to .71 for women. Split-half reliability was reported for Data/Ideas and People/Things summary scales between .67 and .92 for 8th and 10th grade students.

Savickas, Taber and Spokane (2002) reported convergent and discriminant validity for the UNIACT against four other widely-used inventories of vocational interests. They found that the six career area subscales correlated with their like-named counterparts well, with median scores on each of the six career areas correlating between r = .49 and r = .60, indicating that the instrument measures the RIASEC types similarly to
the other inventories, particularly the SDS and the SII. Also, they found that adjacent types correlated more highly than types that are separated on the RIASEC hexagon, as expected.

The 2006 revision of the UNIACT was developed with a sample of 4,019 persons over the age of 21 who participated in the ACT testing during the 2003-2004 academic year and it was normed on another set of individuals aged 21 to 59 (M = 29). Some of the 90 original items were rewritten to be more applicable to an adult population, and then the most reliable items were retained for a total of 72 items. The inventory was then normed on a group of 4,018 adults whose scores were weighted in order to create norms representative of the U.S. population in terms of gender, racial/ethnic group, age category, and geographic region. Although no post-norming validity or reliability data are available, the instrument is 80% identical to the 90-item version that has extensive research support (Swaney, 1995).

The UNIACT was selected for this study based on its long empirical history, its convergent validity with other major interest inventories (Savickas, Taber & Spokane; 2002), and its use in previous studies utilizing Prediger’s People/Things and Data/Ideas dimensions (Tracy, 2003; Tracey & Robbins, 2006). Additionally, there is the advantage that a measure of environment, the World of Work Map (WWM), was developed empirically using the UNIACT data from occupational incumbents, providing an equivalent measure of environment to be matched to an individual’s interests. Therefore both elements of congruence are calculated using a single conceptual framework, and congruence estimates should be maximized.
Inventory of Children’s Activities-Revised (ICA-R; Tracey, 2002; Tracey & Ward, 1998). The ICA-R (Appendix B) is a 30-item interest inventory with 5 indicators for each RIASEC scale (the competence scale items were not used.). Item response options range from don’t like at all to like a lot on a five-point Likert scale. The scores for each scale are summed to provide a single score for each RIASEC dimension, and these scores were used to produce Things/People and Data/Ideas scores. Tracey and Ward (1998) reported correlations between the ICA-R and the SII between .68 and .82 (M = .76) and alpha reliability estimates between .66 and .86 in a sample of adults (realistic $\alpha = .86$, investigative $\alpha = .74$, artistic $\alpha = .66$, social $\alpha = .77$, enterprising $\alpha = .75$, conventional $\alpha = .70$). The ICA-R provides a brief, validated secondary measure of the RIASEC types, which utilizes different response options and question types than does the UNIACT. It is included in this study to cover more completely the RIASEC domains, allow for comparison between congruence scores generated from the UNIACT and those generated by the ICA-R, and to further validate the ICA-R against an established interest inventory. By including a second measure of interests, the moderation hypothesis can be tested more completely.

Hoppock’s Job Satisfaction Blank (Hoppock, 1935). According to Tranberg, Slane and Ekeberg (1993), eight published studies have examined the relation between Holland code congruence and academic satisfaction. Only one of these studies found a statistically significant correlation (Meir & Erez, 1981). Different measures of satisfaction have been used, most commonly single-item satisfaction questions. For example, Frantz and Walsh (1972) used the VPI to generate a Holland code and used first letter agreement to
measure congruence. Satisfaction was measured in their study using a “Student Questionnaire”, which was not defined in the paper.

Tinsley (2000) called for using validated instruments in studies attempting to measure the relationship of congruence to satisfaction. Accordingly, the Global Satisfaction Scale from Hoppock’s (1935) Job Satisfaction Blank (JSB) was utilized for this study, but it was adapted to measure satisfaction for one’s college major rather than satisfaction for one’s job. Specifically, the word “job” was replaced by the words “college major” in each of the questions and response options. For questions 1, 2 and 4, no other alterations were necessary. For item 3, which has to do with the desire to quit one’s job for another, item responses had to be altered to reflect the fact that college students do not often earn a salary for their major studies but may be influenced to remain in a major based on the potential for future earnings.

This four-item instrument requires respondents to endorse one of seven response options. The items are summed to create a total score that ranges from 4 to 28 with higher scores indicating greater job satisfaction. The alpha reliability for the original instrument was reported to be between .76 and .89 by McNichols, Stahl, and Manley (1978) and to be .87 by Tokar and Subich (1997). McNichols and colleagues (1978) administered the instrument to over 28,000 individuals and found it to have an even distribution not indicative of a ceiling or floor effect, and to differentiate between higher and lower ranked military personnel. Additionally, they found the JSB to correlate highly with Job Descriptive Index (JDI; Smith, Kendall, & Hulin, 1969) scales of Work (.73), Pay (.16),
To what extent are you satisfied with your declared Major” and was anchored as follows: 1 = “not at all satisfied”, 3 = “somewhat satisfied”, 5 = “neutral”, 7 = “satisfied”, 9 = “very satisfied.” Previous research has used varied and novel tools to measure major satisfaction (Frantz & Walsh, 1972; Holland, 1968; Morrow, 1971). Logue and colleagues (2007) argued for the use of a single-item measure for assessing major satisfaction on the grounds that such an item is conceptually the aggregate of all facets of satisfaction. They found no positive correlation between Enterprising interests and satisfaction in a sample of business students, but they did find negative correlations between satisfaction and Realistic, Investigative and Artistic interests for this sample, consistent with Holland’s (1985) theory. This method of measuring major satisfaction was added for redundancy and to provide a check for the current adaptation of the JSB (Hoppock, 1935).

Two additional single-item satisfaction measures were added to address intrinsic and extrinsic satisfaction for participant’s choice of college major. The extrinsic satisfaction question read, “To what extent are you satisfied with your major in terms of the financial security and professional opportunity it will provide” anchored on the same 9-point scale. The intrinsic satisfaction question read, “To what extent are you satisfied with your major in terms of your enjoyment of the course material.”
Students also were asked “How certain are you that the major you have now is the major you will have at graduation” with response options anchored as follows: 1 = “not at all certain”, 3 = “somewhat certain”, 5 = “neutral”, 7 = “mostly certain”, 9 = “very certain.” This item was used as a criterion for inclusion as the present research requires respondents with some commitment to their major in order for meaningful data to be collected. Students indicating less than 3 on the 1 to 9 scale were excluded from analysis.

Valuation of Ordinary Work Scale (VOWS). A measure of attitudes toward religious and non-religious work was constructed from the literature on attitudes toward work among Christians and through consultation with ministers conversant in the doctrine of vocation or calling. A total of 13 items were created to cover elements such as the direct comparison between sacred and secular occupations, the role of work to support ministry, the role of religious proselytism in the workplace, service to God within Church-based social services, and the idea that God calls missionaries and ministers but not those in ordinary occupations. Item responses are made on a 1 to 7 scale including the responses, 1 = “Strongly Disagree,” 2 = “Disagree,” 3 = “Somewhat Disagree,” 4 = “Neither Agree nor Disagree,” 5 = “Somewhat Agree,” 6 = “Agree,” and 7 = “Strongly Agree.”

Initial pilot testing (N = 45) of the instrument was conducted with a convenience sample of staff members at a faith-based mental health clinic and members of an online discussion group dedicated to the Lutheran doctrine of vocation. This pilot yielded an internal reliability estimate of .73 when 9 of 13 original items were retained (this was improved from .67 prior to deleting 4 items). Significant mean differences between the
members of the vocation discussion group (N = 28, M = 15.38) and the broadly
Evangelical mental-health clinic staff (N = 19, M = 21.36, p < .01) demonstrated initial
criterion validity of the measure because the members of the discussion group have a
common commitment to the classical protestant view of work while the mental-health
clinic staff would be expected to have more mixed views. The retained items included, “I
believe that it is easier to serve God as a minister than as a mechanic,” “I believe that
Christians who are not in ministry are not living out the call of discipleship with their
whole lives,” “I believe that only ministers have a calling from God,” “I believe that God
wants all Christians to serve as missionaries if possible,” “I believe that the real value of
work is to make money to support missionaries and ministers,” “I believe that God is
with ministers more fully than everyone else,” “I believe that giving up everything for
Jesus means full-time ministry,” “I believe that teaching in a Christian school serves God
more than teaching at a private or public school,” and “I believe that you ought to use
your job to reach the lost or help people spiritually if you want to serve God with it.”

Subsequently, three additional items taken from the Survey of Reformed
Distinctives (SORD; Eames, 2006) were included in the measure. These items were “God
is more pleased by the work of pastors and missionaries than plumbers and bankers,”
“There is nothing spiritual about studying sociology or physics” and “I believe that some
legitimate occupations are more ‘sanctified’ than others.” These items were added
because they came from an existing, validated scale designed to distinguish between
Calvinists (who would be expected to endorse a low differential evaluation between
ministry and non-ministry occupations) and non-Calvinist Evangelical Christians (who
would be expected to endorse a higher differential evaluation). These items were altered slightly to the form “I believe…” to match the stem of the other items.

Additionally, 8 reverse-scored items were created to balance the above set of items. These items were, “I believe that no work is "just a job" if done out of love for God,” “I believe that my work as a college student is spiritually significant,” “I believe that an ordinary job, like customer service, is a holy occupation,” “I believe that Christians serve God by doing their jobs faithfully,” “I believe that God cares for His creation largely through the agency of human work,” “I believe that ordinary work is a venue for service to God,” “I believe that ministry work is no more important to people in my church than ordinary jobs,” and “I believe that loving God in your work means serving your boss, co-workers and customers well.” These items were not pilot-tested. Items were mixed randomly before presentation (see Appendix E). After reverse scoring, all items on the VOWS are summed such that more agreement with items indicates a greater perception of the distinction between sacred and secular vocations.

**Intent to Enter Full-Time Ministry.** A single-item measure of a participant’s intent to work in a religious setting was deemed necessary to exclude individuals who may intend to work in a ministry occupation despite their non-ministry college major. For example, some individuals in education may intend to enter the mission field or full-time ministry work as nuns or brothers of a religious order. Since different occupational goals could exist within a single major, this item will assess a student’s intent to enter full-time ministry. For such individuals, the proposed moderator would not be expected to affect their college major satisfaction. This item reads, “I intend to work in full-time ministry..."
after graduation” along with “yes” and “no” response options. Participants responding “yes” to this question were excluded from analysis.

*Religious Commitment Inventory – 10.* The Religious Commitment Inventory – 10 (RCI-10; Worthington et al., 2003) was included to ensure that the VOWS is not merely a proxy for religious commitment. The RCI-10 (Appendix F) is a ten-item measure of “the degree to which a person adheres to his or her religious values, beliefs and practices and uses them in daily living” (p. 85). It was designed to limit the influence of denominationally distinctive beliefs. The alpha reliability of the RCI-10 was found to be .93 and the three-week test-retest reliability was found to be .87 in a sample of 155 religiously diverse individuals (Worthington et al, 2003). Kliewer and colleagues (2006) reported an alpha level of .93 in a sample of 101 African Americans aged 9 to 13. Discriminant validity for the RCI-10 was demonstrated with non-significant correlations with Spirituality (as defined as exemplary human characteristics) and morality. The RCI-10 had a high correlation with the frequency of an individual’s religious participation. Items are assessed on the following scale, 1 = “not at all true of me,” 2 = “somewhat true of me,” 3 = “moderately true of me,” 4 = “mostly true of me,” and 5 = “totally true of me” (Worthington, 2003). Responses are summed with higher scores indicating greater personal commitment to one’s religion. A total score of 20 on the RCI-10 was required as a criterion for inclusion of respondents because the moderation effect of the VOWS between interests and major satisfaction is hypothesized to be contingent upon some degree of religious commitment.
Marlowe-Crowne Social Desirability Scale – 10. A short version of the Marlowe-Crowne Social Desirability Scale (M-C SDS; Crowne & Marlowe, 1960) developed by Strahan and Gerbasi (1972) was included as a test of the validity of the VOWS measure. The M-C 1(10) (Appendix G) is a ten-item measure of socially desirable responding. Ten statements are presented with “true” and “false” response options. Items are keyed in a socially desirable direction and are split such that half (5) are positively worded and half (5) are negatively worded. Responses are summed to a total score such that higher scores indicate greater socially desirable responding.

Strahan and Gerbasi (1972) performed principal components analysis on the original 33 items of the M-C SDS and extracted the best functioning 20 items, from which they constructed two parallel short forms. The reliability coefficients for the M-C 1(10) were found to be between .59 and .70, as compared to .73 to .87 for the original. The authors reported high correlations (“.80s or .90s”; p. 192) between the short form and the original, with the acknowledgement that the latter subsumes the former. Additionally, the authors report that the distribution of the M-C 1(10) was “essentially unimodal and nearly symmetric” (p. 193) with a mean of 4.5 and a standard deviation of 2.1. These psychometric properties are sufficient for the purpose that this instrument will serve in this study.

Religious Orientation Scale. Since Duffy and Blustein (2005) found religious orientation to be relevant to career self-efficacy in a sample of students at a Roman Catholic college, the Religious Orientation Scale (Allport & Ross, 1967), a measure of religious orientation was included as a check to ensure that the VOWS measure did not
inadvertently measure either intrinsic or extrinsic religiosity predominantly. Leong and Zachar (1990) found that a three-factor solution (one intrinsic and two extrinsic factors) best represented data from samples of American and Australian college students. The ROS (Appendix H) is a fifteen-item scale that measures intrinsic religiosity (9 items, one reverse scored), extrinsic-social religiosity (3 items) and extrinsic-personal religiosity (3 items). Items are endorsed on a 5-point Likert scale ranging from Strongly Disagree to Strongly Agree. Responses to each subscale are summed to intrinsic, extrinsic-social and extrinsic-personal scores. The alpha coefficient for the intrinsic scale were reported to be .87 in a sample of 285 white college students in the United States (Leong & Zachar, 1990) and alpha levels for the shorter extrinsic scales were reported as .63 for extrinsic-social and .62 for extrinsic-personal scales for the same sample.

**Demographic Questionnaire.** Additional survey questions include the college of one’s attendance, class rank, age, ethnic identification, sex, declared major, current estimated GPA and denominational affiliation (Appendix I). Participants’ names and email addresses were gathered at the end of the study for inclusion in the prize drawing and were separated from the rest of the data immediately after data collection. Finally, an open-ended comments box was provided for participants to voice concerns about the study.

**Procedure**

The above research instruments were reviewed and approved by the Institutional Review Board of this university. Participants were recruited from Christian colleges and universities known for their commitment to religious values and teaching. A link to the
study was emailed to the students along with a request for their participation. Similar to other online studies, student participants read and checked a box that they understand the informed consent page of the study before being administered any items. In the informed consent, participants were told that they could withdraw from the study at any time.

As the VOWS measure has not been previously validated, it was presented first, followed by both measures of vocational interest (UNIACT, ICA-R). The measure of social desirability was then presented followed by the measures of religiosity (RCI-10, ROS), as to minimize the contamination of the latter on the former. Students were then asked their primary college major (if they have more than one) followed by the major satisfaction questions. Demographic questions were asked next, including college of attendance, sex, class standing, age, GPA, race/ethnicity and denominational affiliation. At the end of the data collection period, names were selected at random to receive the prizes.

**Statistical Analysis**

*Calculation of Congruence.* Vocational interest scores from the UNIACT-College/Adult version, were standardized according to the UNIACT population norms and transformed into Prediger’s (1982, Prediger & Vansickle, 1992) People-Things and Data-Ideas dimensions using the following formulae (Swaney, 1995, p. 126):

\[
\text{Things/People} = (2 \times R + I - A - 2 \times S - E + C), \quad \text{Data/Ideas} = (1.73 \times E + 1.73 \times C - 1.73 \times I - 1.73 \times A).
\]

ICA-R scores were standardized based on the sample mean of the study and entered into the same formulas to determine the coordinates of participants' interests on the WWM. Students selected their primary major code from a list and their reported
major was coded by the author according to the standard ACT rubric into one of the 26 career clusters of the WWM. The student’s self-selected major area was used as the coordinate on the WWM, unless the student did not respond to this item, in which case the reported major was coded into WWM coordinates. As an example, the major Human Resources Development/Training is most similar to career area A (Employment-Related Services) on the World of Work Map, and it is located at $T = 57.5$ (toward the Data pole) on the Data/Ideas axis and $T = 37.7$ (toward the People pole) on the People/Things axis. The coordinates of the students’ interest inventories and the coordinates of their college majors were then compared to determine congruence using each of the following two methods.

As reported by Tracey and colleagues (2005), Euclidian distance is simply the straight-line distance between two points in two-dimensional space. The square root of the squared difference in X coordinates (Things/People dimension) added to the squared difference in Y coordinates (Data/Ideas dimension) gives the Euclidian distance between the two points. It is calculated with the formula: $\text{SQRT}((\text{interest T/P} - \text{WWM T/P})^2 + (\text{interest D/I} - \text{WWM D/I})^2)$. For this method of calculating congruence, perfect congruence between the two points results in a Euclidian distance of 0, with larger numbers indicating greater distance between the points. Figure 2 illustrates the Euclidian distance between two points on the Things/People and Data/Ideas dimensions.

Tracey and Robbins (2006) reported using a linear transformation of the angular distance called the A index (Fisher, Heise, Bohrnstedt, & Lucke, 1985) to calculate the distance between points as described by the angle formed by the vectors of the interest
point and the college major point. However, this adaptation resulted in a sign change such that negative correlations between Euclidian distance and the A index were positively related. To avoid this confusion, the simple angular distance, or measure of the angle formed between the points representing a participant’s interest inventory scores and his or her chosen college major connected by a straight line to the point of origin (0,0) was used in this study. The angular distance ranges between 0 degrees (perfect congruence) and 180 degrees (perfectly discrepant). Figure 3 demonstrates the angular distance between two points.

*Tests of Hypotheses.* Statistical analysis of the data was conducted with SPSS 12 computer software. Preliminary descriptive statistics for all variables and a reliability analysis of the VOWS was conducted. Then the VOWS was correlated with the RCI-10 (Worthington et al., 2003) and the ROS (Allport & Ross, 1967; Leong & Zachar, 1990) to assess its discriminant validity.

The hypotheses of this research were tested using regression. They are:

**Hypothesis 1:** Congruence between students’ vocational interests and college majors is associated significantly with students’ greater satisfaction with their college major.

**Hypothesis 2:** A measure of devaluation of ordinary work moderates the relationship between congruence and satisfaction such that more devaluation will result in weaker correlations between congruence and major satisfaction.

These hypotheses were tested with a series of 8 regression equations that reflect the various combinations of the two methods of measuring interests (i.e., UNIACT and ICA-R), the two methods of measuring congruence (i.e., Euclidian distance and angular distance) and the two methods of measuring satisfaction (i.e., JSB and single-item). All
scores were standardized prior to moderation analysis (Frazier, Tix & Barron, 2004). In each regression, the congruence score was entered at the first step, and if this step was significant at p<.05 the first hypothesis was supported. At the second step of each regression, the VOWS variable was added to the equation. Finally, at the third step, an interaction (i.e., congruence x VOWS) term was added to the regression equations to test the moderation hypothesis (Figure 4). Moderation is evident if the amount of additional variance explained by the addition of the interaction term is statistically significant. Figures of the slope of the regression lines for satisfaction on congruence were plotted with both low (one standard deviation below the mean) and high (one standard deviation above the mean) levels of the VOWS to help in the interpretation of significant moderation effects.

Figure 4. Model of hypothesized moderator design.
CHAPTER IV
RESULTS

Instrument Psychometrics

Valuation of Ordinary Work Scale. Examination of corrected item-total correlations revealed four items with correlations below .20 which were thus not included in the composite measure of attitudes toward ordinary work (Cronbach, 1984). The items removed were as follows: “I believe that ministry work is no more important to people in my church than ordinary jobs,” “I believe that only ministers have a calling from God,” “I believe that you ought to use your job to reach the lost or help people spiritually if you want to serve God with it,” and “I believe that God cares for His creation largely through the agency of human work.” It appeared that the wording of these items might have been less clear than the remaining items.

The trimmed instrument, called the Valuation of Ordinary Work-Revised (VOWS-R) was found to have an internal consistency reliability estimate of $\alpha = .76$. For 15 individuals, the mean for the available items was substituted for a missing item. The VOWS-R had a mean of 33.81 and a standard deviation of 9.65 and a range of scores from 16.00 to 85.33. The VOWS-R was correlated modestly with the JSB ($r = -.25$) and the single item measure of college major satisfaction ($r = -.25$) indicating that those who perceive a greater difference between sacred and secular occupations were less satisfied with their college majors. Additionally, the VOWS-R correlated moderately with the
measures of religiosity (RCI-10, \( r = -.35 \); ROS-I, \( r = -.38 \); ROS-EP, \( r = .21 \)). These correlations indicate that perceiving a distinction between sacred and secular work was associated with lower intrinsic religiosity and commitment, and higher extrinsic-personal religiosity. These correlations were not so high as to indicate excessive conceptual overlap between the VOWS-R and aspects of religiosity. Finally, small but significant correlations were observed between the VOWS-R and gender \( (r = -.19) \), class standing \( (r = -.12) \) and self-reported GPA \( (r = .11) \) indicating that greater distinction between sacred and secular work was related to being male, being further from graduation, and having a lower GPA (see Table 2).

**Vocational Interest Measures.** Missing data from RIASEC subscales on both vocational interest measures were replaced with the mean of the other items obtained from that respondent on the subscale. No more than one item was replaced per subscale. A total of 44 participants had missing data on one of the subscales of an interest inventory.

Since reliability coefficients for vocational interest inventories are frequently presented separately by gender (Swaney, 1995), coefficient alphas are provided separately for men and women below. Alpha reliability for the 2006 revision of the UNIACT interest inventory (Swaney, 1995) subscales measuring the six Holland types for women in the current sample are as follows: Realistic \( \alpha = .84 \), Investigative \( \alpha = .91 \), Artistic \( \alpha = .87 \), Social \( \alpha = .75 \), Enterprising \( \alpha = .79 \), and Conventional \( \alpha = .90 \). For comparison, the reliability coefficients reported by Swaney (1995) for the UNIACT-R in
### Table 2
Intercorrelations Among Study Variables

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<th></th>
<th>M</th>
<th>SD</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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<td>1. Gender</td>
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<td>2. Class Standing</td>
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<td>4. Age</td>
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<td>5. JSB</td>
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<td>6. Major Satisfaction</td>
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<td>-.032</td>
<td>-.032</td>
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<td>7. Extrinsic Major Satisfaction</td>
<td>6.63</td>
<td>2.24</td>
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<td>-.092</td>
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<td>8. Intrinsic Major Satisfaction</td>
<td>7.69</td>
<td>1.61</td>
<td>.078</td>
<td>-.057</td>
<td>-.029</td>
<td>-.016</td>
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<td>10. Marlowe-Crowne</td>
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<td>-.096</td>
<td>-.009</td>
<td>-.059</td>
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<td>11. RCI-10</td>
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<td>12. ROS-Intrinsic</td>
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<td>.167</td>
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<td>13. ROS-Extrinsic Personal</td>
<td>9.46</td>
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<td>14. ROS-Extrinsic Social</td>
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<td>-.035</td>
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<td>15. VOWS-R</td>
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<td>9.65</td>
<td>-.188</td>
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<td>.112</td>
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<td>16. UNIACT Angular Distance</td>
<td>74.87</td>
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<td>.048</td>
<td>-.051</td>
<td>-.065</td>
<td>.032</td>
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<td>17. UNIACT Euclidian Distance</td>
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<td>.007</td>
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<td>18. ICA-R Angular Distance</td>
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<td>50.75</td>
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<td>-.040</td>
<td>-.050</td>
<td>-.024</td>
<td>-.009</td>
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<tr>
<td>19. ICA-R Euclidian Distance</td>
<td>1.56</td>
<td>0.76</td>
<td>-.082</td>
<td>.007</td>
<td>.002</td>
<td>.005</td>
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*. Correlation is significant at the 0.05 level 2-tailed.
** Correlation is significant at the 0.01 level 2-tailed.

GPA scored as follows, 1 = "3.6 to 4.0," 2 = "3.3 to 3.6," 3 = "3.0 to 3.3," 4 = "2.6 to 3.0," 5 = "2.3 to 2.6," 6 = "2.0 to 2.3," 7 = "Below 2.0"
Table 2 (Continued)
Intercorrelations Among Study Variables

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*. Correlation is significant at the 0.05 level 2-tailed
**. Correlation is significant at the 0.01 level 2-tailed
GPA scored as follows, 1 = "3.6 to 4.0," 2 = "3.3 to 3.6," 3 = "3.0 to 3.3," 4 = "2.6 to 3.0," 5 = "2.3 to 2.6," 6 = "2.0 to 2.3," 7 = "Below 2.0"
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Intercorrelations Among Study Variables

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<td>.597 **</td>
<td>.587 **</td>
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* Correlation is significant at the 0.05 level 2-tailed
** Correlation is significant at the 0.01 level 2-tailed

GPA scored as follows, 1 = "3.6 to 4.0," 2 = "3.3 to 3.6," 3 = "3.0 to 3.3," 4 = "2.6 to 3.0," 5 = "2.3 to 2.6," 6 = "2.0 to 2.3," 7 = "Below 2.0"
a sample of 100 adult women were as follows: Technical (Realistic) $\alpha = .83$, Science (Investigative) $\alpha = .91$, Arts (Artistic) $\alpha = .91$, Social Service (Social) $\alpha = .85$, Business Contact (Enterprising) $\alpha = .86$, and Business Operations (Conventional) $\alpha = .91$. The alpha reliability estimates for the present sample of men were as follows: Realistic $\alpha = .87$, Investigative $\alpha = .89$, Artistic $\alpha = .85$, Social $\alpha = .78$, Enterprising $\alpha = .84$, and Conventional $\alpha = .90$. Again, for comparison, the reliability estimates reported by Swaney (1995) for the UNIACT-R in a sample of 100 adult men were as follows: Technical (Realistic) $\alpha = .88$, Science (Investigative) $\alpha = .90$, Arts (Artistic) $\alpha = .90$, Social Service (Social) $\alpha = .84$, Business Contact (Enterprising) $\alpha = .77$, and Business Operations (Conventional) $\alpha = .88$. The means for the six interest types, after converting raw scores to normed scores were as follows for women (N = 337): these standardized means were as follows: Realistic $T = 51.53$ (standard deviation = 9.10), Investigative $T = 46.98$ (standard deviation = 12.47), Artistic $T = 59.17$ (standard deviation = 10.88), Social $T = 58.36$ (standard deviation = 11.94), Enterprising $T = 52.08$ (standard deviation = 8.87), Conventional $T = 48.88$ (standard deviation = 9.76). For men (N = 126) the standardized scores were as follows: Realistic $T = 54.15$ (standard deviation = 9.67), Investigative $T = 46.31$ (standard deviation = 9.47), Artistic $T = 56.55$ (standard deviation = 10.09), Social $T = 57.33$ (standard deviation = 11.25), Enterprising $T = 52.49$ (standard deviation = 9.36), Conventional $T = 49.10$ (standard deviation = 9.51).

The alpha reliability of the Inventory of Children’s Activities-Revised (ICA-R; Tracey, 2002; Tracey & Ward, 1998) subscales for women were as follows: Realistic $\alpha =$
.85, Investigative $\alpha = .82$, Artistic $\alpha = .63$, Social $\alpha = .63$, Enterprising $\alpha = .66$, and Conventional $\alpha = .73$. For men these reliability estimates were as follows: Realistic $\alpha = .85$, Investigative $\alpha = .80$, Artistic $\alpha = .67$, Social $\alpha = .72$, Enterprising $\alpha = .65$, and Conventional $\alpha = .75$. Tracey and Ward (1998) did not provide reliability information separately by gender, but in a sample of college students they found overall reliability estimates as follows: Realistic $\alpha = .86$, Investigative $\alpha = .75$, Artistic $\alpha = .68$, Social $\alpha = .75$, Enterprising $\alpha = .76$ and Conventional $\alpha = .67$. In the present sample, the Artistic, Social and Enterprising subscales for women and the Artistic and Enterprising subscales for men fell below the .70 alpha level often accepted as indicative of acceptable reliability (Helms et al, 2006).

Table 3
Comparison between ICA-R Subscale Scores between present study and Tracey and Ward (1998)

<table>
<thead>
<tr>
<th>ICAR Subscale</th>
<th>Current Study</th>
<th>Tracey and Ward, 1998</th>
<th>Z test</th>
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<tr>
<td></td>
<td>N</td>
<td>M</td>
<td>SD</td>
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<td>Men</td>
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<td>3.37</td>
<td>0.95</td>
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<td>Investigative</td>
<td>3.72</td>
<td>0.79</td>
<td>2.96</td>
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<td>Artistic</td>
<td>4.02</td>
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<td>3.16</td>
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<tr>
<td>Social</td>
<td>3.88</td>
<td>0.69</td>
<td>3.29</td>
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<td>Enterprising</td>
<td>3.47</td>
<td>0.71</td>
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<tr>
<td>Conventional</td>
<td>3.00</td>
<td>0.81</td>
<td>2.86</td>
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<tr>
<td>Women</td>
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<tr>
<td>Realistic</td>
<td>337</td>
<td>2.86</td>
<td>0.89</td>
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<tr>
<td>Investigative</td>
<td>3.37</td>
<td>0.91</td>
<td>2.57</td>
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<tr>
<td>Artistic</td>
<td>4.19</td>
<td>0.59</td>
<td>3.64</td>
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<tr>
<td>Social</td>
<td>4.31</td>
<td>0.55</td>
<td>3.98</td>
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<td>Enterprising</td>
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<td>0.73</td>
<td>3.51</td>
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<tr>
<td>Conventional</td>
<td>3.26</td>
<td>0.81</td>
<td>3.30</td>
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Note: Means and Standard Deviations have been divided by 5 to match the method of reporting in Tracey and Ward (1989)
Table 3 provides a comparison between the mean scores observed in this sample and those found by Tracey and Ward (1998). Considerable differences in scores were observed between the present sample and the norm groups for both UNIACT and ICA-R instruments. For men, differences of greater than one half of a standard deviation from the norm group were observed on both the Social (T = 57.33) and Artistic (T = 56.55) subscales of the UNIACT. Similarly, for women, the Social (T = 58.36) and Artistic (T = 59.17) subscales were considerably different from the standardization group. In this sample, both men and women endorsed more Social and Artistic interests on the UNIACT than did those in the norm group. Similarly, mean differences between the present sample and data presented by Tracey and Ward (1998) show significant differences between the present college sample and the small sample of college students sampled by Tracey and Ward (1998). Statistically significant differences are evident in the Social and Artistic domains on the ICA-R, but also on the Investigative subscale, with both men and women endorsing more items than Tracey and Ward’s sample. Additionally, women in this sample appeared to endorse Realistic interests at a higher rate than the previous sample. Overall, it appears that this sample endorsed more Social and Artistic interests than did the comparison groups.

Evidence for the validity of the subscales of the ICA-R may be deduced from the correlations between ICA-R subscales and UNIACT subscales. Descriptive statistics and intercorrelations among the UNIACT and ICA-R subscales for both men and women are detailed in Table 4. Correlations between corresponding UNIACT and ICA-R subscales ranged from $r = .48$ (Social) to $r = .77$ (Investigative) for women and from $r = .61$
Table 4  
Intercorrelations among Interest Inventory Subscales for Men and Women

<table>
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<th>Interest Subscales</th>
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<td>-.023</td>
<td>-.062</td>
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SD 4.738  3.969  3.336  3.460  3.532

Men are below the diagonal and women are above the diagonal 
Means and Standard Deviations for Women on the side, Men below 
Men N = 126, Women N = 337
Table 4 (Continued)
Intercorrelations among Interest Inventory Subscales for Men and Women

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M 15.020  54.151  46.310  56.548  57.325  52.492  49.095

Men are below the diagonal and women are above the diagonal

Means and Standard Deviations for Women on the Side, Men below

Men N = 126, Women N = 337
(Enterprising) to $r = .78$ (Realistic) for men. For comparison, Savickas, Taber and Spokane (2002) correlated like-named subscales from five major vocational interest inventories and found the median subscale correlation for each of the subscales to range between $r = .49$ and $r = .60$. It would appear that considerable conceptual overlap between RIASEC subscales of both instruments.

Additionally, the pattern of correlations across instruments appears to be consistent with the theoretical hexagonal structure of vocational interests according to Holland’s (1997) theory. For example, in the sample of men, the Investigative scale of the ICAR correlates most strongly with the UNIACT Investigative score ($r = .73$), less strongly with the adjacent types on the Holland hexagon (UNIACT Realistic, $r = .56$; UNIACT Artistic, $r = .18$) and least well with the interest type on the opposite side of the hexagon (UNIACT Enterprising, $r = -0.02$). While not perfectly overlapping with the more well-established measure, the ICA-R appears to be measuring vocational interests in a theoretically consistent manner in this sample.

**Major Satisfaction Measures.** For four individuals who failed to provide responses for one of the four Hoppock’s Job Satisfaction Blank (Hoppock, 1935) items, the mean of the other three items was substituted. The alpha reliability of the 4-item revision of the JSB was $\alpha = .81$ ($N = 464$). This compares to a reliability estimate of the unaltered instrument of $\alpha = .87$ reported by Tokar and Subich (1997). This scale correlated with the single item measure of college major satisfaction $r = .76$ ($p < .001$), with the single-item measure of intrinsic college major satisfaction $r = .66$ ($p < .001$), and with the single item measure of extrinsic major satisfaction $r = .30$ ($p < .001$). In this
sample, the modified JSB was more highly associated with Intrinsic than Extrinsic major satisfaction. This appears to be consistent with the findings of McNichols and colleagues (1978) who correlated the JSB with the subscales of the Job Descriptive Index (Smith, Kendall and Hulin, 1969). McNichols and colleagues reported a higher correlation between the JSB and the Work subscale of the JDI ($r = .73$), than with the extrinsic subscales of the JSB (Pay, $r = .16$; Promotion, $r = .40$; Supervisor, $r = .46$; and Co-workers, $r = .36$). Additionally, the JSB was only slightly correlated ($r = .12, p < .01$) with the Marlowe-Crowne Social Desirability Scale – 10 (Crowne & Marlowe, 1960) in the current sample.

Finally, some criterion-related validity for the major satisfaction measures can be gleaned from their relationship with students’ reported certainty of graduating in the same major as they currently hold; it is assumed that more satisfied students would have more confidence in remaining in their satisfactory majors rather than selecting a different major. After statistically controlling for class standing and social desirability, certainty was found to correlate modestly with the modified JSB ($pr = .39, p < .001$) and the single-item measure of major satisfaction ($pr = .42, p < .001$). It would appear then that the modified JSB and the single-item measure of college major satisfaction are validly measuring the major satisfaction construct.

*Measures of Religiosity.* The Religious Commitment Inventory-10 (Worthington et al., 2003) had a reliability coefficient estimate of $\alpha = .88$ which is slightly lower than the estimate of .93 found in two previous samples (Worthington et al., 2003; Kliewer et al., 2006). Participants whose score on the RCI-10 was not at least 20 (76 participants)
were not included in data analysis. There were no cases of missing data for the remaining sample, whose scores on the instrument ranged from 20 to 50 with an average of 36.45 and a standard deviation of 7.70. Worthington et al (2003) reported scores from a sample of 150 Christian students at explicitly Christian colleges as having a mean of 38.5 and a standard deviation of 7.9, but a sub-sample of 278 Christian students from unidentified educational institutions had a mean of 25.8 with a standard deviation of 10.3. Because participants who scored below 20 were excluded from in this research, a meaningful comparison cannot be made between the present data and normative scores reported by Worthington et al (2003).

The subscales of the Religious Orientation Scale (Allport & Ross, 1967; Leong & Zachar, 1990) for this sample achieved reliability coefficients of $\alpha = .79$ (Intrinsic), $\alpha = .51$ (Extrinsic - Personal) and $\alpha = .60$ (Extrinsic – Social). These reliability coefficients fall short of the benchmark coefficients of $\alpha = .90$, $\alpha = .62$ and $\alpha = .65$ reported by Leong and Zachar (1990). Means and standard deviations for the ROS subscales are found in Table 2 along with intercorrelations among all study variables. The intrinsic subscale of the ROS correlated strongly with the RCI-10 ($r = .79, p < .01$) but the extrinsic subscales correlated weakly with this measure of religious commitment (personal, $r = .15, p < .01$; social, $r = .19, p < .01$). Worthington (2003) reported higher correlations between the RCI-10 and measures of religious participation ($r = .70$) and self-definition as spiritual as defined as “a belief and participation in some transcendental realm” ($r = .58$) than correlations between the RCI-10 and a measure of everyday morality ($r = .09$) and spirituality as defined as “quantities and characteristics of exemplary humanity (e.g.,
honesty, hope, compassion, love of humanity, etc.)” \(r = .18\). Thus, the observed
correlations between the RCI-10 and the ROS subscales appear to be consistent with
previous research.

**Marlowe-Crowne Social Desirability Scale.** The short version of the Marlowe-
Crowne Social Desirability Scale (M-C 1(10); Crowne & Marlowe, 1960; Strahan &
Gerbasi, 1972) was found to have a reliability coefficient of \(\alpha = .55\) with a mean of 3.88
and a standard deviation of 1.93. This compares to a mean of 4.5 and standard deviation
of 2.1 reported by Strahan and Gerbasi (1972), with reliability estimates reported to be
between .59 and .70. The M-C 1(10) was found to correlate significantly, albeit
modestly, with the modified JSB \(r = .13, p < .01\) and both intrinsic \(r = .10, p < .05\) and
extrinsic \(r = .11, p < .05\) major satisfaction. Additionally, the M-C 1(10) correlated with
the RCI-10 \(r = .13, p < .05\) measure of religious commitment.

**Tests of Hypotheses**

The first hypothesis stated that the congruence between vocational interests and
the college majors of participants correlates significantly with their job satisfaction as
measured by both the JSB and the single item measure of job satisfaction. The second
hypothesis stated that the measure of attitudes toward ordinary work moderates the
relationship between congruence and satisfaction.

Examination of the correlations between the four congruence measures and the
two measures of college major satisfaction by gender revealed a substantial difference
between men and women in regard to the first hypothesis. Table 5 shows the correlations
among the four congruence measures and the two major satisfaction instruments. The
Euclidian Distance method of calculating congruence on the UNIACT inventory correlated -.211 \((p < .05)\) with the JSB for men and .031 \((ns)\) with the JSB for women, and -.147 \((ns)\) with the single-item measure of major satisfaction for men, and .009 \((ns)\) with the single-item measure of major satisfaction for women. The Euclidian Distance method of calculating congruence on the ICA-R instrument correlated -.321 \((p < .01)\) with the JSB for men and .00 \((ns)\) with the JSB for women, and -.247 \((p < .01)\) with the single-item measure of major satisfaction for men and .004 \((ns)\) with the single-item measure of major satisfaction for women.

For the Angular Distance method of calculating congruence, no correlations between congruence and satisfaction were found to be significant. For the male sample, however, the magnitude of correlations with the JSB were similar to the non-significnat .095 correlation between congruence and academic satisfaction found by Tranberg, Slane and Ekeberg (1993) in their meta-analysis. The Angular Distance method of calculating congruence on the UNIACT instrument correlated -.114 \((ns)\) with the JSB for men and -.015 with the JSB for women, and .007 \((ns)\) with the single-item measure of major satisfaction for women.

Table 5
Means, Standard Deviations and Correlations with Major Satisfaction of Four Measures of Congruence

<table>
<thead>
<tr>
<th></th>
<th>Men (N = 126)</th>
<th>Women (N = 337)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>UNIACT Euclidian Distance</td>
<td>1.50</td>
<td>.79</td>
</tr>
<tr>
<td>ICA-R Euclidian Distance</td>
<td>1.66</td>
<td>.76</td>
</tr>
<tr>
<td>UNIACT Angular Distance</td>
<td>70.83</td>
<td>51.05</td>
</tr>
<tr>
<td>ICA-R Angular Distance</td>
<td>79.26</td>
<td>52.23</td>
</tr>
</tbody>
</table>

Note: Sat. is Single Item Measure of College Major Satisfaction.
satisfaction for men and -.048 (ns) with the single-item measure of major satisfaction for women. Finally, the Angular Distance method of calculating congruence from ICA-R data correlated -.081 (ns) with the JSB for men and .022 (ns) with the JSB for women, and -.054 (ns) with the single-item measure of major satisfaction for men and -.028 (ns) with the single-item measure of major satisfaction for women.

In sum, Hypothesis one is partially supported for the sample of men in this study, and not supported for the sample of women. Because of these substantial differences in the pattern correlations across gender, the second hypothesis was examined separately by gender, despite the smaller sample size, which limited the ability power of the analysis to find significant moderation effects.

Prior to entry into hierarchical regression equations, all variables were standardized as z scores after the recommendation of Frazier, Tix and Barron (2004). One regression equation was run for each of the methods of calculating congruence (4) by both measures of major satisfaction (2) by gender (2). Accordingly, each method of calculating congruence is discussed in turn by both outcome variable and gender to minimize confusion. Because the measure of social desirability correlated significantly with the JSB ($r = .13, p < .01$), the Marlowe-Crowne 1(10) was entered into each regression equation as a covariate. Specifically, in step one the Marlowe-Crowne 1(10) measure of social desirability, the congruence measure and the VOWS-R were regressed on one of the two measures of college major satisfaction. In step two the interaction term between congruence and VOWS-R was entered to test for moderation.
Euclidian Distance with the UNIACT. For men, regressing on JSB, the Euclidian Distance measure of congruence for the UNIACT instrument yielded significant beta weights at step one only for congruence ($\beta = -.245, p < .01$) and the VOWS-R ($\beta = -.239, p < .01$) with no additional variance explained by the addition of the interaction term in the second step. The VOWS-R, Euclidian Distance measure of congruence and social desirability accounted for 11.2% of the variance on the JSB, with the second step contributing a non-significant 1.3% (see Table 6). Similarly, when regressed on the single-item measure of college major satisfaction, significant beta weights were found only for Euclidian Distance ($\beta = -.178, p < .05$) and VOWS-R ($\beta = -.309, p < .001$).

Additionally, no interaction was in evidence. The first step of the regression contributed 13.4% of the variance in scores on the single item measure of college major satisfaction, with the second step contributing a non-significant .2% (see Table 7).

For women, the Euclidian Distance measure of congruence calculated from the UNIACT did not contribute significantly to explanation of the variance in JSB, but the VOWS-R ($\beta = -.271, p < .001$) and the social desirability covariate ($\beta = .161, p < .01$) were significant predictors of college major satisfaction as measured by the JSB. The addition of an interaction term did not improve prediction over the 9.3% accounted for by the first step (see Table 8). Similarly, when the single item measure of college major satisfaction was used as the outcome variable, Euclidian Distance did not contribute significantly to the prediction of major satisfaction, and neither did social desirability. The VOWS-R did have a significant beta weight in the first step ($\beta = -.225, p < .001$), but the interaction term between congruence and VOWS-R did not add to prediction of the
Table 6
Hierarchical Linear Regression of UNIACT Euclidian Distance and VOWS-R on the modified JSB measure of College Major Satisfaction (Men)
Regressing on JSB

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.101</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Euclidian Distance</td>
<td>-.245 **</td>
<td>.112</td>
<td>5.082</td>
<td>.002</td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.239 **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.090</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Euclidian Distance</td>
<td>-.234 **</td>
<td>.013</td>
<td>1.74</td>
<td>.190</td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.240 **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.114</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7
Hierarchical Linear Regression of UNIACT Euclidian Distance and VOWS-R on the Single Item Measure of College Major Satisfaction (Men)
Regressing on Single Item Measure of College Major Satisfaction

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.152</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Euclidian Distance</td>
<td>-.178 *</td>
<td>.134</td>
<td>6.219</td>
<td>.001</td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.309 **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.148</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Euclidian Distance</td>
<td>-.174 *</td>
<td>.002</td>
<td>.232</td>
<td>.631</td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.310 **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.041</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8
Hierarchical Linear Regression of UNIACT Euclidian Distance and VOWS-R on the modified JSB measure of College Major Satisfaction (Women)
Regressing on JSB

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.161</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Euclidian Distance</td>
<td>.028</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.271</td>
<td>**</td>
<td>.093</td>
<td>11.235</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.161</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Euclidian Distance</td>
<td>.019</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.275</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.035</td>
<td></td>
<td>.001</td>
<td>.412</td>
</tr>
</tbody>
</table>

Table 9
Hierarchical Linear Regression of UNIACT Euclidian Distance and VOWS-R on the Single Item Measure of College Major Satisfaction (Women)
Regressing on Single Item Measure of College Major Satisfaction

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.078</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Euclidian Distance</td>
<td>.004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.225</td>
<td>**</td>
<td>.054</td>
<td>6.231</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.079</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Euclidian Distance</td>
<td>-.011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.231</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.060</td>
<td></td>
<td>.003</td>
<td>1.163</td>
</tr>
</tbody>
</table>
single item measure at step 2. The first step of the equation explained 5.4% of the variance in scores on the single item measure of college major satisfaction, with the addition of the interaction term contributing a non-significant .3% (see Table 9).

*Euclidian Distance with the ICA-R.* In the sample of men, when the Euclidian Distance method of calculating congruence between an individual’s college major and ICA-R interest inventory score was regressed on college major satisfaction as measured by the JSB, Euclidian Distance had a beta coefficient of -.341 (p < .001), which along with the VOWS-R (β = -.237, p < .01) and the measure of social desirability (β = .067, ns) accounted for 16.6% of the variance in JSB scores (see Table 10). The addition of the interaction term in the second step did not improve prediction. Additionally, when regressing on the single item measure of college major satisfaction, Euclidian Distance (β = -.262, p < .01) and the VOWS-R (β = -.309), but not social desirability, were significant predictors of major satisfaction, accounting for a combined 16.9% of the variance in scores on the single item measure (see Table 11). The addition of the interaction term contributed a non-significant .2% to the prediction.

In the sample of women, when regressed on the JSB, Euclidian Distance as calculated from the ICA-R was not predictive, but social desirability (β = .160, p < .01) and the VOWS-R (β = -.272, p < .001) both contributed significantly to the prediction of JSB scores (see Table 12). In fact, 9.2% (p < .001) of the variance in JSB scores was accounted for by these three variables in combination. The addition of the interaction term improved the prediction of JSB scores by a non-significant .3%. Similarly, when regressed on the single item measure of college major satisfaction, the Euclidian Distance
Table 10
Hierarchical Linear Regression of ICA-R Euclidian Distance and VOWS-R on the modified JSB Measure of College Major Satisfaction (Men)
Regressing on JSB

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>$\beta$</th>
<th>$\Delta R^2$</th>
<th>$\Delta F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.067</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Euclidian Distance</td>
<td>-.341</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.237</td>
<td>*</td>
<td>.166</td>
<td>8.032</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.052</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Euclidian Distance</td>
<td>-.313</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.208</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.095</td>
<td>.007</td>
<td>1.075</td>
<td>.302</td>
</tr>
</tbody>
</table>

Table 11
Hierarchical Linear Regression of ICA-R Euclidian Distance and VOWS-R on the Single Item Measure of College Major Satisfaction (Men)
Regressing on Single Item Measure of College Major Satisfaction

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>$\beta$</th>
<th>$\Delta R^2$</th>
<th>$\Delta F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.126</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Euclidian Distance</td>
<td>-.262</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.309</td>
<td>*</td>
<td>.169</td>
<td>8.216</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.119</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Euclidian Distance</td>
<td>-.249</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.296</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.043</td>
<td>.002</td>
<td>.218</td>
<td>.641</td>
</tr>
</tbody>
</table>
Table 12
Hierarchical Linear Regression of ICA-R Euclidian Distance and VOWS-R on the Modified JSB Measure of College Major Satisfaction (Women)
Regressing on JSB

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.160</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Euclidian Distance</td>
<td>-.002</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.272</td>
<td>**</td>
<td>.092</td>
<td>11.131</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.159</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Euclidian Distance</td>
<td>-.016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.273</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.058</td>
<td></td>
<td>.003</td>
<td>1.140</td>
</tr>
</tbody>
</table>

Table 13
Hierarchical Linear Regression of ICA-R Euclidian Distance and VOWS-R on the Single Item Measure of College Major Satisfaction (Women)
Regressing on Single Item Measure of College Major Satisfaction

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.078</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Euclidian Distance</td>
<td>-.003</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.225</td>
<td>**</td>
<td>.054</td>
<td>6.230</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>-.076</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Euclidian Distance</td>
<td>-.019</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.227</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.071</td>
<td></td>
<td>.005</td>
<td>1.679</td>
</tr>
</tbody>
</table>
variable was not predictive. Nor was the measure of social desirability, but the VOWS-R was a significant predictor ($\beta = -.225, p < .001$). Combined, these variables explained 5.4% of the variance in major satisfaction scores. The addition of the interaction term contributed a non-significant .5% to the prediction (see Table 13).

**Angular Distance with the UNIACT.** In the sample of 126 men, the Angular Distance method of calculating congruence between college major and UNIACT-derived interest scores was regressed onto the JSB variable of college major satisfaction, along with the social desirability covariate and the potential moderator variable, the VOWS-R. Table 14 shows that neither the congruence measure, nor the covariate achieved statistical significance, but the measure of beliefs about ordinary work ($\beta = -.240, p < .01$) was found to contribute significantly to the prediction of JSB scores. The first step in the hierarchical regression accounted for 7.5% ($p = .024$) of the variance in JSB scores. The addition of the interaction term contributed a non-significant 1.0% to the prediction of JSB scores. Similarly, when regressed on the single item measure of college major satisfaction (see Table 15), neither the Angular Distance measure nor the social desirability covariate contributed significantly to explanation of variance in major satisfaction. Yet, the VOWS-R ($\beta = -.295, p < .001$) was found to have a significant predictive effect. These variables accounted for 10.4% of the variance in major satisfaction scores together. The addition of the interaction term contributed an additional non-significant .3%.

For women (see Table 16), both social desirability ($\beta = .161, p < .01$) and VOWS-R ($\beta = -.271, p < .001$) predicted major satisfaction as measured by the JSB, but
Table 14
Hierarchical Linear Regression of UNIACT Angular Distance and VOWS-R on the Modified JSB Measure of College Major Satisfaction (Men)
Regressing on JSB

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.103</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Angular Distance</td>
<td>-.150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.240</td>
<td>**</td>
<td>.075</td>
<td>3.247</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.112</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Angular Distance</td>
<td>-.177</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.215</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>.108</td>
<td>.010</td>
<td>1.288</td>
<td>.259</td>
</tr>
</tbody>
</table>

Table 15
Hierarchical Linear Regression of UNIACT Angular Distance and VOWS-R on the Single Item Measure of College Major Satisfaction (Men)
Regressing on Single Item Measure of College Major Satisfaction

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.159</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Angular Distance</td>
<td>-.040</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.295</td>
<td>**</td>
<td>.104</td>
<td>4.695</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.164</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Angular Distance</td>
<td>-.056</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.281</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>.061</td>
<td>.003</td>
<td>.423</td>
<td>.517</td>
</tr>
</tbody>
</table>
### Table 16
Hierarchical Linear Regression of UNIACT Angular Distance and VOWS-R on the Modified JSB Measure of College Major Satisfaction (Women)
Regressing on JSB

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.161</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Angular Distance</td>
<td>-.012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.271</td>
<td>**</td>
<td>.092</td>
<td>11.149</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.158</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Angular Distance</td>
<td>-.016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.276</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.043</td>
<td></td>
<td>.002</td>
<td>.669</td>
</tr>
</tbody>
</table>

### Table 17
Hierarchical Linear Regression of UNIACT Angular Distance and VOWS-R on the Single Item Measure of College Major Satisfaction (Women)
Regressing on Single Item Measure of College Major Satisfaction

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.080</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Angular Distance</td>
<td>-.046</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.223</td>
<td>**</td>
<td>.056</td>
<td>6.491</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.076</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIACT Angular Distance</td>
<td>-.054</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.233</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.081</td>
<td></td>
<td>.006</td>
<td>2.248</td>
</tr>
</tbody>
</table>
the congruence variable was not significant. The first step in the regression equation explained 9.2% ($p < .001$) of the variance in JSB scores. The addition of the interaction term, however, did not improve on the prediction of the JSB variable. When regressing on the single item measure of college major satisfaction (see Table 17), only the VOWS-R ($\beta = -.233, p < .001$) was found to significantly predict major satisfaction. Together, the step 1 variables explained 5.6% of the variance in major satisfaction, and this was not improved by the addition of the interaction term.

*Angular Distance with the ICA-R.* In the sample of 126 men, regressing the Angular Distance measure of congruence between interests and college major, along with social desirability and a measure of attitudes toward ordinary work, onto the JSB measure of college major satisfaction resulted in explaining 6.5% ($p = .043$) of the variance in major satisfaction (see Table 18). Specifically, social desirability, and congruence were found to be non-significant, but the VOWS-R ($\beta = -.231, p < .05$) was found to contribute significantly to the prediction of satisfaction as measured by the JSB. The introduction of the interaction term did not improve prediction. Similarly, when regressed on the single item measure of college major satisfaction (see Table 19), only the VOWS-R ($\beta = -.306, p < .001$) significantly predicted satisfaction. The combined effect of the first step in the regression was to explain 11.1% of the variance in the single-item measure of satisfaction. Addition of the interaction term contributed a non-significant .4% to the explanation of outcome variable.

For the sample of 337 women (see Table 20), the social desirability measure ($\beta = .162, p < .01$) and the VOWS-R ($\beta = -.272, p < .001$), but not Angular Distance based
### Table 18
Hierarchical Linear Regression of ICA-R Angular Distance and VOWS-R on the Modified JSB Measure of College Major Satisfaction (Men)

**Regressing on JSB**

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ $R^2$</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.099</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Angular Distance</td>
<td>-.113</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.231*</td>
<td>.065</td>
<td>2.805</td>
<td>.043</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.102</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Angular Distance</td>
<td>-.119</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.232*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>.026</td>
<td>.001</td>
<td>.082</td>
<td>.776</td>
</tr>
</tbody>
</table>

### Table 19
Hierarchical Linear Regression of ICA-R Angular Distance and VOWS-R on the Single Item Measure of College Major Satisfaction (Men)

**Regressing on Single Item Measure of College Major Satisfaction**

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ $R^2$</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Angular Distance</td>
<td>-.096</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.306 **</td>
<td>.111</td>
<td>5.059</td>
<td>.002</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.144</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Angular Distance</td>
<td>-.079</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.302 ***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.068</td>
<td>.004</td>
<td>.583</td>
<td>.447</td>
</tr>
</tbody>
</table>
Table 20
Hierarchical Linear Regression of ICA-R Angular Distance and VOWS-R on the Modified JSB Measure of College Major Satisfaction (Women)
Regressing on JSB

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.162</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Angular Distance</td>
<td>.034</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.272</td>
<td>**</td>
<td>.093</td>
<td>11.285</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.163</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Angular Distance</td>
<td>.030</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.278</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.043</td>
<td></td>
<td>.002</td>
<td>.662</td>
</tr>
</tbody>
</table>

Table 21
Hierarchical Linear Regression of ICA-R Angular Distance and VOWS-R on the Single Item Measure of College Major Satisfaction (Women)
Regressing on Single Item Measure of College Major Satisfaction

<table>
<thead>
<tr>
<th>Step and Variable</th>
<th>β</th>
<th>Δ R²</th>
<th>Δ F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.077</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Angular Distance</td>
<td>-.020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.225</td>
<td>**</td>
<td>.054</td>
<td>6.279</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlowe Crowne</td>
<td>.079</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA-R Angular Distance</td>
<td>-.033</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOWS-R</td>
<td>-.242</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>-.120</td>
<td>*</td>
<td>.014</td>
<td>4.899</td>
</tr>
</tbody>
</table>
congruence on the ICA-R instrument, were found to significantly predict college major satisfaction as measured by the modified JSB. These variables explained 9.3% \((p < .001)\) of the variance in modified JSB scores. The addition of the interaction term contributed a non-significant .2% to this prediction. A significant interaction effect was found, however, in the regression of congruence, beliefs about work and social desirability on the single item measure of college major satisfaction (see Table 21). Specifically, in the first step, only the VOWS-R \((\beta = -.225, p < .001)\) was found to predict major satisfaction. The step one variables together explained 5.4% \((p < .001)\) of the variance in major satisfaction. The addition of the interaction term \((\beta = -.120, p < .05)\) contributed an additional 1.4% \((p = .028)\) to the prediction of the satisfaction variable, thus supporting a moderation effect of beliefs about ordinary work on the relationship between congruence and satisfaction.

Figure 5 illustrates the nature of the moderation effect found. It is a graph of predicted scores on college major satisfaction created by calculating and plotting expected scores on college major satisfaction for plus and minus one standard deviation on both congruence and VOWS-R measures. As seen in Figure 5, the interaction is in the opposite direction of prediction. For those scoring high on the VOWS-R (indicating a greater perception of distinction between sacred and secular work), overall satisfaction is lower than those scoring low on the VOWS-R, and the slope is in the hypothesized direction, as congruence increases, so does satisfaction. However, for those scoring low on the VOWS-R, overall satisfaction is higher, but decreases as congruence increases. This is contrary to prediction. However, this moderation effect amounts to a decrease of
.14 on the original scale of 1 to 9 for every 50.29 degrees of change in congruence.

Additionally, because the average score on the single item measure of satisfaction was higher for women (M = 7.94, SD = 1.46) than for men (M = 7.56, SD = 1.54), the range of scores on this variable was more restricted in the sample of women.

Figure 5
Congruence-Satisfaction relationship by level of VOWS-R

<table>
<thead>
<tr>
<th>Satisfaction (z score)</th>
<th>Low Congruence</th>
<th>High Congruence</th>
</tr>
</thead>
<tbody>
<tr>
<td>High VOWS-R</td>
<td>0.377</td>
<td>-0.369</td>
</tr>
<tr>
<td>Low VOWS-R</td>
<td>0.191</td>
<td>-0.055</td>
</tr>
</tbody>
</table>

Overall, then, no support for the hypothesized moderating effect of beliefs about ordinary work on the relationship between congruence and satisfaction was noted. Hypothesis 2 is therefore rejected.

Exploratory Analysis

The rationale for this study included the idea that beliefs about ordinary work differ in accordance with traditional theological understandings of the nature of ordinary and ministerial work. It was argued that the medieval Roman Catholic understanding of a
strong sacred-secular distinction has been weakened but not eliminated in recent years by statements such as those of Pope John Paul II (1981) about the value of ordinary work. Similarly, the teaching about the holiness of ordinary work coming from the Protestant reformation of the 16th century has weakened (Schuurman, 2004; Placher, 2005). It was of interest, therefore, whether there were any mean differences on the VOWS-R based on denominational affiliation. Since sample sizes were low for many denominations, all protestant denominations were collapsed and compared with the mean for Roman Catholic participants. Protestants (N = 369) had a mean of 32.99 on the VOWS-R with a standard deviation of 9.00. Catholic participants (N = 55) had a mean of 37.81 on the VOW-R with a standard deviation of 11.41. A two-tailed t-test revealed this to be a significant difference (t = -3.57, p < .001). In order to control for the effect of extreme scores on the VOWS-R which might have influenced the smaller Roman Catholic sample more than the larger Protestant sample, the t-test was rerun on only those participants who scored between –2 and +2 standard deviations on the VOWS-R measure. In this case, Protestants (N = 361) had a mean of 32.42 with a standard deviation of 8.20, while Roman Catholic participants (N = 52) had a mean of 36.10 with a standard deviation of 8.59. This difference remained statistically significant (t = -3.01, p < .01). It would appear that in this sample, Roman Catholic participants were more likely to endorse a distinction between ministerial and non-ministerial work.

Since both the VOWS-R measure of beliefs about ordinary work and two of the measures of religiosity were observed to correlate with college major satisfaction variables, a partial correlation matrix was generated to determine if the correlation
between VOWS-R and major satisfaction was due to the overlap between the VOWS-R and the RCI-10 ($r = -.35$), or between the VOWS-R and the ROS-I ($r = -.384$). In other words, would the VOWS-R predict major satisfaction if the respondent’s levels of religious commitment and motivation were held constant. For women the VOWS-R correlated $pr = -.19$ ($p < .001$) with the single item measure of college major satisfaction and $pr = -.21$ ($p < .001$) with JSB when controlling for religiosity. For men, the VOWS-R was found to correlate $pr = -.25$ ($p < .05$) with the single item measure of college major satisfaction and $pr = -.18$ ($p = .05$) with the modified JSB. These results seem to indicate that when the effects of religiosity were controlled, religious beliefs about ordinary work continued to predict college major satisfaction in this sample.
CHAPTER V
DISCUSSION

This concluding chapter restates the problem and research methodology, discusses the findings of the study and examines the exploratory investigation of the data. Additionally, implications of the research and limitations of the study are addressed.

Overview of Purpose

This research sought to examine the influence of religious beliefs on work related behavior among religiously committed college students. Specifically, this research intended to measure the extent to which individuals maintained a belief in the differing significance of ministerial work and non-ministerial work (ordinary work) and the effect of this belief on the relationship between person-environment congruence and college major satisfaction. Anecdotal evidence exists (Schuurman, 2004) that among some committed Christians, there is a subtle devaluation of ordinary work in favor of privileging ministry occupations based on the understanding that God is best served only in the latter. Additionally, there is in the history of Christianity, disagreement about the role of ordinary work and its divine importance (Placher, 2005; Schuurman, 2004; Veith, 2002), which may be taught in a church or educational environment and may influence students’ thinking about the value of their intended work. It was therefore hypothesized
that for those religiously committed Christian students who were not preparing for the
ministry, greater devaluation of ordinary work would result in weaker associations
between fit with their college major environment and satisfaction with their major. For
example, if a student was interested in Realistic occupations and chose a college major
consonant with those interests such as Forestry Management, yet this person had adopted
the belief that Christians who are serious about their religious commitment ought to serve
on the mission field, then this student’s expected high satisfaction based on congruence
between interests and college major environment may be tempered by the belief that his
major is not the best way he could be serving God.

In order to test this hypothesis, a meaningful way of measuring the fit between a
person’s interests and his or her environment was sought. In the last half-century, the
vocational personality theory of John Holland (1973, 1989, 1997) has dominated the field
of vocational psychology and given rise to a great many methods of measuring interests,
determining work environments, and calculating the congruence between the two. The
literature about the link between congruence and satisfaction, especially as
operationalized by Holland’s theory is, however, quite mixed. Some have proposed (i.e.,
Tinsley, 2000) that because correlations between congruence and satisfaction are not
strong enough to be of much practical importance, that research should discard the
Holland operationalization of the congruence hypothesis and begin to look elsewhere for
a foundation for the career counseling enterprise.

Since the correlations between congruence and satisfaction (as well as other
important outcome variables) are admittedly modest, moderators have been sought to
determine in which groups the congruence/satisfaction hypothesis best helps to explain work behavior. These moderator studies have met with varied success, with participant gender (Carson & Mowsesian, 1993; Healy & Mourtson, 1985; Rounds, 1990), dominant Social code type (Carson & Mowsesian, 1993; Mount & Muchinsky, 1978; Tranberg et al., 1993) and group importance (Meir, Keinan & Segal, 1986; Meir, Tziner & Glazner, 1997) all receiving mixed research support.

This study utilized a sample of Christian college students to maximize the salience of religious beliefs about work to the participants and to ensure a large sample size. The drawback to a college sample is that previous research has not consistently demonstrated significant congruence to satisfaction relationships among college students. Additionally, no validated measure of college students’ major satisfaction was available.

This study sought to overcome these drawbacks by including two measures of vocational interests, two measures of college major satisfaction and by calculating congruence using two different methods based on the Things/People and Data/Ideas dimensions (Prediger, 1982). The latter methods eliminate the need to rank-order an individual’s interests, thereby retaining valuable information. Using Tracey and colleagues’ (Tracey, 2003; Tracey, Robbins & Hofsess, 2005; Tracey & Robbins, 2006) method of calculating congruence based in the World of Work Map allows for full utilization of interest inventory data because a single point on the map is generated using all of the interest inventory scores, instead of simply rank-ordering the three most highly endorsed as is required by even the more sophisticated congruence indices.
Therefore, this study constituted a unique investigation into the influence of a particular religious belief, using methodology that attempts to overcome some of the limitations inherent in prior congruence research. Specifically, by using multiple measures of vocational interests and college major satisfaction, and methods of calculating congruence it was hoped that the moderation effect, if extant, would be observable.

**Discussion of Results**

Support for Hypothesis 1 which stated that congruence between students’ vocational interests and majors would be meaningfully related to college major satisfaction was mixed in the sample of men and absent for the sample of women. According to the meta-analysis by Tranberg and colleagues (1993), six studies have been conducted which correlated academic satisfaction with congruence based on Holland’s (1997) typology. Frantz and Walsh (1972) reported an overall correlation of $r = .17$ in a sample of 118 graduate students, Holland (1968) reported null results in a sample of 1959 high school students, Morrow (1971) reported an overall correlation of $r = .13$ in a sample of 325 math and social science students, Nafziger, Holland and Gottfredson (1975) reported an overall correlation of $r = .06$ for a sample of 1878 college students, Posthuma and Navran (1970) reported null results in a sample of 110 military academy students, Spokane and Derby (1979) reported an overall correlation of $r = .15$ in a sample of 132 female undergraduates, and Swaney and Prediger (1985) reported an overall correlation of $r = .07$ in a sample of 1688 adults.
Some of the correlations in the current study, thus, seem to be better than those obtained in previous research. Specifically, three of the four correlations between Euclidian distance-based major congruence and satisfaction for both interest inventories were statistically significant for men, and the remaining correlation that did not reach statistical significance was a correlation of .15, consistent with previously observed correlation magnitudes. The Angular distance-based congruence to satisfaction correlations for men were weaker, at -.11 and -.08 for the more robust major satisfaction measure and .01 and -.05 for the secondary measure of college major satisfaction. The magnitude of the first two of these is still consistent with previous research, despite not reaching statistical significance. The pair of correlations based on the ICA-R measure of interests may have been affected by not having a standardization group against which to anchor the World of Work Map coordinates. That is, ICA-R z scores for the present sample had to be used to plot interest points on the world of work map because no previous research has used the ICA-R in this manner. Because the sample seemed to be fairly Social and Artistic, the origin (0,0 point) was likely to be in a different location in two-dimensional space than for the UNIACRT which had an origin point independent of the present data set. This difference in origin point may have affected correlations for the ICA-R angular distance measures more than the Euclidian distance measures since the latter does not require a meaningful reference point. All of the correlations between congruence and satisfaction were very low, however, for the sample of women in this study.
This gender difference is contrary to the results of Rounds (1990) who found that interest congruence predicted satisfaction more strongly for women than for men in his sample of working adults. However, the meta-analysis by Tsabari and colleagues (2004) found no significant differences across genders for congruence to satisfaction correlations, though they did not report the magnitudes of these aggregate correlations for comparison to the present results. Thus, it appears that the gender difference observed in this study is not typical of studies on the congruence to satisfaction relationship.

To understand this finding, it should be noted that, in the present sample, women as a group had a significantly higher mean on the single item measure of college major satisfaction than did men (mean for women, 7.94; mean for men, 7.56, t = -2.37, p < .05). Women also had a higher mean on the JSB than did men (mean for women, 23.05; mean for men, 22.53). The standard deviations were similar across genders on the single item measure of major satisfaction (1.46 women, 1.54 men) and the JSB (3.09 women, 3.00 men). These mean differences on the outcome variables between men and women participants may have amounted to a restriction in range that reduced the correlations between congruence and satisfaction for women.

Further, given the religious nature of the student population surveyed, a religious variable unmeasured in this study may contribute to the gender difference observed in the present sample, which was not anticipated by the majority of the existing research. Morgan and Scanzoni (1987) found that religious devoutness negatively predicted college women’s workforce participation intentions, partially mediated through their choice of college major and sex-role attitudes. If the high level of devoutness among the women
surveyed contributed to less career orientation among some of the women in this sample as compared to the men, then correspondence between interests and environment may be less important in predicting college major satisfaction than are other factors. Perhaps religious considerations, only one of which was measured in this study, are a significant source of motivation and satisfaction in the career development of women at Christian colleges and universities. One such consideration may be the importance of family orientation over and against career orientation as conveyed by religious teaching. Since sex-role attitudes were not measured in the current study, it is not possible to examine this speculation with the present data set.

In regard to Hypothesis 2, beliefs about the distinction between ministry and non-ministry occupations did not moderate the relationship between congruence and satisfaction for either the men or the women in this sample. The one statistically significant interaction term observed in the sample of women was in a direction opposite to what was expected and was of miniscule magnitude. In this one case, an increase in congruence was accompanied by a decrease in satisfaction with college major among women who perceived a low level of difference between ministry and non-ministry occupations. This likely represents a statistical artifact rather than a meaningful interaction because those who had low scores on the VOWS-R were nearing the top of the scale in satisfaction across all levels of congruence (around 8.3 on a scale of 1 to 9), and because the decrease amounted to a very slight change in satisfaction (.14 on the original scale of 1 to 9) for a very large change in congruence (50.29 degrees). Indeed, it is very hard to even speculate about why, for those women who believe more strongly in
the sacredness of ordinary work, increasing congruence would lead to less major satisfaction.

The lack of an interaction effect between congruence and the measure of beliefs about ordinary work, combined with the observation that beliefs about ordinary work did have an independent influence on satisfaction, can be interpreted as indicating that across all levels of congruence, believing that non-ministry occupations are less spiritual than are ministry occupations had the effect of slightly reducing major satisfaction for students of both genders at Christian colleges and universities. In other words, it may be that cognitive dissonance from holding a belief that religious occupations are more desirable for a committed Christian while engaging in a non-ministry college major may cause a reduction in major satisfaction, regardless of how well one fits with that major in terms of occupational interests. It is possible, however, that those with lower major satisfaction were motivated to elevate ministry occupations. That is, in a religious environment, individuals may idealize ministry majors if they are not highly satisfied with their current majors. Alternatively, some additional third variable may create the observed relationship between devaluation of ordinary work and lessened college major satisfaction. One such possible variable, general religious commitment, was controlled in this study and found not to drive the relationship between religious beliefs about work and college major satisfaction.

The religious commitment variable itself was observed to play a significant, independent role in the satisfaction of college students at Christian colleges and universities. This could be understood as a general positive effect of religiosity (Sikorska-
Simmons, 2005), or an effect of ideological congruence between the individual and the college environment. During college, the ideological match between a student and her or his educational setting may be a substantial predictor of satisfaction with college major. For this study, the Holland operationalization of the Person-Environment fit model was chosen based on the breadth of research utilizing vocational interests, however researchers have pointed to other characteristics of people and environments that may influence important work outcomes. For example, if an individual highly values service to others as part of his or her occupation, he or she may be less satisfied in a position in which the opportunity for altruism is limited (Dawis, 2005). Perhaps, in this case, ideological correspondence between students and their institutions influenced their college major satisfaction. Students may feel more comfortable in an environment in which a worldview similar to their own is espoused by the faculty, and therefore experience more satisfaction with their majors.

Measurement Issues

VOWS-R. As mentioned above, the measure of the valuation of ordinary work was found to predict college major satisfaction while partialing out the effects of religious commitment. This suggests promise for the VOWS-R, but it must be noted that the instrument was modified from its original form. Because of extremely low item-total correlations, four items were dropped from the measure of beliefs about ordinary work. On review, some of these items may have been subject to interpretation other than that which was intended. The first of the items that was removed read, “I believe that ministry work is no more important to people in my church than ordinary jobs.” This item may
have been confusing because of the negative “no more important” or because of its external reference to “people in my church.” This item was one of the items that were not previously pilot tested. The second of the excluded items, “I believe that only ministers have a calling from God” may have been too exclusionary for some respondents because, as written, it excluded missionaries and others who work for Christian organizations from the concept of calling. The third, “I believe that you ought to use your job to reach the lost or help people spiritually if you want to serve God with it” may have read slightly double-barreled to some respondents who may have interpreted “reach the lost” and “help people spiritually” as distinct questions, resulting in low correlations with the total score on the measure. Finally, “I believe that God cares for His creation largely through the agency of human work” may not have been precise enough because of the word “largely” which was intended to leave room for supernatural intervention while acknowledging human participation in God’s work under ordinary circumstances. Because some theological traditions see God’s intervention as more than occasional, this question may not have meant the same thing to every participant. This item also was not previously pilot tested.

The modified VOWS measure did appear to perform well when correlations were observed between the VOWS-R and the other variables that were included in the study as checks on the validity of the VOWS-R measure. Scores on the revised VOWS were not found to correlate significantly with scores on the measure of social desirability included in this study. However, because this measure suffered from low reliability in this sample, this observation is tentative. Additionally, the VOWS-R correlated moderately with
religious commitment and intrinsic religiosity, but not to the extent of overlapping with either of these constructs. Those respondents who reported a more intrinsic religious orientation and more overall religiosity were less likely to espouse a distinction between sacred and secular occupations. However, those who espoused more of an orientation toward religion as a means to personal fulfillment were more likely to affirm a distinction between ministry and non-ministry occupations. Neither of these correlations was so high as to suggest that the VOWS-R tapped extrinsic or intrinsic religious orientation directly, but it appears that the constructs are related.

Responses to the VOWS-R instrument do not appear to reflect religious commitment to a great degree, nor did they seem to be driven by social desirability. With regard to their dispersion, the scale mean is considerably below the mid-point of the scale, corresponding to an average endorsement of 2.11 (“Disagree”) on a scale of 1 to 10. Only a few individuals endorsed items in such a way as to yield an overall affirming position on the statements comprising the VOWS-R. There was no reason to consider these individuals’ data to be the result of a response set, however, based on careful observation of their responses to later items. The distribution of scores on the VOWS-R for both women and men were approximately normally distributed and did not show evidence of a floor effect.

In addition, it appears that the VOWS-R was endorsed differently across Protestant and Roman Catholic participants. This difference was not anticipated formally, but it is consistent with the discussion of traditional differences in teaching regarding the function of ordinary work among members of these churches. It would seem that the
VOWS-R measure, though not achieving superior internal reliability, did measure religious beliefs about ordinary work in a meaningful way. Despite the average score being in the “disagree” range, it would appear, based on correlations between the VOWS-R and the outcome variables, that endorsing even a few VOWS-R items had a negative effect on students’ college major satisfaction.

**Congruence.** Because the method of calculating congruence (Tracey, 2003; Tracey, Robbins & Hofsess, 2005; Tracey & Robbins, 2006) used in this study is somewhat non-traditional, a few words are in order. It appears that the congruence indices were meaningful measures of individuals’ congruence between their vocational interests and their college majors and not random. Participants were more congruent with their majors than would be expected if majors were randomly assigned. Based on a possible range of 0° to 180° on the angular distance measures the observed means of 75° and 77° respectively for the UNIACT and the ICA-R, indicate that on average the sample was more congruent with their majors based on an expected average of 90° if majors were randomly assigned to participants. Because there is no maximum distance, a similar comparison of the Euclidian distance methodology is impossible.

Secondly, across the two methods of calculating congruence and the two measures of vocational interests, there is some evidence of the meaningfulness of the resulting scores. Within measures of interests, the two methods of calculating congruence correlated strongly (UNIACT, \( r = .76 \); ICA-R, \( r = .79 \)) but the same method correlated less strongly across instruments (Angular Distance, \( r = .51 \), Euclidian Distance, \( r = .57 \)) and opposite methods across opposite instruments correlated even less strongly (ICA-R
Euclidian distance to UNIACT Angular distance, \( r = .43 \), ICA-R Angular Distance to UNIACT Euclidian distance, \( r = .46 \). This would seem to lend credibility to the methodology of both Angular distance and Euclidian distance as measures of congruence. It is unknown why the Euclidian distance method resulted in stronger correlations for men in this sample than did the angular distance method.

**Limitations**

Although the strengths of this study include the use of dual measures of interests and major satisfaction, and a sophisticated method of calculating congruence, there are several limitations to discuss. Demographically, this study’s sample was limited primarily to Caucasian students with a strong majority of women; denominational affiliation was too diverse to engage in many meaningful comparisons. Although analyzing the data separately for women and men reduced the statistical power available to detect interaction effects if they existed, it was necessary based on the substantial gender differences in correlations with the criterion variable. Future research should attempt to sample equal numbers of men and women in order to generate directly comparable results by gender and may attempt to recruit participants for planned contrasts between religious groups in order to better understand whether the devaluation of ordinary work is transmitted by church teaching at an organizational level.

The use of a college student sample was intended to isolate individuals of high religious commitment. Yet, the use of college major satisfaction as an outcome variable is somewhat problematic because average satisfaction was found to be quite high for participants of both genders with limited variability. Additionally, satisfaction with
college major may be substantially influenced by factors beyond the curriculum. College major satisfaction may have much to do with satisfaction with particular instructors or advisors, the perceived status of the major on campus, or the quality of the laboratory equipment possessed by the department. These elements are unrelated to the content of a major and perhaps irrelevant to the congruence question. Additionally, the environment in a college major may differ substantially from corresponding workplaces in terms of characteristics that would influence their position on the World of Work Map. For example, those individuals who choose to teach may have greater Social interests than those who choose not to teach, thereby creating an environment that may differ considerably from the actual working environment of any given field. The positions of the various job families on the World of Work Map were generated for occupations and then adapted to college majors. Different locations on the WWM may have resulted from analysis of college major data rather than occupational data.

Additionally, the sample for this study was found to be quite social in their vocational interests as a whole. It could be that the religious environment of Christian colleges may influence students’ responses to vocational interest inventories, as social service is often highly esteemed and valued among Christian believers. For instance, it may be very difficult for a person with strong religious commitment to respond negatively to the item, “Help settle an argument between friends” as peacemaking is considered by Christians to be a virtue. No studies to date have examined possible religious connotations of interest inventory items.
Further, Tranberg and colleagues (1993) found Socially typed individuals to have the highest congruence/satisfaction relationship of all the Holland types. Yet, Mount and Muchinsky (1978) found that Socially typed individuals had the weakest congruence/satisfaction relationship. It is unclear how the weighting of the sample toward Socially typed individuals may have influenced the results.

Some measurement limitations should be noted as well. First, the measure of socially desirable responding suffered from low reliability. Future research may wish to utilize alternative measures of social desirability, particularly those that have been validated on samples of religious individuals. Secondly, the measure of attitudes toward ordinary work was modified and used as a moderator variable on the same sample. Additional validation of this measure is required. Finally, the measures of college major satisfaction were limited in range, especially for the women in this sample. Although the reliability of the modified version of the JSB was sufficient, extending the range of possible scores and perhaps including content more relevant to the college experience may be important for future research with college major satisfaction as an outcome variable.

As this study was limited to Christian students, future research can expand the area of investigation to include other faith traditions in relation to the role and importance of work. Since some religions do not have professional clergy or have other differences with Christianity, the results of this study can only be generalized to Christian college students.
Finally, because of restriction in the range of the central variables in this study, the possibility of Type II error becomes more likely. Overall, participants endorsed both major satisfaction instruments toward the top of the scale. Also, student’s reported low levels of perceived difference between ministry and non-ministry occupations overall. Coupled with the tendency of this sample to endorse Social and Artistic vocational interests at a higher rate than previous participants, these restrictions in range may have led to a masking of true relationships between congruence and satisfaction as well as meaningful moderation.

Implications

No previous research looked at the role of religious belief in the work-related behavior of students. Discussion of religion in the work life appears to be on the rise (Bloch & Richmond, 1997, Gockel, 2004; Looby & Sandhu, 2002; Ottaway, 2003) and this research expands upon previous efforts by measuring a particular belief over and above general religious commitment and orientation. Although the moderator hypothesis was not supported, a direct relationship between religious beliefs about work and major satisfaction was observed and may be an important line of investigation for future research.

Students may experience conflict between their vocational plans as guided by their interests and the perception of which paths are pleasing to God. If confirmed, this speculation would seem to be a significant area of interest to career counselors, particularly in environments in which religious salience is particularly high and ministry majors are available. It is also possible, given the extent of religious belief in the U.S.
population, that students in non-religious educational environments may experience similar conflict and seek career counseling. It is important for career counselors, who are sensitive to individual differences among their clients, to be aware that a client’s religious beliefs may have an important influence on his or her choice of or satisfaction with a career path.

As clients may assume that discussion of religious beliefs is not an acceptable topic for career counseling, it may be important for a clinician to discuss what jobs are valuable to a client and his or her community while attending to possible religious themes that may be present. Additionally, querying for underlying, world-view level beliefs when discussing value priorities may be helpful. For example, two people may express a value for “helping others,” yet may have entirely different underlying beliefs driving this value. For one individual, religious beliefs may motivate this value whereas for another, a humanistic ethic may underlie the desire to help others in his or her work life.

Although this study focused on individuals who had not chosen ministry majors, those who do choose ministry majors may be influenced by their beliefs about ordinary work as well. One could speculate that some individuals may choose career paths that do not accord with their interests on the basis of their beliefs about the distinction between ordinary and ministry occupations. Career counselors may benefit from knowing what a client believes about the value of her or his work in the eyes of God and the religious community to which she or he belongs. Clients could then be encouraged to explore their beliefs about the role of ordinary work in the teaching of their church.
This study was also important in that it further demonstrated the success of the Euclidian distance method of calculating congruence between interests and locations on the World of Work Map. For the men in this sample, the Euclidian distance methodology yielded correlations with magnitudes equal to or greater than those generated by previous research with college students. It is important to note that the Euclidian distance method also yielded significant correlations between the ICA-R (Tracey, 2002; Tracey & Ward, 1998) and self-reported majors, since the ICA-R was not used in the development of the World of Work Map (Swaney, 1995).

The lack of a relationship between congruence and satisfaction for women was not anticipated on the basis of previous research. As stated previously, this difference could be an artifact based on the high satisfaction observed among women in this sample. However, the lack of a relationship between congruence and satisfaction coupled with the significant influence of religiosity and beliefs about ordinary work on the major satisfaction of women may indicate that especially for a woman at a Christian college or university, congruence between her vocational interests and her academic environment may not be very important for producing satisfaction with her college major. A holistic approach to career counseling may be even more important for women than for men in the Christian college environment. Such an approach would likely investigate the match between a student’s interest inventory scores to a corresponding area on the World of Work Map, but would emphasize other information about the client including needs/values, career salience, personality, gender-role orientation, role conflict, (Hackett & Lonborg, 1994) and based on this research, religious commitment, religious orientation.
and religious beliefs. The absence of any discernable relationship between congruence and satisfaction in this fairly large sample of women should serve as a caution against group-based interventions that emphasize interest inventory congruence to the exclusion of a more nuanced, person-centered approach to major selection and career exploration.

The results of this research do not appear to support Holland’s (1997) contention that person-environment congruence at the level of the six vocational types ought to predict satisfaction. As Tinsley (2000) noted, there is ample evidence that person-environment fit does affect important outcome variables, however, at the level of abstraction of the Holland vocational types, little consistent empirical evidence exists to support the congruence/satisfaction hypothesis. The observed relationship between religious variables and satisfaction in this study may point to the importance of self-concept in college major satisfaction.

If the speculation that cognitive dissonance may drive the relationship between beliefs about ordinary work and satisfaction holds true, and some students have conflicting views of themselves as committed Christians and as having made a commitment to a non-ministry occupation, then more attention to the formation of work self concepts (Savickas, 2005) in career counseling at Christian college and universities may be warranted. Counselors may help college students reflect on and process the meaning of their future careers, within the context of their religious beliefs. This could mean encouraging students to explore the teaching of their own faith tradition and introducing other perspectives on the significance of ordinary work to the discussion. Additionally, since men and women may differ in work-related self concept within a
strongly religious environment, this approach to career counseling may be doubly appropriate. Finally, utilization of a life-space approach to career counseling may help students to integrate their role as religious believers at a time when their occupational self concept would be in the process of forming.

Direction for Future Research

Since the measure of beliefs about ordinary work predicted college major satisfaction, yet did not achieve exemplary reliability in this sample, revision of the instrument seems to be warranted. Because the items were derived from conversations with ministers and other experts who may express themselves in more theologically nuanced ways than the average college student, it may be interesting to examine students’ language about ministry and non-ministry occupations qualitatively. Following conversations with religiously committed students about the intersection of their faith and their work lives, and the spiritual importance of their non-ministry majors, additional items may be developed for validation. Indeed, such an investigation could lend support to the assertion that there are differences in beliefs about ordinary work among religiously committed Christian college students.

It may be useful to replicate this present study, accommodating for some of the limitations noted above. One such improvement would be the use of Nauta’s (2007) recently published Academic Major Satisfaction Scale, which measures general college major satisfaction and distinguished between students who changed majors from those who did not over a two-year period. Use of this validated measure may lead to more definitive conclusions as to the relationship between congruence and college major
satisfaction. Also, since the measure of socially desirable responding was not as reliable as expected, a more robust measure could be utilized. Additionally, sampling a similar number of men and women from a diverse mix of job families would be ideal.

Another line of investigation may involve inclusion of gender issues into the model. Since a considerable difference was observed between men and women on the relationship between congruence and satisfaction, measures of sex-role attitudes or work/family orientation may be useful to explain these observed differences. Career orientation among Christian college women may moderate the relationship between congruence and satisfaction such that congruence predicts satisfaction more strongly for those women who intend to work full-time following graduation, for example.

It also may be interesting and useful to explore the influence of beliefs about ordinary work and religiosity of the job satisfaction of working adults. Sikorska-Simmons (2005) found that religiosity predicted job satisfaction among the staff at an assisted living facility. The addition of a measure of beliefs about ordinary work may yield valuable information for career counselors when working with religiously committed clients.

Finally, it would be useful to examine the religious beliefs of faith traditions beyond Christianity. There are many differences between varying faith traditions in regard to the roles of lay people and clergy. For example, some faith traditions have no organized clergy while for others no formal training exists which would be analogous to the seminary system used by some Christian denominations. Further, some religions have stringent criteria in regard to who is eligible for clerical work, which may include gender,
age, caste and other requirements. Other religious systems are entirely open to any individual who wishes to serve. There are also likely to be economic differences between faith traditions with some supporting full time staff while others may be on an entirely volunteer basis. Certainly qualitative investigation into the attitudes of individuals committed to a variety of religious traditions regarding the intersection of work and faith would expand the literature and could lead to the discovery of other specific beliefs that may influence career related outcomes such as satisfaction and choice.
REFERENCES


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APPENDICES
APPENDIX A

UNIACT VOCATIONAL INTEREST INVENTORY – COLLEGE/ADULT

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APPENDIX B

INVENTORY OF CHILDREN’S ACTIVITIES - REVISED

For the next 30 items, please indicate how much you like the following activities:

Don’t like at all
Don’t like
So so
Like
Like a lot

1. Build Things
2. Understand how things work
3. Draw Pictures
4. Talk with friends
5. Sell things to others
6. Add numbers
7. Hammer nails
8. Take things apart
9. Listen to music
10. Teach someone to read
11. Be a group leader
12. Keep things tidy
13. Watch construction
14. Watch a science show
15. Make up a story
16. Help others feel comfortable
17. Tell others what to do
18. Count and sort things
19. Fix a toy
20. Look in a microscope
21. Play with clay or playdough
22. Help sick people
23. Plan games for others
24. Make charts
25. Watch someone fix a T.V.
26. Mix things together to see what happens
27. Sing along with music
28. Take care of young children
29. Try talking your parents into something you want
30. Organize a closet
APPENDIX C
HOPPOCK JOB SATISFACTION BLANK (ORIGINAL)

1. Choose the ONE of the following statements which best tells how well you like your job.

I hate it
I dislike it
I don’t like it
I am indifferent to it
I like it
I am enthusiastic about it
I love it

2. Choose one of the following to show HOW MUCH OF THE TIME you feel satisfied with your job:

All of the time
Most of the time
A good deal of the time
About half of the time
Occasionally
Seldom
Never

3. Choose the ONE of the following which best tells how you feel about changing your job:

I would quit this job at once if I could get anything else to do.
I would take almost any other job in which I could earn as much as I am earning now.
I would like to change both my job and my occupation.
I would like to exchange my present job for another job in the same line of work.
I am not eager to change my job, but I would do so if I could get a better job.
I cannot think of any job for which I would exchange mine
I would not exchange my job for any other

4. Choose one of the following to show how you think you compare with other people

No one likes his job more than I like mine
I like my job much better than most people like theirs
I like my job better than most people like theirs
I like my job about as well as most people like theirs
I dislike my job more than most people dislike theirs
I dislike my job much more than most people dislike theirs
No one dislikes his job more than I dislike mine
APPENDIX D

HOPPOCK JOB SATISFACTION BLANK (MODIFIED)

1. Choose the ONE of the following statements which best tells how well you like your college major.

   I hate it
   I dislike it
   I don’t like it
   I am indifferent to it
   I like it
   I am enthusiastic about it
   I love it

2. Choose one of the following to show HOW MUCH OF THE TIME you feel satisfied with your college major:

   All of the time
   Most of the time
   A good deal of the time
   About half of the time
   Occasionally
   Seldom
   Never

3. Choose the ONE of the following which best tells how you feel about changing your major:

   I would quit this major at once if I could.
   I would take almost any other major in which I could earn as much as I will earn from staying in this major.
I would like to change both my major and my occupational plans.
I would like to exchange my present major for another similar major.
I am not eager to change my major, but I would do so if someone made a convincing case for a better major.
I cannot think of any major for which I would exchange mine.
I would not exchange my major for any other.

4. Choose one of the following to show how you think you compare with other people

No one likes his or her college major more than I like mine
I like my college major much better than most people like their
I like my college major better than most people like theirs
I like my college major about as well as most people like theirs
I dislike my college major more than most people dislike theirs
I dislike my college major much more than most people dislike theirs
No one dislikes his or her college major more than I dislike mine
APPENDIX E

VALUATION OF ORDINARY WORK SCALE

Please indicate the level at which you agree with the following statements.

Strongly Disagree
Disagree
Somewhat Disagree
Neither Agree nor Disagree
Somewhat Agree
Agree
Strongly Agree

1. I believe that there is nothing spiritual about studying sociology or physics.
2. I believe that ministry work is no more important to people in my church than ordinary jobs. (R)
3. I believe that only ministers have a calling from God.
4. I believe that my work as a college student is spiritually significant. (R)
5. I believe that Christians who are not in ministry are not living out the call of discipleship with their whole lives.
6. I believe that God is more pleased by the work of pastors and missionaries than plumbers and bankers.
7. I believe that an ordinary job, like customer service, is a holy occupation (R)
8. I believe that it is easier to serve God as a minister than as a mechanic
9. I believe that giving up everything for Jesus means full-time ministry.
10. I believe that ordinary work is a venue for service to God. (R)
11. I believe that Christians serve God by doing their jobs faithfully (R)
12. I believe that God wants all Christians to serve as missionaries if possible.
13. I believe that you ought to use your job to reach the lost or help people spiritually if you want to serve God with it
14. I believe that the real value of work is to make money to support missionaries and ministers.
15. I believe that God cares for His creation largely through the agency of human work.
(R)
16. I believe that some legitimate occupations are more ‘sanctified’ than others.
17. I believe that no work is “just a job” if done out of love for God. (R)
18. I believe that teaching in a Christian school serves God more than teaching at a private or public school.
19. I believe that God is with ministers more fully than everyone else.
20. I believe that loving God in your work means serving your boss, co-workers and customers well. (R)
APPENDIX F

RELIGIOUS COMMITMENT INVENTORY – 10

Please indicate how true of you each statement below is on the following scale:

Not at all true of me
Somewhat true of me
Moderately true of me
Mostly true of me
Totally true of me

1. I often read books and magazines about my faith.
2. I make financial contributions to my religious organization.
3. I spend time trying to grow in understanding of my faith.
4. Religion is especially important to me because it answers many questions about the meaning of life.
5. My religious beliefs lie behind my whole approach to life.
6. I enjoy spending time with others of my religious affiliation.
7. Religious beliefs influence all my dealings in life.
8. It is important to me to spend periods of time in private religious thought and reflection.
9. I enjoy working in the activities of my religious organization.
10. I keep well informed about my local religious group and have some influence in its decisions.
Please mark the following questions as either true or false.

1. I'm always willing to admit it when I make a mistake.
2. I always try to practice what I preach.
3. I never resent being asked to return a favor.
4. I have never been irked when people expressed ideas very different from my own.
5. I have never deliberately said something that hurt someone's feelings.
6. I like to gossip at times.
7. There have been occasions when I took advantage of someone.
8. I sometimes try to get even rather than forgive and forget.
9. At times I have really insisted on having things my own way.
10. There have been occasions when I felt like smashing things.
APPENDIX H

RELIGIOUS ORIENTATION SCALE

Please indicate your level of agreement on the following scale:

Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

1. Religion offers me comfort when sorrow and misfortune strike.
2. I try hard to carry religion over to all other dealings in life.
3. Church membership helps establish a person in the community.
4. The purpose of prayer is to secure a happy and peaceful life.
5. What I believe doesn’t matter as long as I lead a normal life.
6. I’ve often been keenly aware of the presence of a divine being.
7. My religious beliefs lie behind my whole approach to life.
8. Prayers said alone are as meaningful as when said during service.
9. The church is most important as a place to form social relationships.
10. If not prevented by circumstances, I attend church once a week.
11. Religion is important for answering questions about life’s meaning.
12. Religion is interesting because church is a congenial social activity.
13. I read literature about my faith (or church).
14. Private religious thought and meditation is important to me.
15. The primary purpose of prayer is to gain relief and protection.
APPENDIX I

DEMOGRAPHIC QUESTIONNAIRE

What college or University do you attend? ____________________________________

What is your current class standing?
   First year
   Sophomore
   Junior
   Senior

What is your current GPA?
   3.6 to 4.0
   3.3 to 3.6
   3.0 to 3.3
   2.6 to 3.0
   2.3 to 2.6
   2.0 to 2.3
   Below 2.0

What is your age? ________ years

What is your gender? ___Man   ___Woman

What is your Race/Ethnicity?
   _____African American
   _____Asian-American/Pacific Islander
   _____Caucasian
   _____Latino/Hispanic
   _____Native American
   _____Multiracial
   _____Other __________________________________________
What is your denominational affiliation?
Baptist (American Baptist)
Baptist (Southern Baptist)
Baptist (Other)
Catholic (Roman Catholic)
Church of Christ (UCC)
Christian (Churches of Christ)
Episcopal
Friend (Quaker)
Mennonite
Methodist (United Methodist)
Mormon (LDS)
Lutheran (ELCA)
Lutheran (LCMS)
Lutheran (Other)
Nazarene
Non-Denominational
Orthodox (Eastern, Russian, Greek)
Pentecostal (Assemblies of God)
Pentecostal (Other)
Presbyterian (PCUSA)
Presbyterian (Other)
Wesleyan
Not Sure
Not Religiously Affiliated

What is your college major? If you have a double major, please report the major that is more related to your future career plans. ______________________________________

Pick one of the following that best represents your college major.
Employment-Related Services (Human Resources, etc.)
Marketing & Sales (Finance, Real Estate, etc.)
Management (Public Admin, Institutional Mgmt., etc.)
Regulation & Protection (Criminal Justice, etc.)
Communications & Records (Court Reporting, Secretarial, etc.)
Financial Transactions (Accounting, Bookkeeping)
Distribution & Dispatching (Aviation Mgmt)
Transport Operation & Related (Airplane Piloting)
Agriculture, Forestry & Related (Wildlife Mgmt, Nat Resource Mgmt., etc.)
Computer & Information Specialties (MIS, Comp. Sci., etc.)
Construction & Maintenance (Fire Protection, etc.)
Crafts & Related (Culinary Arts, etc.)
Manufacturing & Processing (Machine Tool Operation)
Mechanical & Electrical Specialties (Computer Repair, Heating/Air, etc.)
Engineering & Technologies (Engineering, Architecture, Mathematics, etc.)
Natural Science & Technologies (Chemistry, Biology, etc.)
Medical Technologies (Pharmacy, etc.)
Medical Diagnosis & Treatment (Pre-Med, Physical Therapy, etc.)
Social Science (Economics, Philosophy, Geography, etc.)
Applied Arts (Visual) (Commercial Art, Fine Arts, etc.)
Creative & Performing Arts (Religious Music, Dance, etc.)
Applied Arts (Written & Spoken) (Journalism, Advertising, Spanish, etc.)
Health Care (Nursing, Dental Assisting, etc.)
Education
Community Services (Social Work, Religion, Law, etc.)
Personal Services (Cosmetology/Barbering, etc.)
APPENDIX J

INFORMED CONSENT

PROJECT TITLE: RELIGIOUS BELIEFS ABOUT MINISTERIAL AND NON-MINISTERIAL WORK AS RELATED TO COLLEGE MAJOR SATISFACTION

INVESTIGATOR’S NAME:
Michael Benoit (mbo5@uakron.edu)

RESEARCH PURPOSE AND PROCEDURES: The purpose of this study is to examine the role of religious beliefs about work in the relationship between a person’s fit with his or her college major and the satisfaction that he or she has with that major. If you agree to participate you will be asked to respond to a number of questions about your occupational interests, religious beliefs and orientations, and satisfaction with your major, as well as some demographic questions (your age, GPA, denominational affiliation, etc.)

TIME COMMITMENT: 30 minutes

BENEFITS, RISKS, AND DISCOMFORTS: There are no direct benefits for participating in this study. This is a survey study; thus, participation is associated with very minimal risk. You are not required to take part in the research and you may decline to participate without any penalty. You may discontinue participation at any time without penalty.

RESULT OF PARTICIPATION: If you so choose, you will be entered in a drawing to win (1) 2.0 GB USB Flash Drive or (1) 1.0 GB MP3 player.

Confidentiality: Demographic information (college, major, age, etc.) will be kept in a secure location and only the researcher will have access to the data. Participants will not be individually identified in any publication or presentation of the research results and only aggregate data will be used.

At the end of the survey you will have the option of clicking on a link that will take you to a separate data collection location to enter your email address for inclusion in the prize drawing. Your email will not be connected to your survey responses.

CONSENT: I have been fully informed of the above-described procedure with its possible benefits and risks. I also understand that my responses will be maintained in a confidential manner by the researcher. I voluntarily give my permission for my participation in this study. I know that the investigator and his/her associates will be available to answer any questions I may have. If, at any time, I feel my questions have not been adequately answered, I know that I can contact the researcher (Michael Benoit, mbo5@uakron.edu). I am also aware that I can request to speak with the researcher’s advisor (Dr. Linda Subich, 330-972-8378). I understand that I may discontinue my participation at any time by exiting the survey without submitting it.

This project has been reviewed and approved by the University of Akron Institutional Review Board. If you have any questions about your rights as a research participant, you may call the IRB at (330) 972-7666 or 1-888-232-8790.

By clicking on the button below, you are providing your consent to participate in this study.

APPROVED

IRB

Date 4/16/07

The University of Akron
APPENDIX K

IRB LETTER OF APPROVAL

Office of Research Services and Sponsored Programs

April 19, 2007

Michael Bott
Psychology Department
The University of Akron
Akron, Ohio 44325-4301

Mr. Bott,

Your protocol entitled 'Religious Beliefs about Ministerial and Non-Ministerial Work as a Moderator of the Relationship Between Parish-Environment Fit and Career Satisfactions' was determined to be exempt from IRB review on April 19, 2007. The IRB application number assigned to this project is 20070415. The protocol represents minimal risk to subjects and matches the following federal category for exemption:

☐ Exemption 1 - Research conducted in established or commonly accepted educational settings, involving normal educational practices.
☐ Exemption 2 - Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior.

☐ Exemption 3 - Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior not exempt under category 2, but subjects are elected or appointed public officials or candidates for public office.

☐ Exemption 4 - Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens.

☐ Exemption 5 - Research and demonstration projects conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine public programs or benefits.

☐ Exemption 6 - Taste and food quality evaluation and consumer acceptance studies.

Annual continuation applications are not required for exempt projects. If you make changes to the study's design or procedures that increase the risk to subjects or include activities that do not fall within the approved exemption category, please contact the IRB to discuss whether or not a new application must be submitted. Any such changes or modifications must be reviewed and approved by the IRB prior to implementation.

Please retain this letter for your files. If the research is being conducted for a master's thesis or doctoral dissertation, the student must file a copy of this letter with the thesis or dissertation.

Sincerely,

Sharon McElherrty
Interim Director

CC: Linda Subich, Adviser
    Rosalie Hetz, IRB Chair

[Approved consent form attached]
APPENDIX L

PERMISSION TO USE THE UNIACT INTEREST INVENTORY

ACT
INFORMATION FOR LIVES TRANSITIONS

AGREEMENT FOR THE RELEASE OF ACT MATERIALS
FOR USE IN CAREER-RELATED RESEARCH

The purpose of this document is to specify, and confirm agreement to, the terms and conditions under which ACT, Inc. (ACT) will provide a copy of the adult version of UNIACT without charge to Michael Benoit, The University of Akron.

Terms and Conditions

Following is a list of the terms that the Principal Investigator identified above agrees to honor as a condition for receiving ACT materials. The signature at the end of this Agreement by the Principal Investigator is a pledge to ACT that these terms have been read, understood, and accepted.

1. The Principal Investigator attests that the materials provided by ACT will be used solely for the purposes outlined in the attached research proposal dated November 22, 2006. The expected completion date for this project is May 2007.

2. The Principal Investigator agrees that any reproductions of ACT assessments will include a copyright statement as follows:

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3. The Principal Investigator agrees to provide ACT with a written report of project results within six months of the expected completion date and a copy of all conference presentations, journal articles, and other publications that result from this research project.

4. The Principal Investigator agrees not to sell, disclose or otherwise make the materials or their documentation available to any third party (other than co-investigators), except as approved by ACT in writing. The Principal Investigator agrees that any materials used via computer (online) will be removed upon completion of this specific research purpose.

5. The agreement period may be extended by mutual agreement of the Principal Investigator and ACT. Such agreement must be confirmed in writing by ACT prior to the expected completion date for the investigation.

   [Signatures]

   [Addresses and contact information]

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