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CONGRUENCE WITH COLLEGE MAJOR IN LIGHT OF

COGNITIVE INFLUENCE AND WORK ROLES

by

Erica Lynn Mathis

A Thesis
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and the Department of Psychology
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ABSTRACT

CONGRUENCE WITH COLLEGE MAJOR IN LIGHT OF

COGNITVE INFLUENCE AND WORK ROLES

by Erica Lynn Mathis

May 2016

Using Holland's theory, the author examined moderators that may influence students' academic success and satisfaction while accounting for cognitive influence. Data from 233 undergraduate students was analyzed using a series of hierarchical multiple regressions. The study sought to determine if student employment and the level of interest profile elevation were significant moderators of the relationship between congruence with college major and academic major satisfaction, as well as academic major success. Uniquely, academic major success was determined through GPA and a 10-subscale self-report measure. Cognitive influences were operationalized as positive and negative thinking and accounted for in all analyses. Correlation results suggested that student employment has a negative relationship with academic success as measured by GPA. No study hypotheses were supported, but regression analyses did reveal significant impact of cognitive influences on both academic major satisfaction and academic major success in both research questions.-Based on these findings, clinicians are encouraged to aid students in strategically planning the relationship between required work and educational responsibilities.

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CHAPTER I

INTRODUCTION

Students' college experience is shaped by a variety of factors, including academic major satisfaction and success (Kreig, 2013; Webber, Krylow, & Qin, 2013). Past research has shown various influences on academic major satisfaction and academic success (Bercher, 2014; McIlveen, Beccaria, & Burton, 2013). One issue that students regularly face is the interaction between their personality and the environment of their institution and college major. Therefore, an important construct to investigate in relation to academic major satisfaction and academic success is person-environment fit. The current study used congruence, as established by Holland's theory (Holland, 1997), to measure person-environment fit. Potential moderators and cognitive influences were also explored.

Academic Major Satisfaction and Success

Academic Major Satisfaction

Academic major satisfaction has been defined as the "enjoyment of one's roles or experiences as a student" (Lent, Singley, Sheu, Schmidt, & Schmidt, 2007, p. 87; Ojeda, Flores, & Navarro, 2011). Although this construct has gained its own definition, academic major satisfaction has also been referred to as a way to measure the decision-making outcomes of college students in place of job satisfaction (Nauta, 2007). Many studies have focused on job satisfaction, leading to parallels in the research exploring job and academic major satisfaction. Nauta (2007) asserted that academic major satisfaction is like job satisfaction for college students in that different academic settings lead to different opportunities to utilize skills and interests.

Nauta (2007) also noted that academic major satisfaction is influenced by a number of factors. Lent et al. (2007) found academic goal progress, self-efficacy, and environmental supports to be individually and collectively predictive of academic major satisfaction. Additionally, Soria and Stebleton (2013) found intrinsic motivation to be positively related to academic major satisfaction. This is an important finding since intrinsic motivations are typically what one finds to be inherently interesting, supporting Holland's proposition that engaging in activities that one finds interesting create satisfaction (Holland, 1997).

Academic major satisfaction is an important concern for higher education institutions due to its relationship with issues such as student retention. Elliott and Shin (2002) found that student satisfaction had a positive impact on factors such as motivation, retention, and recruitment. More specifically, academic major satisfaction is an important issue for academic advisors. Light (2001) noted that student satisfaction with academic advising constitutes a substantial portion of a successful college experience. The result of Bailey, Bauman, and Lata's (1998) study supports this idea in that they found non-persisting students to have a significantly lower level of satisfaction with academic advising than persisting students. The current study sought to examine possible predictors and moderators of academic major satisfaction in order to inform issues such as student retention and academic advising.

Academic Success

In addition to academic major satisfaction, academic success is an important factor that influences the college experience. Welles (2010) noted that "the concept of academic success in college is complex and multifaceted" (p. 2). Many researchers have

studied academic success by using grade point average (GPA) (Bauer & Liang, 2003; Duff, Boyle, Dunleavy, & Ferguson, 2004; Farsides & Woodfield, 2003; Furnham, Chamorro-Premuzic, & McDougall, 2002; Goff & Ackerman, 1992; Gray & Watson, 2002; Lievens, Coetsier, De Fruyt, & De Maeseneer, 2002; Phillips, Abraham, & Bond, 2003; Wolfe & Johnson, 1995) or exam results (Busato, Prins, Elshout, & Hamaker, 2000; De Fruyt & Mervielde, 1996; Diseth 2003; Dollinger & Orf, 1991). However, a meta-analysis by Robbins et al. (2004) found that psychosocial and study skills explained variance in academic outcomes above and beyond standardized tests scores and GPA when predicting academic outcomes in college students. Therefore, it is important to consider factors in addition to GPA when defining and studying academic success.

One example of the investigation of other factors that influence academic success is the development of the Academic Success Inventory for College Students (ASICS; Prevatt et al., 2011). The measure stemmed from Self-Determination Theory (Deci & Ryan, 2000), Achievement Goal Theory (Harackiewicz, Barron, Tauer, & Elliot, 2002), Self-Regulation Theory (Zimmerman, 1989), Input-Environment-Outcomes Model (I-E-O) (Astin, 1993), Student Integration Model (Tinto, 1993), and the Student Engagement Model (Kuh, 2001). Factors included on the ASICS are skills, quality of instruction, career decidedness, external motivation/future, confidence in abilities, personal adjustment, concentration and self-regulation, socializing, internal motivation/interest, and lack of anxiety.

While the large amount of factors may seem overwhelming, understanding academic success as more than just GPA is of utmost importance to higher education institutions. Academic success is directly related to degree attainment. This is troubling

considering that 40% of students will leave an institution without attaining a degree (Newby, 2002; Porter, 1990). Leaving college without a degree can cause students to earn less money and be financially unstable, as well as to have fewer career opportunities (Kane & Rouse, 1995). Understanding factors affecting academic success could aid higher education institutions in preventing academic failure. The current study explored the influence of person-environment fit on academic major satisfaction and academic success, as well as potential moderators and cognitive influences' effects on this relationship. These influential variables will be discussed below.

Person-Environment Fit

Person-environment fit, or congruence, has been defined as the compatibility in the relationship between an individual's characteristics and the characteristics of his or her environment (Kristof-Brown, Zimmerman, & Johnson, 2005). If an individual's personality matches the characteristics of his or her environment, he/she should experience positive outcomes (Holland, 1997). Studies have found person-environment fit as a predictor of success, satisfaction, and overall well-being (Broadbridge & Swanson, 2006; Holland, 1997; Nauta, 2013). However, person-environment fit has been most often studied within the world of work and less often in the college environment. This study focused on broadening the understanding of person-environment fit in an academic setting and its relationship to academic major satisfaction and academic success.

Holland's theory suggests that individuals who work in environments that align with their personalities are more satisfied and successful than individuals who work in environments that are different from their personalities (Holland, 1997). Holland stated

that his research on person-environment fit also applies to higher education settings (Holland, 1997). However, there are differences between the factors that shape work environments and higher education environments. For instance, a typical work environment may be shaped by superiors, co-workers, and the nature of the work itself. However, higher education environments may be shaped by academic departments and faculty. Smart, Feldman, and Ethington (2000) noted that faculty in different academic departments create different academic environments based on their teaching approaches and academic preferences. For example, Smart and McLaughlin (1974) found that departments categorized as Holland's Investigative and Realistic types were more focused on research and graduate education while Social, Artistic, and Conventional departments were more focused on "the provision of a congenial work environment for faculty" (Smart et al., 2000, p. 83). While the factors that shape typical work environments are determined by the job itself, factors that shape higher education environments may be determined by academic major.

Fit between one's personality and environment may have benefits such as increased performance, satisfaction, and commitment to an organization, as well as reduction in intention to quit (Dawis & Lofquist, 1984; Holland, 1997; Supeli & Creed, 2014; Tracey, Allen, & Robbins, 2012). Specifically in the college environment, fit between personality and major is related to higher GPAs and persistence in major and career field (Tracey et al., 2012). Satisfaction and persistence in one's major are important outcomes of person-environment fit as they lead to commitment to college and timely degree attainment (Allen & Robbins, 2008; Tinto, 1993). In line with these outcomes, the goal of academic advisors is often to aid students in finding a major that

matches their interests (Crookston, 2009). However, some research has shown contradictory evidence on the importance of person-environment fit, or congruence (specifically fit between students' interests and academic major). Some studies and meta-analyses have found only small to moderate correlations between academic major congruence and outcomes such as satisfaction and success (Assouline & Meir, 1987; Spokane, 1985; Spokane, Meir, & Catalano, 2000; Tranberg, Slane, & Ekeberg, 1993; Tsabari, Tziner, & Meir, 2005). For example, the meta-analysis by Tsabari and colleagues (2005) found correlations between congruence and satisfaction to range from .16 to .17. These findings were slightly weaker than those of Assouline and Meir (1987) who found a correlation of .21, but similar to Tranberg and colleagues (1993) who found a correlation of .17. Therefore, it is likely that extraneous variables influence the strength of relations between congruence and academic outcomes. The current study sought to examine the effects of work hours and profile elevation on the relationship between congruence and academic major satisfaction and success. One theory that has looked at person-environment fit or congruence in both the workplace and academic environments is Holland's theory.

Holland's Theory

John L. Holland was a pioneer in the field of vocational psychology and specifically in the research of person-environment fit (Gottfredson & Johnstun, 2009). Holland's theory of vocational personalities and work environments created a more organized way to interpret career interests and their relationships to different workplaces (Hansen, 2011). The theory attempts to explain the relationship between vocational personalities and work environments and their application to vocational life (Holland,

1997). In developing his theory, Holland sought to identify which characteristics of vocational personalities and work environments would lead to the most satisfying careers. One intent of the theory is to identify factors that would produce the best possible career decisions, career involvement, and career achievements. Most importantly, Holland sought to apply findings to assist individuals struggling with their careers.

Holland's (1997) first step in working toward the overarching goal of career assistance was characterizing individuals by level of resemblance to six personality types. Holland's typology, referred to as RIASEC given the first letter of each of his six types, is comprised of realistic, investigative, artistic, social, enterprising, and conventional types. Holland organized these types in a hexagonal shape to demonstrate the relationship among the types. While each of the six types has distinct traits, the types nearest to each other on Holland's hexagonal model are the most similar (Holland, 1997). According to Holland's conceptualization of the RIASEC types, individuals who most closely resemble the realistic type are generally opinionated and enjoy working with their hands. Investigative individuals are less interested in manual work than realistic individuals. They tend to be intellectual and enjoy researching various phenomena. While artistic individuals share a degree of the investigative type's innovative nature, they are usually more expressive and like to create art forms unsystematically. Social individuals are similarly expressive, but typically described as empathic and choose activities in which they can serve others. Conversely, enterprising individuals use assertiveness to reach organizational goals through leading and persuading others. Conventional individuals are organized and orderly and enjoy the manipulation of data as well as other systematic activities. Although these personality types are distinct, individuals may experience

various levels of resemblance to each type. When the level of resemblance to a type is high, an individual is more likely to exhibit behaviors typical of that particular type (Holland, 1997).

According to Holland's theory, individuals develop into a personality type through a combination of factors, including heredity and environment (Holland, 1997). Support for this assertion was provided by Lykken, Bouchard, McGue, and Tellegen (1993) whose twin study found that genetic factors accounted for more than 30% of occupational interests. The foundation set by genetics and parental influence leads to the reinforcement of certain activities which can produce more intense interests. Continued involvement in preferred activities helps hone skills and competencies in the interest areas (Holland, 1997). Experiences gained from involvement in preferred activities ultimately lead to the formulation of self-concept and personality (Holland, 1997). As individuals develop their self-concepts and personality, they can become more attuned to the types of environments that are most closely related to their personality type.

Holland stated that the individuals who make up an environment are responsible for the creation of the atmosphere of that environment (Holland, 1997). Therefore, six model environments were established to mirror the six personality types (Holland, 1997). Since realistic individuals possess technical and mechanical skills, realistic environments encourage the use of technical skills and value traditional attitudes. Investigative environments utilize scientific skills and value rationality due to investigative individuals' scholarly abilities. Similarly, artistic individuals' aesthetic abilities encourage artistic environments' utilization of expressive skills and appreciation of imagination. Social environments utilize helping skills and value cooperation because of

social individuals' ability and desire to serve others. Enterprising individuals' ability to be aggressive and assertive encourages enterprising environments to utilize leadership skills and value self-confidence. Conventional environments utilize practical skills and value conformity because of conventional individuals' clerical and organizational skills.

When individuals are paired with a certain environment, the interaction between their personality and the environment can be used to predict outcomes such as vocational choice, stability, and achievement (Harms, Roberts, & Winter, 2006; Holland, 1997; Wille, Tracey, Feys, & De Fruyt, 2014). Similarly, research has demonstrated that interactions between personality and environment predict certain outcomes for college students. For college students, environments are determined by majors (Allen & Robbins, 2010; Smart et al., 2000). Choosing a major exposes students to an academic department and faculty members that provide unique experiences and affect success and satisfaction in unique ways (Feldman, Smart, & Ethington, 2004). Smart and Umbach (2007) noted that faculty members encourage participation in activities relevant to academic environments and reward student values related to their academic environment. Research has also shown that factors within academic departments, such as curricula and departmental climate, affect student satisfaction and success more significantly than institutions as a whole (Hartnett & Centra, 1977; Smart & Umbach, 2007). Since various factors that influence college student outcomes are determined by major, it is important to understand how students' fit with their major affects satisfaction and success. The current study sought to add to the understanding of students' fit with their majors and how it influences student outcomes.

In addition to the primary assumptions regarding personality and environment types, Holland's theory includes several secondary constructs. Two of the secondary constructs, congruence and profile elevation, are of interest to this study. According to the Self-Directed Search manual (Holland & Messer, 2013a), congruence is the "amount of agreement or compatibility between two Holland codes" (p. 8) and is a method of measuring and defining person-environment fit. Profile elevation is the "overall level 'liking' or interest a person indicates across all domains of the SDS" (p. 12). Congruence will be examined in more detail in the following section, while profile elevation will be discussed as a possible moderator in a later section.

Congruence

Various methods have been used to examine the interaction between individuals' personalities and their work environments. Holland's theory notes congruence as a method of measuring the interaction between personality and environment, specifically one's vocational personality and his/her work environment (Holland, 1997). Congruence, then, refers to the degree to which individuals' vocational personalities match their work environments. The current study used congruence as a measurement of person-environment fit between college students and their majors.

Holland's theory asserts that people who are employed in environments that match their personalities will be more satisfied and successful (Nauta, 2013). In other words, higher levels of congruence should lead to more satisfaction and success (Holland, 1997). Therefore, the investigation of congruence is important to the prediction of job satisfaction and success. Previous studies have examined the relationship between levels of congruence and job satisfaction and success. One meta-analysis conducted by

Tranberg and colleagues (1993) found that congruence and satisfaction were not significantly correlated, and other meta-analyses have also found weak or negative results (Assouline & Meir, 1987; Spokane, 1985). However, Holland (1997) argued that the inconsistency of results is partially explained by the methods in which congruence are measured. He noted that the integrity of the studies used in the meta-analyses varied greatly. Additionally, he asserted that the positive nature of the majority of correlations found in studies regarding congruence provided evidence to support the construct of congruence (Holland, 1997). In other words, although the studies included in the meta-analyses varied in integrity and the strength of the relationship found between congruence and satisfaction, the correlations produced were almost exclusively positive and should be seen as supportive evidence of the construct of congruence. These findings may also highlight how a variety of factors could be affecting the magnitude of the relations between congruence and outcomes. Not all of these studies assessed other life roles and work-relevant factors that moderate congruence or lack of congruence between a person and his/her work. The current study sought to understand how a factor (i.e., employment) outside of a student's interests and his/her major may impact expected outcomes of congruence.

Despite the varying research on congruence itself, there is evidence for a positive relationship between congruence (i.e., between interests and major) and academic major satisfaction in college students (e.g., Allen, 1996; Feldman, Smart, & Ethington, 1999). Allen's (1996) study on music majors found congruence to have a significant positive correlation with educational satisfaction. Similarly, Feldman and colleagues (1999) found that college students' congruence with their majors was a good predictor of academic

major satisfaction. They reported effect size differences between congruent and incongruent students over a four year period that ranged from one-tenth to one-half of a standard deviation.

Research that has been conducted on congruence and academic success has produced relatively weak relationships. Feldman et al. (1999) noted that the weak relationship between congruence and academic success could be due to poorly defined constructs such as academic success itself. For instance, studies may not provide a clear operational definition of constructs such as academic success. Additionally, constructs such as academic success may be operationalized differently across studies. For example, Sharkey and Layzer (2000) defined academic success as "achievement of or progress toward the students' desired career goal" (p. 354). In contrast, Mbuva (2011) defined success as a student's ability to complete their degree or program. Despite these differences, some research has shown positive results between congruence and academic success. For instance, Posthuma and Navran (1970) found that students that were congruent with their academic environment had higher grade point averages than incongruent students. To avoid the complications of poorly defined constructs, academic success has been operationally defined for using two methods, GPA and a self-report measure of academic success.

Congruence, Success, and Satisfaction

Just as congruence is used as a method of measuring vocational personality and work-environment fit, congruence can also be used as a tool in examining the person-environment fit of college students in their majors. Studies have found that congruence between personality and college major is a predictor of both success and satisfaction

(Broadbridge & Swanson, 2006; Holland, 1997; Nauta, 2013). Both success and satisfaction are of interest in the current study. Congruence between students' personality and interests and their college major has been empirically supported, and in some cases, has predicted academic success. Tracey and Robbins (2006) found that students who had chosen majors similar to their interests had higher GPAs than their peers in majors incongruent with their interests. Similarly, Tracey and colleagues (2012) found that when students had a higher level of congruence with their major they had higher GPAs and were more likely to remain in their major. Since academic success is directly related to degree attainment, it is important for higher education institutions to understand the factors that influence academic success. The current study sought to better understand the connection between congruence and academic success.

The relationship between congruence and academic major satisfaction has been explored. Yet, the relevant literature could use some updating for the current college student body. Congruence has been found to predict academic major satisfaction. Smart's (1987) study found that students with congruent undergraduate and graduate majors were more satisfied with faculty-student and peer relations than students with incongruent majors. As far as satisfaction with environment, Holland (1958) found mixed results between males and females. Females' level of congruence was positively related to satisfaction with college environment, while males' level of congruence showed a negative relationship. Walsh and Russel (1969) and Walsh and Lewis (1972) found that students experienced fewer adjustment problems when they chose a major congruent to their personalities. Similarly, Frantz and Walsh (1972) found that graduate students who

chose a major congruent to their personalities were more satisfied than their incongruent peers. Walsh, Spokane, and Mitchell (1976) found similar results in an undergraduate population.

Although academic major satisfaction has been characterized as an important outcome of congruence, it is important to recognize that satisfaction is based on a number of different aspects of the learning environment (e.g., instruction, career planning assistance, etc.). The variety of these aspects creates difficulty in measuring the construct of academic major satisfaction. To remedy this, researchers have developed their own academic major satisfaction scales. Allen (1996) found that congruency was positively related to both academic achievement and academic major satisfaction by using the Music Major Satisfaction Questionnaire (MMSQ) designed for the study. Similarly, Nauta (2007) created a measure called the Academic Major Satisfaction Scale (AMSS). Nauta (2007) administered the AMSS to the same group of students over a span of two years and found positive associations between satisfaction scores and students who changed their major to something more congruent with their personality. Not only is satisfaction an important outcome of congruence, but it is also an important factor in retention (Sanchez-Leguelinel, 2008). As mentioned earlier, satisfaction plays a role in retention and degree attainment. The current study aimed to understand how the relationship between congruence and academic major satisfaction can be used to inform higher education institutions and academic advisors in order to address issues such as retention and degree attainment. Additionally, the current study aimed to explore possible moderators of the aforementioned relationships such as employment and profile elevation. These moderators are explained in more detail below.

Students as Employees

There has been research focused on applying Holland's theory of vocational personalities and work environments to higher education settings (Feldman, Ethington, & Smart, 2001; Feldman et al., 1999, 2004; Porter & Umbach, 2006). There is, however, less research on how congruence between personality and major is affected in students who serve in roles aside from their academic role. An important role that many students hold is that of the employee. Working causes students to spend time away from school, which may affect congruence. Students with work obligations may not have adequate time or focus to benefit from congruence with their academic environment (Hawkins, Smith, & Hawkins, 2005). The impact of work on college students is substantial, as a growing number of college students are employed in addition to being enrolled in a full academic course load. The U.S. Census Bureau (2011) reported that 72% of college students held a job. Of those students, 20% held full-time, year-round positions. The remaining 52% held year-round jobs that averaged between 20 and 26 hours of work per week. Therefore, it would be beneficial to a large number of students to examine how working might affect congruence in college students. The relationships between success, satisfaction, and congruence have been explored in typical students (Tracey et al., 2012; Tracey & Robbins, 2006). However, investigating students' work roles is important to gain more insight into factors that moderate the congruence relationship.

The increasing cost of higher education, coupled with the lessening of government funding to universities, leaves many students with no other choice than to work during full-time enrollment in college (State Higher Education Executive Officers, 2013). This need to work requires students to navigate the relationship between work and

school. Hall (2010) found that students were struggling in dealing with balancing work and school responsibilities. This struggle could lead to adverse outcomes. For instance, Park and Sprung (2013) identified work-school conflict as a notable stressor and found a negative relationship between work-school conflict and psychological health. Additionally, Furr and Elling (2000) found that the number of hours worked were positively related to students' reports of employment interfering with academic advancement. Based on these findings, student employment has a meaningful impact on students' academic performance and overall well-being. Since college student employment is a trend that appears to only be on the rise (Stern & Nakata, 1991; U.S. Census Bureau, 2011), its effects on academic performance and well-being is crucial in understanding how to serve an increasingly employed college student body.

It is possible that students with majors that match their personalities could receive decreased benefits (e.g., satisfaction, performance, well-being) (Edwards, 1991; Kristof, 1996; Spokane et al., 2000; Verquer, Beehr, & Wagner, 2003) from that congruence because of a conflict between the role of student and the role of employee. More specifically, individuals may experience a decrease in academic success and satisfaction at the same time they experience an increase in workplace demands and responsibilities (i.e. amount of hours worked per week). Butler (2007) found that work-school conflict and decreased academic performance were related to increased work hours and demands. This finding supports the idea that there could be a negatively correlated relationship between employee/work role demands and academic success. It is also possible that academic major satisfaction could be affected by increased workplace demands and responsibilities. Broadbridge and Swanson (2006) found that some students do

experience negative outcomes when combining their roles as students and their roles as employees, such as decreased academic performance and diminished psychological well-being. Kulm and Cramer (2006) found that employed students had lower GPAs than unemployed students. Additionally, they found that employed student spent less than the recommended amount of time studying (Kulm & Cramer, 2006). This finding tentatively supports the idea that there is a negative correlation between employee/work role demands and academic major satisfaction, as well as academic success. The current study hopes to add to the research about the numerous proposed effects of student employment on academic satisfaction and success. The present study will also examine another moderator more closely related to congruence, profile elevation.

<div align="center">Profile Elevation</div>

Congruence has been one of the most studied Holland secondary constructs. However, there is another important and substantially less studied secondary construct, profile elevation. While congruence focuses on the person-environment fit relationship, profile elevation refers to how much an individual endorses, or likes, activities and occupations across a variety of environments. A student's profile elevation has some relevance to his or her congruence as well. Congruence is partially defined by the RIASEC areas of greatest interest for the student. Yet, areas of greatest interest are determined based on the elevation of other RIASEC areas. Therefore, some students may express an overall higher level of interest than others, for which profile elevation can account.

Profile Elevation is calculated by totaling all of the positive endorsements on a measure. Fuller, Holland, and Johnston (1999) initially defined and studied Holland

interest profile elevation on the Self-Directed Search (SDS; Holland & Messer, 2013b), the measure Holland created to assess the RIASEC types in an individual. Fuller and colleagues calculated profile elevation on the SDS by adding the positive responses on the six subscales (Fuller et al., 1999).

While profile elevation appears to be a simple calculation, it has been utilized in research in various ways. An early study by Gottfredson and Jones (1993) asserted that high profile elevation on the SDS was related to extroverted characteristics such as enthusiasm and impulsiveness. However, the relationship was described as weak, given the empirical results (Gottfredson & Jones, 1993). Holland, Johnston and Asama (1994) further investigated these findings by investigating the correlation between profile elevation and the NEO Personality Inventory (NEO PI; Costa & McCrae, 1989). Results demonstrated a positive correlation between profile elevation and the scales of Openness and Extraversion. Conversely, a negative correlation was found between profile elevation and Neuroticism scores (Holland et al., 1994). Fuller et al. (1999) and Bullock and Reardon (2008) also demonstrated significant positive correlations between high profile elevation and the scales of Openness, Conscientiousness, and Extraversion.

Fuller and colleagues (1999) noted that profile elevation could serve as a tool for understanding an individual's psychological health after finding significant correlations between profile elevation and some of the subscales of the Personal Styles Inventory (PSI; Silver & Malone, 1993). Additionally, Fuller et al. (1999) found low profile elevation to be significantly related to depressive traits.

Profile elevation may be an important construct to look at when considering college student academic success and satisfaction. Swanson and Hansen (1986) noted a

positive correlation between profile elevation and positive academic outcomes such as higher grades and higher likelihood to remain in college. As stated, positive relationships have been found between profile elevation and the personality characteristics of openness, extraversion, and conscientiousness (Bullock & Reardon, 2008; Fuller et al., 1999; Holland et al., 1994). Research has also shown positive relationships between some of these personality characteristics and academic major satisfaction and success. In regards to academic success, De Fruyt and Mervielde (1996) found a positive correlation between conscientiousness and exam results. Additionally, O'Connor and Paunonen (2007) found positive correlations between openness and scholastic achievement. However, a meta-analysis by Trapmann, Hell, Hirn, and Schuler (2007) found no connection between extraversion and academic achievement. In regards to academic major satisfaction, positive correlations have been found between the personality characteristics of extraversion, conscientiousness, and agreeableness and college major satisfaction (Logue, Lounsbury, Gupta, & Leong, 2007; Lounsbury, Saudargas, Gibson, & Leong, 2005; Naydenova, Lounsbury, Levy, & Kim, 2012). Based on the positive relationship between profile elevation and personality characteristics and the positive relationship between personality characteristics and academic success and satisfaction, it seems plausible that profile elevation would have a positive relationship with academic success and satisfaction. Finding a direct link between profile elevation and academic success and satisfaction may allow practitioners to streamline assessment by making conclusions about likelihood for academic success and satisfaction based on an interest measure.

Additionally, previous literature has not accounted for cognitive influences (i.e., positive and negative thinking) in examining profile elevation and its relationship to personality or academic variables. The current study aimed to understand if profile elevation could moderate the relationships between congruence, academic major satisfaction, and academic success. Further, the current study sought to expand research on profile elevation as an understudied secondary construct of Holland's theory.

Cognitive Influence

In addition to work hours and profile elevation, cognitive influence is a factor that could affect the benefits of congruence as it relates to academic major satisfaction and success. In the current study, cognitive influence is defined as positive thinking and negative career thoughts. A student's cognitions could affect the level in which they endorse areas of interest. Therefore, positive thinking and negative career thoughts are possible covariates and must be accounted for in studying the relationships between congruence, academic major satisfaction, and academic major success.

Positive Thinking

Bekhet and Zauszniewski (2013) defined positive thinking as "a cognitive process that creates hopeful images, develops optimistic ideas, finds favorable solutions to problems, makes affirmative decisions, and produces an overall bright outlook on life" (p. 1076). Research has shown that such positive thinking is related to outcomes such as higher well-being, fewer instances of depression, and better quality of life (Lightsey & Boyraz, 2011; Zauszniewski, Bekhet, & Suresky, 2009). Further, research has shown a link between factors related to positive thinking, such as hope, and positive academic outcomes. One study found that hope was positively correlated with GPA (Snyder et al., 2002). Another study found academic optimism to have a significant impact on academic

achievement (Hoy, Tarter, & Hoy, 2006). However, not all instances of positive thinking are beneficial. Boyraz and Lightsey (2012) noted that in some individuals, positive automatic thoughts could be indicative of unhealthy denial which accumulates as stress mounts. In this case, data from those individuals might affect possible causal inferences about the true nature between positively thinking and positive outcomes. This is especially true for students who may be highly positive in spite of poor academic performance or satisfaction (i.e., low GPA with no chance of improving before graduation). The current study sought to account for positive thinking in order to better explain the relations between congruence, profile elevation, academic major satisfaction, and academic success. Accounting for positive thinking is predicted to eliminate the effect that maladaptive positive thinking (i.e., unhealthy denial) could have on the relationships between congruence, profile elevation, academic major satisfaction, and academic success.

Negative Career Thoughts

Lam and Cheng (2001) defined negative thoughts as "unhelpful, distorted, idiosyncratic and negatively biased" (p. 256). Negative career thoughts are negative thoughts framed within career development (Sampson, Peterson, Lenz, Reardon, & Saunders, 1996). They have been referred to as faulty self-efficacy beliefs, dysfunctional cognitions, and dysfunctional career beliefs (Brown & Lent, 1996; Corbishley & Yost, 1989; Krumboltz, 1990).

Negative career thoughts can interfere with the career decision-making process (Bullock-Yowell, Peterson, Reardon, Leierer, & Reed, 2011; Strauser, Lustig, Keim, Ketz, & Malesky, 2002; Van Haveren, 2000). The literature indicates a variety of

negative outcomes related to negative career thoughts, including anxiety, poor job satisfaction, poor self-efficacy, and academic undecidedness (Judge & Locke, 1993; Kilk, 1997; Sampson, Reardon, Peterson, & Lenz, 2004; Stead, Watson, & Foxcroft, 1993). As an example, Kilk (1997) found that students who had not chosen an academic major had higher levels of dysfunctional thinking than students who had chosen a major. These outcomes (i.e., poor job satisfaction, poor self-efficacy, and academic undecidedness) of negative career thoughts could be influential in understanding students' congruency with their academic majors in that negative career thoughts might affect major choice and major satisfaction. Therefore, negative career thoughts may influence congruency's effect on academic major satisfaction and academic success. The current study sought to account for negative career thoughts in order to better explain the variance between congruence, profile elevation, academic major satisfaction, and academic success.

Present Study

The current study examined how certain factors may influence the relationship between students' congruence with their major and academic major satisfaction and academic success. More specifically, the present study explored the role of work hours in moderating the relationship between congruence and academic major satisfaction and success. Additionally, this study investigated the role of profile elevation in moderating the relationship between congruence and academic major satisfaction and success. The variables of positive thinking and negative career thoughts were accounted for in order to explore the previously mentioned relationships in the absence of cognitive influence, and assessed their influence on the dependent variables. The present study sought to answer the questions:

1. When accounting for positive thinking and negative career thoughts, does number of hours worked moderate the relationship between congruence and academic major satisfaction and success?

2. When accounting for positive thinking and negative career thoughts, does profile elevation moderate the relationship between congruence and academic major satisfaction and success?

It was hypothesized that:

1. When accounting for positive thinking and negative career thoughts, the relationship between congruence and academic major satisfaction will be moderated by number of work hours.

2. When accounting for positive thinking and negative career thoughts, the relationship between congruence and academic success as measured by GPA will be moderated by number of work hours.

3. When accounting for positive thinking and negative career thoughts, the relationship between congruence and academic success as measured by scores on the ASICS will be moderated by number of work hours.

4. When accounting for positive thinking and negative career thoughts, the relationship between congruence and academic major satisfaction will be moderated by profile elevation.

5. When accounting for positive thinking and negative career thoughts, the relationship between congruence and academic success as measured by GPA will be moderated by profile elevation.

6.   When accounting for positive thinking and negative career thoughts, the relationship between congruence and academic success as measured by scores on the ASICS will be moderated by profile elevation.

CHAPTER II

METHOD

Participants

The sample for the current study consisted of undergraduate students from a mid-sized southeastern university. According to the statistical program G*Power (Faul, Erdfelder, Lang, & Buchner, 2007), the analyses being used (i.e., hierarchical multiple regressions), and an estimated effect size of .15, the current study required 107 participants. A review of the literature on congruence, academic satisfaction, and academic success has produced effect sizes ranging from 0.1 to 0.7 (Feldman et al., 1999; Tsabari, 2005). Due to this large range, an effect size of .15 was chosen to follow the suggestions of Cohen (1988). A total of 233 individuals participated in the study in order to ensure enough participants for each analysis even after eliminating invalid responses. The racial distribution of the sample was 66.1% White, 29.6% Black, 2.1% Hispanic, 1.3% American Indian/Alaskan Native, 0.4% Asian/Pacific Islander, and 0.4% Other. The sex distribution of the sample was 82% female and 18% male. Detailed demographic information can be seen in Table 1.

Table 1

Demographic Characteristics of Sample

Characteristic	n	%
Gender		
Female	42	18
Male	191	82
Race		
American Indian/Alaskan Native	3	1.3

Table 1 (continued).

Characteristic	*n*	%
Asian/Pacific Islander	1	.4
Black or African American	69	29.6
Hispanic	5	2.1
White	154	66.1
Other	1	.4
Year in College		
Freshman	72	30.9
Sophomore	56	24.0
Junior	55	23.6
Senior	18	20.6
Other	2	.9
Major Declared		
Yes	228	97.9
No	5	2.1
Employment Status		
Employed	113	48.5
Not Employed	120	51.5
Number of Paid Positions Held		
1	96	85
2	14	12.4
3	1	.9
4	2	1.8
5+	0	0
Hours Worked Per Week		
1-10	20	17.9
11-20	50	44.6
21-30	24	21.4

Table 1 (continued).

Characteristic	*n*	%
31-40	16	14.3
Hours Worked Per Week		
41-50	1	.9
51-60	1	.9

Procedure

Participants were recruited with the approval of the university's Institutional

Review Board (see Appendix). An online survey consisting of an informed consent

statement, a demographics form, and measures of the study was advertised on the

psychology department's research recruitment website, SONA. The survey was hosted on

Qualtrics, a data collection website, and linked to SONA. Participation in studies

advertised through SONA provides students with opportunities to earn extra course

credit. Because the SONA participant pool is largely female, additional male participants

were recruited by contacting predominantly male student groups at the university. Emails

were sent to leaders of the organizations requesting participation from male members.

The Student Veteran Organization and one fraternity on campus participated and

contributed approximately 15 participants total.

Validity of data was addressed using bogus validity items, recommended by

Meade and Craig (2012). The use of these items aided in identifying participants who

carelessly responded to measures in the current study. The items added were structured in

order to blend into their respective measures. Each item instructed participants to answer

a specific way (e.g., "Answer 'agree' to this question"). Participants who answered

either validity items incorrectly were eliminated from the sample; the data for participants

was also evaluated to determine validity of answers. All measures were counterbalanced

except for the Career Thoughts Inventory (CTI; Sampson et al., 1996). The CTI was

presented last so that participants who responded carelessly did not utilize one of the paid

administrations of the measure.

<div align="center">Measures</div>

A demographic form and all study measures were administered to each participant

using the approach outlined in the Procedures section. Table 2 provides information on

the measures' means, standard deviations, range, and alpha coefficients for the current

sample.

The Demographic Form prompted participants to provide their age, gender,

race/ethnicity, year in college, college major, and GPA. The demographic form also

prompted participants to provide information on their work, including job status, type of

job, and number of hours worked per week, as well as the nature of and purpose for their

jobs. The purpose of gathering information about participants' work was to identify

workers and non-workers, as well as to gain qualitative information about participants'

type of work and reasons for working. However, only the number of hours worked were

used in the analyses.

The O*NET Interests Profiler Short Form (National Center for O*NET

Development, 1999) was used in the current study to determine participants' congruence

with their college major, as well as profile elevation. The O*NET Interests Profiler Short

Form is a self-report measure designed to measure career interest based on Holland's

theory of vocational personalities and work environments (Holland, 1997). The 60 item

measure includes 10 items for each of Holland's RIASEC types (realistic, investigative, artistic, social, enterprising, and conventional) that reflect work activities within that type. Examples of items from the O*NET Interests Profiler Short Form include "Manage a retail store," and "Edit movies." Participants are asked to respond to items with "like," "dislike," or "unsure." Scores are determined by the number of self-reported "likes." A high number of "likes" in any of the RIASEC types indicates a strong interest in that type. The possible range of scores on each scale is 0 to 10. A summary code is created by ordering the three highest scoring types from highest score to lowest score.

Psychometric properties of the O*NET Interests Profiler Short Form were also examined. Alpha coefficients of the RIASEC types in the O*NET Interests Profiler Short Form indicated acceptable levels of internal consistency ($\alpha = .78-.87$) (Rounds, Su, Lewis, & Rivkin, 2010). Test-retest reliability of the RIASEC types are high, with correlations ranging from .78 to .86 (Rounds et al., 2010). Rounds and Walker (1999) provided evidence for convergent validity of the O*NET Interest Profiler by comparing it to the O*NET Interest Finder, which also assesses career interest based on Holland's RIASEC types. The highest correlations were found between corresponding RIASEC types, and ranged from .73 to .84. Additionally, Russell (2007) found the Kappa coefficient between the Strong Interest Inventory and the O*NET Interest Profiler to be .36. The same study found the Kappa coefficient between the SDS and the O*NET Interest Profiler to be .45.

The current study utilized scores of congruence and profile elevation. Congruence was calculated using the Iachan Agreement Index (Iachan, 1984). This method assesses how well two codes match through weighted scores for certain pairings. For the current

study, a participant's code from the interest profiler was matched with the code associated with their major. Exact matches occur when a letter appears in both codes in the same position (e.g., a letter is in the first position in the first code and the first position in the second code). Close matches occur when a letter appears in both codes in different but adjacent positions (e.g., a letter is in the first position in the first code and the second position in the second code). Marginal matches occur when a letter appears in both codes in different, non-adjacent positions (e.g., a letter is in the first position in the first code and the third position in the second code). Possible scores on the Iachan Agreement Index range from 0 to 28. The values of exact, close, and marginal matches are 22, 10, and 4, respectively, for first letter matches; 10, 5, and 2, respectively, for second letter matches; and 5, 2, and 1, respectively, for third letter matches. Letters that appear in only one code of a pairing are considered no match and have a value of 0. The profile elevation score is indicative of overall "liking" or endorsement of items. Profile elevation is calculated by adding all of the RIASEC scale scores on the Interest Profiler Short Form. In the current study, profile elevation score was treated as a continuous variable.

The *Academic Success Inventory for College Students* (ASICS; Prevatt et al., 2011) was used in the current study to assess participants' level of college major success. The ASICS is a self-report measure designed to investigate students' level of academic success in areas other than academic achievement. The measure requires the user to think of a class that they considered difficult in order to answer the questions. However, it is important to note that some subscales reflect more global evaluations of factors influencing students' perception of their success (e.g., career decidedness) and therefore

may not be directly related to the class chosen at the beginning of the measure. The

measure consists of 50 items, all scored on a seven-point likert-type scale (1= *strongly*

disagree; 7 = *strongly agree*). A total score was used in the current study, but scores can

be separated into 10 subscales (i.e., Career Decidedness, Internal Motivation/Confidence,

External Motivation/Future, General Academic Skills, Lack of Anxiety, Concentration,

External Motivation/Current Time, Personal Judgment, Perceived Instructor Efficacy,

and Socializing). Scores on each subscale range from 1-7 and are divided by the number

of subscale questions and multiplied by 14.28 to create subscale scores between 1 and

100. Total scores can range from 1 to 1000. Examples of items from the ASICS include

"I am certain that my major is a good fit for me" and "I studied a lot for this class." The

Cronbach alpha for the 50-item ASICS was .93 (Welles, 2010).

   The Academic Major Satisfaction Scale (AMSS; Nauta, 2007) was used in the

current study to assess participants' level of college major satisfaction. The AMSS is a

self-report measure designed to investigate students' level of satisfaction with their

academic majors. The measure consists of six items, all scored on a five-point likert-type

scale (1= *strongly disagree*; 5 = *strongly agree*). Scores from the six items are averaged

to produce a score from one to five. This scoring ranging from one to five was used in

the current study. Higher scores indicate a higher level of academic major satisfaction.

Examples of items from the AMSS include "I often wish I hadn't gotten into this major,"

and "Overall, I am happy with the major I have chosen." Nauta (2007) reported high

internal consistency for the six items of the AMSS (α = .90). Convergent validity was

demonstrated by Nauta (2007) through significant positive correlations with both student

GPA ($r = .35$, $p < .01$) and the Career Decision Self-Efficacy Scale–Short Form (CDSE-

SF; Betz, Klein, & Taylor, 1996) ($r = .45$, $p < .001$).

     The Positive Automatic Thoughts Questionnaire (ATQ-P; Ingram & Wisnicki,

1988) was used in the current study to assess participants' positive thinking. The ATQ-P

is a self-report measure designed to investigate individuals' positive thinking through the

frequency of positive automatic thoughts. The measure consists of 30 items, all of which

are scored on a five-point likert-type scale ranging from *(1) never* to *(5) all the time*

(Ingram, Kendall, Siegle, Guarino & McLaughlin, 1995). Total scores were used in the

current study and can range from 30 to 150. Examples from the ATQ-P include "I will be

successful," and "My life is running smoothly." Burgess and Haaga, (1994) found the

coefficient alpha of the ATQ-P to be .95. They also found correlations between

individual items and the total scale to range from .32 to .78 (Burgess & Haaga, 1994).

Many studies have investigated the discriminant validity of the ATQ-P by comparing it to

the Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980). These studies

found correlations ranging from -.47 to .29 (Bruch, Mattia, Heimberg, & Holt, 1993;

Burgess & Haaga, 1994; Ingram, 1989a; Ingram, 1989b; Ingram, Atkinson, Slater,

Saccuzzo, & Garfin, 1990; Ingram, Bernet, & McLaughlin, 1994; Ingram, Fidaleo,

Friedberg, Shenk, & Bernet, 1995; Ingram, Slater, Atkinson, & Scott, 1990; Ingram &

Wisnicki, 1988; London, 1989; McDermut & Haaga, 1994). Convergent validity was

established by comparing the ATQ-P to the Social Anxiety Thoughts Questionnaire

(SAT; Hartman, 1984), the Self- Righteousness Scale (SRS; Falbo & Belk, 1985), the

Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), the

Compulsiveness Inventory (CI; Squires & Kagan, 1986), and the Coping Strategies Scale

(COSTS; Beckham & Adams, 1984).

The Career Thoughts Inventory (CTI; Sampson et al., 1996) was used in the

current study to determine the level of negative career thoughts experienced by

participants. The CTI is a self-report measure designed to investigate dysfunctional or

negative thoughts in relation to decision-making in careers and fields of study. The

measure consists of 48 items, all scored on a four-point likert-type scale (*SD= Strongly*

Disagree, D= Disagree, A= Agree, SA= Strongly Agree), ranging from 0-4, respectively.

Examples of items from the CTI include "My interests are always changing," and "I'm

afraid if I try out my chosen occupation, I won't be successful." The CTI yields a total

score, which is the score that was used in the current study, as well as three subscale

scores that measure specific areas of career related dysfunctional thinking. The subscales

of the CTI are *Decision Making Confusion* (DMC), *Commitment Anxiety* (CA), and

External Conflict (EC). The CTI total score has evidence of high internal consistency in

its college student normative group ($\alpha = .96$) (Sampson et al., 1996). Test-retest reliability

for the CTI total score after a four week interval was .86 (Sampson et al., 1996).

Convergent validity of the CTI was determined by comparing the measure to measures

with similar constructs, such as My Vocational Situation (Holland, Daiger, & Power,

1980), the Career Decision Scale (Osipow, Carney, Winer, Yanico, & Koschier, 1987),

The Career Decision Profile (Jones, 1989) and the NEO PI-R (Costa & McCrae, 1992).

Research Questions and Hypotheses

Research Question 1: When accounting for positive thinking and negative career thoughts, does number of work hours moderate the relationship between congruence and academic major satisfaction and success?

Hypothesis 1a: Accounting for positive thinking and negative career thoughts, the relationship between congruence and academic major satisfaction will be moderated by number of work hours.

Hypothesis 1b: Accounting for positive thinking and negative career thoughts, the relationship between congruence and academic success as measured by GPA will be moderated by number of work hours.

Hypothesis 1c: Accounting for positive thinking and negative career thoughts, the relationship between congruence and academic success as measured by scores on the ASICS will be moderated by number of work hours.

Research Question 2: When accounting for positive thinking and negative career thoughts, does profile elevation moderate the relationship between congruence and academic major satisfaction and success?

Hypothesis 2a: Accounting for positive thinking and negative career thoughts, the relationship between congruence and academic major satisfaction will be moderated by profile elevation.

Hypothesis 2b: Accounting for positive thinking and negative career thoughts, the relationship between congruence and academic success as measured by GPA will be moderated by profile elevation.

Hypothesis 2c: Accounting for positive thinking and negative career thoughts, the relationship between congruence and academic success as measured by scores on the ASICS will be moderated by profile elevation.

Data Analysis

A series of analyses were conducted to compare the effects of work hours, congruency, and profile elevation on academic major satisfaction and success. Hierarchical multiple regression was used to test hypothesis 1a. The independent variables were work hours and congruence score, and the dependent variable was academic major satisfaction consisting of scores on the AMSS. To account for positive thinking and negative career thoughts, scores from the ATQ-P and the CTI were entered in the first block of the analysis. The centered independent variables of work hours and congruence scores were entered into the second block. The interaction term for congruence and work hours was entered into the third block to test for interaction effects. Change in R^2 at Step 3 was examined to determine support of the hypothesis.

Hierarchical multiple regression was used to test hypothesis 1b. The independent variables were work hours and congruence score, and the dependent variable was academic success, as measured by GPA. To account for positive thinking and negative career thoughts, scores from the ATQ-P and the CTI were entered in the first block of the analysis. The centered independent variables of work hours and congruence scores were entered into the second block. The interaction term for congruence and work hours were entered into the third block to test for interaction effects. Change in R^2 at Step 3 was examined to determine support of the hypothesis.

Hierarchical multiple regression was used to test hypothesis 1c. The independent variables were work hours and congruence score, and the dependent variable was academic success, consisting of scores on the ASICS. To account for positive thinking and negative career thoughts, scores from the ATQ-P and the CTI were entered in the first block of the analysis. The centered independent variables of work hours and congruence scores were entered into the second block. The interaction term for congruence and work hours were entered into the third block to test for interaction effects. Change in R^2 at Step 3 was examined to determine support of the hypothesis.

Hierarchical multiple regression was used to test hypothesis 2a. The independent variables were profile elevation and congruence score, and the dependent variable was academic major satisfaction, consisting of scores on the AMSS. To account for positive thinking and negative career thoughts, scores from the ATQ-P and the CTI were entered in the first block of the analysis. The centered independent variables of profile elevation and congruence scores were entered into the second block. The interaction term for profile elevation and congruence were entered into the third block to test for interaction effects. Change in R^2 at Step 3 was examined to determine support of the hypothesis.

Hierarchical multiple regression was used to test hypothesis 2b. The independent variables will be profile elevation and congruence score, and the dependent variable was academic success, as measured by GPA. To account for positive thinking and negative career thoughts, scores from the ATQ-P and the CTI were entered in the first block of the analysis. The centered independent variables of profile elevation and congruence scores were entered into the second block. The interaction term for profile elevation and

congruence was entered into the third block to test for interaction effects. Change in R^2 at Step 3 was examined to determine support of the hypothesis.

Hierarchical multiple regression was used to test hypothesis 2c. The independent variables will be profile elevation and congruence scores, and the dependent variable will be academic success, consisting of scores on the ASICS. To account for positive thinking and negative career thoughts, scores from the ATQ-P and the CTI were entered in the first block of the analysis. The centered independent variables of profile elevation and congruence scores were entered into the second block. The interaction term for profile elevation and congruence was entered into the third block to test for interaction effects. Change in R^2 at Step 3 was examined to determine support of the hypothesis.

Prior to conducting these outlined analyses, preliminary checks were conducted to ensure that there were no violations of the assumptions of normality, linearity, multicollinearity, homoscedasticity, and univariate and multivariate outliers. Effect size was assessed post-analyses to determine statistical and practical significance.

CHAPTER III

RESULTS

Data Clean-Up and Preliminary Analyses

Data were downloaded from Qualtrics into SPSS. Of the 358 original cases, 49 containing no data were deleted ($N = 309$). According to the recommendations in existing literature (Meade & Craig, 2012), bogus questions (e.g., "Select dislike for this question") were included. Sixty-three participants were identified as failing the bogus questions and were removed from the data set ($N = 246$). Additionally, 13 cases were removed due to incomplete data (e.g., did not complete an entire measure, stopped mid-survey) ($N = 233$).

The data set was further examined for cases with missing data on some variables. Missing data on at least one item were present for only 2.6% of the sample, but only 0.55% of all items had missing data. Missing data were calculated for each measure in the study. The missing data were replaced using mean substitution if less than 25% of a scale or entire measure was missing. Participants with more than 25% of data missing from a scale or entire measure were to be deleted; however, no participants remaining after initial data cleaning were missing more than 25% of a scale or entire measure.

Internal consistency alphas yielded for the current study's measures were within the expected range based on the measures' past internal consistency reports, and all alpha coefficients exceeded .77. Alpha coefficients, means, and standard deviations for all variables are presented in Table 2.

Table 2

Scale Reliabilities, Means, and Standard Deviations

Variable	α	M	SD	R	Possible R
IP-SF	.93	.38	.46	0-1	0-1
Realistic	.89	.21	.41	0-1	0-1
Investigative	.84	.33	.46	0-1	0-1
Artistic	.88	.44	.49	0-1	0-1
Social	.77	.60	.48	0-1	0-1
Enterprising	.82	.43	.47	0-1	0-1
Conventional	.87	.25	.43	0-1	0-1
ASICS	.89	641.01	92.56	406.98-913.92	1-1000
AMSS	.92	3.43	.46	1-5	1-5
ATQ-P	.96	118.99	19.70	30-150	30-150
CTI	.98	105.04	29.91	0-144	0-144

The dependent variables (i.e., GPA, scores on the AMSS and ASICS) were explored for normality. None of the dependent variables had significant skewness or kurtosis (i.e., all values were between -3 and 3). However, the Kolmogorov-Smirnov test of normality indicated that the AMSS score variable was not normally distributed ($D(216) = .229$, $p < .001$). However, the mean and standard deviation of the AMSS scores in the current study ($M = 3.43$, $SD = 0.46$) were close to those reported in the original Nauta (2007) article ($M = 4.27$, $SD = 0.93$), although the non-parametric descriptive statistics also distributed a skew for the current study because the highest value was equal to the 75th percentile ($Md = 4.57$; $IQR = 3.67, 5$). Based on all

information available regarding the normality of the AMSS, transformations of this data were not conducted. The predictor variables were also examined for normality. All variables' skewness and kurtosis were minimal (i.e., between -1 and 1), with the exception of the ATQ-P and congruence scores, whose kurtosis was 1.582 and -1.423, respectively.

Intercorrelations among all variables were computed and are presented in Table 3. Scores on the ATQ-P were positively correlated with profile elevation, scores on the ASICS, and scores on the AMSS, and negatively correlated with scores on the CTI. Scores on the CTI were positively correlated with scores on the ASICS and the AMSS. Congruence was negatively correlated with profile elevation. Number of hours worked was negatively correlated with GPA. Scores on the ASICS were positively correlated with scores on the AMSS.

Table 3

Intercorrelations of Variables

	1	2	3	4	5	6	7	8
1. ATQ-P	1	-.48**	.05	-.05	.12	.29**	.19**	-.09
2. CTI	--	1	.06	.02	.05	.39**	.53**	.11
3. Congruence	--	--	1	-.07	-.20**	.10	.01	.01
4. Hours Worked	--	--	--	1	.06	.06	-.16	-.36**
5. Profile Elevation	--	--	--	--	1	.06	-.03	-.07
6. ASICS	--	--	--	--	--	1	.26**	.16*
7. AMSS	--	--	--	--	--	--	1	.07
8. GPA	--	--	--	--	--	--	--	1

Note. * $p < .05$. ** $p < .01$.

Primary Analyses

Hierarchical multiple regression was used to assess the utility of hours worked as a moderator of the relationship between congruence and academic major satisfaction after accounting for cognitive influence. Preliminary analyses were conducted to ensure no violations of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Control variables (scores on the ATQ-P, CTI), the predictor variable (congruence), and the moderator (hours worked) were centered to reduce multicollinearity. Scores from the measures of positive and negative thinking were entered at Step 1, explaining 27% ($p < .001$) of the variance in academic major satisfaction. The second step, including congruence and hours worked, did not emerge as a significant model ($\Delta R^2 = .034$; $p = .086$). Therefore, there was no significant change in R^2. Similarly, the third step including the interaction term of congruence and hours worked did not emerge as a significant model ($\Delta R^2 = .000$; $p = .912$). As such, there was no significant change in R^2. In the first model, only scores on the CTI were statistically significant ($B = .008$, $p < .001$). These predictors and their beta values can be seen in Table 4. Therefore, Hypothesis 1a was not supported because the relationship between congruence and academic major satisfaction was not moderated by work hours.

Table 4

Hierarchical Regression Analysis Summary for Hours Worked as a Moderator of the Relationship Between Congruence and Academic Major Satisfaction

Variable	B	R^2	ΔR^2
Step 1		.274**	
ATQ-P	-.001		

Table 4 (continued).

Variable	B	R^2	ΔR^2
CTI	.008*		
Step 2		.308	.034
ATQ-P	-.002		
CTI	.008**		
Congruence	-.004		
Hours Worked	-.007*		
Step 3		.308	.000
ATQ-P	-.002		
CTI	.008**		
Congruence	-.002		
Hours Worked	-.007*		
Congruence*Hours Worked	-4.96E-5		

Note. * $p < .05$. ** $p < .01$.

A second hierarchical multiple regression was used to assess the utility of hours worked as a moderator of the relationship between congruence and academic major success as measured by GPA after controlling for cognitive influence. Preliminary analyses were conducted to ensure no violations of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Control variables (scores on the ATQ-P, CTI), the predictor variable (congruence), and the moderator (hours worked) were centered to reduce multicollinearity. Scores from the measures of positive and negative

thinking were entered at Step 1; however, this model did not significantly explain any variance in academic major success as measured by GPA (R^2 = .049; p = .129). The second step, including congruence and hours worked, emerged as a significant model that explained 19% of the variance in academic major success as measured by GPA. Although the first model was not significant, there was a significant R^2 change in the second step (ΔR^2 = .142; p = .002). However, the third step including the interaction term of congruence and hours did not significantly explain any variance in academic major success as measured by GPA (R^2 = .024; p = .127). In the second model, scores on the ATQ-P (B = -.007, p = .040) and hours worked (B = -.020, p = .001) were the only statistically significant predictors. These predictors and their beta values can be seen in Table 5. Based on these results, Hypothesis 1b was not supported in that hours worked did not moderate the relationship between congruence and academic major success as measured by GPA.

Table 5

Hierarchical Regression Analysis Summary for Hours Worked as a Moderator of the Relationship Between Congruence and Academic Major Success as Measured by GPA

Variable	B	R^2	ΔR^2
Step 1		.049	
ATQ-P	-.005		
CTI	-.001		
Step 2		.192*	.142*
ATQ-P	-.007*		
CTI	.000		

| Congruence | -.009 | | |

Table 5 (continued).

Variable	B	R^2	ΔR^2
Hours Worked	-.020*		
Step 3		.216	.024
ATQ-P	-.008*		
CTI	.001		
Congruence	.034		
Hours Worked	-.020**		
Congruence*Hours Worked	-.001		

Note. * p < .05, **p < .001.

A third hierarchical multiple regression was used to assess the utility of hours worked as a moderator of the relationship between congruence and academic major success as measured by the ASICS self-report measure after controlling for cognitive influence. Preliminary analyses were conducted to ensure no violations of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Control variables (scores on the ATQ-P, CTI), the predictor variable (congruence), and the moderator (hours worked) were centered to reduce multicollinearity. Scores from the measures of positive and negative thinking were entered at Step 1, explaining 10% ($p =$ .003) of the variance in academic major success as measured by self-report. The second step, including congruence and hours worked, did not emerge as a significant model (ΔR^2 = .006; $p = .726$). Therefore, there was no significant change in R^2. Similarly, the third

Step, including the interaction term of congruence and hours worked also did not emerge

as a significant model ($\Delta R^2 = .001$; $p = .789$), and there was no significant change in R^2.

In the first model, only scores on the CTI were statistically significant ($B = .991$, $p =$

.005). These predictors and their beta values can be seen in Table 6. Therefore,

Hypothesis 1c was not supported in that in that hours worked did not moderate the

relationship between congruence and academic major success as measured by self-report.

Table 6

Hierarchical Regression Analysis Summary for Hours Worked as a Moderator of the

Relationship Between Congruence and Academic Major Success as Measured by Self-

Report

Variable	β	R^2	ΔR^2
Step 1		.103*	
ATQ-P	.072		
CTI	.991*		
Step 2		.108	.006
ATQ-P	.044		
CTI	.993*		
Congruence	-.679		
Hours Worked	.832		
Step 3		.109	.001
ATQ-P	.025		
CTI	1.005*		
Congruence	.531		

Hours Worked	.387
Congruence*Hours	-.030
Worked	

Note. * p < .05.

A fourth hierarchical multiple regression was used to assess the utility of profile elevation as a moderator of the relationship between congruence and academic major satisfaction after controlling for cognitive influence. Preliminary analyses were conducted to ensure no violations of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Control variables (scores on the ATQ-P, CTI), the predictor variable (congruence), and the moderator (profile elevation) were centered to reduce multicollinearity. Scores from the measures of positive and negative thinking were entered at Step 1, explaining 29% ($p < .001$) of the variance in academic major satisfaction. The second step, including congruence and profile elevation, did not emerge as a significant model ($\Delta R^2 = .003$; $p = .631$). Therefore, there was no significant change in R^2. Similarly, the third step including the interaction term of congruence and profile elevation also did not emerge as a significant model ($\Delta R^2 = .000$; $p = .951$), and there was no significant change in R^2. In the first model, only scores on the CTI were statistically significant ($B = .009$, $p < .001$). These predictors and their beta values can be seen in Table 7. Therefore, Hypothesis 2a was not supported in that profile elevation did not moderate the relationship between congruence and academic major satisfaction.

Table 7

Hierarchical Regression Analysis Summary for Profile Elevation as a Moderator of the Relationship Between Congruence and Academic Major Satisfaction

Variable	B	R^2	ΔR^2
Step 1		.288*	
ATQ-P	-.002		

Table 7 (continued).

Variable	B	R^2	ΔR^2
CTI	.009**		
Step 2		.292	.003
ATQ-P	-.002		
CTI	.009**		
Congruence	-.002		
Profile Elevation	-.002		
Step 3		.292	.000
ATQ-P	-.002		
CTI	.009**		
Congruence	-.002		
Profile Elevation	-.002		
Congruence*Profile Elevation	-1.601E-5		

Note. * p < .05, ** p < .001.

A fifth hierarchical multiple regression was used to assess the utility of profile elevation as a moderator of the relationship between congruence and academic major success as measured by GPA after controlling for cognitive influence. Preliminary analyses were conducted to ensure no violations of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Control variables (scores on the ATQ-P, CTI), the predictor variable (congruence), and the moderator (profile elevation) were centered to reduce multicollinearity. Scores from the measures of positive and negative

thinking were entered at Step 1, but did not emerge as a significant model ($R^2 = .037$; $p = .054$). The second step, including congruence and profile elevation, was also not significant as a model ($\Delta R^2 = .003$; $p = .773$). Therefore, there was no significant change in R^2. Similarly, the third step including the interaction term of congruence and profile elevation was not a significant model ($\Delta R^2 = .000$; $p = .913$), and there was no significant change in R^2. Based on these results, the Hypothesis 2b was not supported in that in that profile elevation did not moderate the relationship between congruence and academic major success as measured by GPA.

Table 8

Hierarchical Regression Analysis Summary for Profile Elevation as a Moderator of the Relationship Between Congruence and Academic Major Success as Measured by GPA

Variable	B	R^2	ΔR^2
Step 1		.037	
ATQ-P	-.005		
CTI	.003*		
Step 2		.040	.003
ATQ-P	-.005		
CTI	.003*		
Congruence	-2.127E-5		
Profile Elevation	-.002		
Step 3		.040	.000
ATQ-P	-.005		
CTI	.003*		

| Congruence | -2.275E-5 | | |

Table 8 (continued).

Variable	B	R^2	ΔR^2
Profile Elevation	-.002		
Congruence*Profile Elevation	4.901E-5		

Note. * p < .05.

Finally, a sixth hierarchical multiple regression was used to assess the utility of

profile elevation as a moderator of the relationship between congruence and academic

major success as measured by self-report after controlling for cognitive influence.

Preliminary analyses were conducted to ensure no violations of the assumptions of

normality, linearity, multicollinearity, and homoscedasticity. Control variables (scores on

the ATQ-P, CTI), the predictor variable (congruence), and the moderator (profile

elevation) were centered to reduce multicollinearity. Scores from the measures of positive

and negative thinking were entered at Step 1, explaining 17% ($p < .001$) of the variance

in academic major success as measured by self-report. The second step, including

congruence and profile elevation, did not emerge as a significant model ($\Delta R^2 = .007$; $p =$

.403). Therefore, there was no significant change in R^2. Similarly, the third step including

the interaction term of congruence and profile elevation also did not emerge as a

significant model ($\Delta R^2 = .000$; $p = .895$), and there was no significant change in R^2. In the

first model, both scores on the ATQ-P ($B = .660$, $p = .049$) and CTI ($B = 1.014$, $p < .001$)

were statistically significant. These predictors and their beta values can be seen in Table

9. Therefore, Hypothesis 2c was not supported in that in that profile elevation did not

moderate the relationship between congruence and academic major success as measured by self-report.

Table 9

Hierarchical Regression Analysis Summary for Profile Elevation as a Moderator of the Relationship Between Congruence and Academic Major Success as Measured by Self-Report

Variable	B	R^2	ΔR^2
Step 1		.165**	
ATQ-P	.660*		
CTI	1.014**		
Step 2		.172	.007
ATQ-P	.623		
CTI	1.006**		
Congruence	.918		
Profile Elevation	.315		
Step 3		.172	.000
ATQ-P	.619		
CTI	1.006**		
Congruence	.921		
Profile Elevation	.301		
Congruence*Profile Elevation	-.008		

Note. * p < .05, ** p < .001.

CHAPTER IV

DISCUSSION

The current study examined how work roles and profile elevation influenced the relationship between students' congruence with their major and academic major satisfaction and academic success. The current study also accounted for cognitive influence (positive thinking and negative career thoughts) in the aforementioned relationships. Past research has demonstrated that congruence between personality and college major is a predictor of both success and satisfaction (Broadbridge & Swanson, 2006; Holland, 1997; Nauta, 2013). Additionally, congruence between students' personality and interests and their college major has been empirically supported, and in some cases, has predicted academic major satisfaction and academic success (Frantz & Walsh, 1972; Holland, 1958; Smart, 1987; Tracey & Robbins, 2006; Tracey et al., 2012; Walsh & Lewis, 1972; Walsh, Spokane, & Mitchell, 1976). One aim of the current study was to add to and update the body of literature that connects the constructs of person-environment fit (congruence), academic major satisfaction, and academic success. Another aim was to expand the literature base by examining work roles and profile elevation as moderators in the relationship between congruence with major and academic major satisfaction and academic success.

Research Question 1

The first research question examined the moderation of work in the relationship between congruence and academic major satisfaction and success when accounting for cognitive influences. The first hypothesis was that hours worked would moderate the relationship between congruence and academic major satisfaction when accounting for

positive thinking and negative career thoughts. This hypothesis was not supported. The hypothesis that work would moderate the relationship between congruence and academic major satisfaction was based on past research that indicates role conflict can lead to diminished well-being (Hecht & McCarthy, 2010). However, it is possible that other unexplored factors could contribute to what was hypothesized to be a linear relationship between student employment and academic major satisfaction. For instance, Markel and Frone (1998) noted that students who are unsatisfied with school are more compelled to join the workforce, which leads to further disengagement from academics. Therefore, it is possible that the relationship between student employment and academic major satisfaction is more reciprocal than linear.

The second hypothesis was hours worked would moderate the relationship between congruence and academic success as measured by GPA when accounting for cognitive influences. This hypothesis was not supported in that hours worked did not moderate the relationship between congruence and academic success as measured by GPA. The hypothesis that work would moderate the relationship between congruence and academic success as measured by GPA was based on past research that suggests students' congruence with their major has a positive, linear relationship with academic success (Tracey & Robbins, 2006; Tracey et al., 2012) and that suggests workplace demands and academic success have a negative, linear relationship (Butler, 2007; Edwards, 1991; Kristof, 1996; Spokane et al., 2000; Verquer et al., 2003).The results of the current study did indicate a negative correlation between hours worked and GPA. However, as previously mentioned, hours worked was not a significant moderator of the relationship between congruence and academic success as measured by GPA. It is possible that other

factors not directly measured in this study could account for these findings. One such factor could be time management. Greene and Maggs (2015) found that there was an imbalanced amount of time spent between academics, employment, and extracurricular activities in college students. Therefore, time management may have influenced the hypothesized relationship between academic success and employment in the current study. Huie, Winsler, and Kitsantas (2012) found that students who were both academically successful and gainfully employed balanced their responsibilities through time management and effort regulation. The results of this study highlight the importance of assessing organizational skills in college students when exploring how their concurrent roles influence each other.

The third hypothesis was that hours worked would moderate the relationship between congruence and academic success as measured by self-report when accounting for cognitive influences. This hypothesis was not supported. The hypothesis that work would moderate the relationship between congruence and academic success as measured by self-report was based on past research that indicates work-school conflict has a negative, linear relationship with academic achievement (Markel & Frone, 1998). However, because this hypothesis was tested using a self-report measure, it is possible that there was no moderation due to individual differences in participants' definitions of academic success.

Cognitive influences (i.e., positive thinking and negative career thoughts) did account for some variance in the first research question's hypothesized relationships. The finding that negative career thoughts influenced the relationship between congruence and academic major satisfaction is consistent with past research that suggests negative or self-

handicapping thought patterns are related to low academic satisfaction (Eronen, Nurmi, & Salmela-Aro, 1998). However, positive thinking did not account for a significant amount of variance in the aforementioned relationship although past research also suggests that optimism is related to high academic satisfaction (Eronen, Nurmi, & Salmela-Aro, 1998). This could be explained by a possible unhealthy denial that manifests as a coping mechanism for accumulating academic-related stress (Boyraz & Lightsey, 2012). Additionally, it is possible that the ATQ-P was not truly reflective of participants' level of positive thinking. Shedler, Mayman, and Manis (1993) found that self-report measures of psychological well-being often present clients as more mentally healthy than they truly are. Therefore, the ATQ-P could show a significant level of positive thinking but fail to measure other mental health issues or patterns of thinking that might negatively impact academic major satisfaction.

Only positive thinking was found to have a main effect on academic major success as measured by GPA. Results indicated a weak negative relationship between positive thinking and GPA. Therefore, as positive thinking decreases, there is a small increase in GPA. Although past research suggests that types of positive thinking such as optimism have a positive, linear relationship with GPA (Rand, Martin, & Shea, 2011), it is possible that less positive thinking might provide motivation for increased academic performance (Goodhart, 1986).

However, cognitive influences did account for a significant amount of variance in academic major success as measured by self-report (i.e., ASICS). This finding is not surprising in that this self-report measure requests that individuals report their academic success based on their own views of how well they are performing. Yet, the unexpected

aspect of the finding is the direction of the relationship. As self-reported academic success scores increased, negative thinking scores also increased. One possible explanation for this unusual finding is that items on the academic success measure are related to academics and items on the negative career thoughts measure are related to careers. Therefore, it is possible that college students in the current study found themselves able to acknowledge their success in classes, but were uncertain or pessimistic about their ability to successfully find and excel in a career that they find acceptable. This could be explained by successful students experiencing more pressure to have a complete plan about their future careers, when they may not have a plan at all. These uncertainties could appear through high scores on the CTI. Mixed findings in the current study highlights the need for more research regarding self-report measures of academic success and how they globally assess academic success. Moreover, the findings in the current study are inconsistent with past research that indicates that negative, dysfunctional thinking may detrimentally affect academic performance (Kilk, 1997). One explanation for this discrepancy is that negative thoughts about one's future career path (as measured by the CTI in this study) could serve as motivation for increased academic performance (Goodhart, 1986). Additionally, it is possible that students' may hold a pessimistic outlook on career success for a variety of reasons, such as economic conditions, the perceived direct applicability of skills gained in college to the workforce, or the aforementioned uncertainties related to general career plans. This supposed pessimism may predispose students to rate themselves highly on self-report measures of academic success so that they may assuage anxiety regarding uncertain career outcomes by reflecting on their current, academic strengths.

Research Question 2

The second research question examined the moderation of profile elevation in the relationship between congruence and academic major satisfaction and success when accounting for cognitive influences. The first hypothesis was that profile elevation would moderate the relationship between congruence and academic major satisfaction when accounting for positive thinking and negative career thoughts. This hypothesis was not supported. The hypothesis that profile elevation would moderate the relationship between congruence and academic major satisfaction was based on past research that indicates profile elevation has a positive, linear relationship with personality characteristics such as openness, extraversion, and conscientiousness (Bullock & Reardon, 2008; Fuller et al., 1999; Holland et al., 1994) and that those personality characteristics have a positive, linear relationship with college major satisfaction (Logue et al., 2007; Lounsbury et al., 2005; Naydenova et al., 2012). Based on the conclusions drawn from the aforementioned research, it seemed plausible that profile elevation would have exhibited a positive, linear relationship with academic major satisfaction. However, one explanation for the absent moderation could be that profile elevation can indicate indecisiveness. Im (2011) found that differentiation, or "the degree of clarity and distinctiveness of vocational interests, preference, and competency," (p. 150) had the most utility when profile elevation was low. Because profile elevation in interest measures indicates the overall level of interest, high profile elevation could indicate indecisiveness which might result in less academic major satisfaction. For instance, an individual's high profile elevation could be related to indecision in that there are a lot of options on the given interest measure that interest the individual.

The second hypothesis was that profile elevation would moderate the relationship between congruence and academic major success as measured by GPA when accounting for positive thinking and negative career thoughts. This hypothesis was not supported. The hypothesis that profile elevation would moderate the relationship between congruence and academic success as measured by GPA was based on past research that suggests a positive, linear relationship between profile elevation and grades (Swanson & Hansen, 1986). Data from the current study did not support this relationship and also revealed that participants' profile elevation scores were negatively skewed. Because profile elevation in interest measures is an indicator of overall interest, this negative skew could reflect a generally low interest level in the sample. Many participants in the current study were freshmen, so one explanation of the low interest levels could be that participants who recently began college are unsure of what their interests are and therefore endorsed fewer items on the IP-SF. Alternatively, this negative skew could be explained by the pressure for freshmen to decide on a major early in their academic career. If students are decided on their major, they may answer interest measures according to what interests align with their major. This negative skew could also be explained due to the brief nature of the IP-SF, as it may not have enough items to fully encompass some individuals' interest on the RIASEC subscales. Additionally, the current study did not examine persistence, which has often been explored in studies related to interest and academic success. For instance, Tracey and Robbins (2006) found that individuals with low levels of interest exhibited a stronger relationship between congruence with their college majors and persistence in their academic pursuits than

individuals with high interest levels. Therefore, it is possible that persistence could be a factor that influenced the relationship between congruence and academic major success but was not accounted for in this study.

The third hypothesis was that profile elevation would moderate the relationship between congruence and academic success as measured by self-report when accounting for positive thinking and negative career thoughts. This hypothesis was not supported. The hypothesis that profile elevation would moderate the relationship between congruence and academic success as measured by self-report was based on the aforementioned literature connecting profile elevation and academic success. Specifically, this hypothesis was shaped by past research that suggests factors other than GPA such as psychosocial and study skills are important to the measurement of academic success (Robbins et al., 2004). However, cognitive influences accounted for a significant amount of variance in academic success as measured by self-report. This finding is congruent with past research that suggests that scores on measures of hope have a positive relationship with factors of academic success such as GPA, internal and external motivation, and goal-directedness (Snyder et al., 2002).

Clinical Implications

The findings of the current study are of importance to career counseling professionals working with college students. Although the data in this study did not support the hypotheses that work influences the relationships between congruence, academic satisfaction, and academic success, students still find themselves holding multiple roles during their college careers. As previously mentioned in the discussion, research has shown that factors such as time management and effort regulation can be

crucial to proper and successful balance of college students' roles. The possibility that these and other factors could have a large impact on the satisfaction and success of college students functioning in various roles is indicative of how complex the interaction between roles can be, especially when considering things such as interest in and fit with college major. Although it may seem that students with majors that fit with their personality would prosper academically regardless of obstacles such as poor time management, the frustration related to these obstacles may lead to additional problems such as poor psychological health which could affect academic performance (Park & Sprung, 2013). The current study provides little clarification on the effects work or level of interest have on congruence with major or success. Yet, analyses do show that how an individual thinks about career development does impact some of these outcome variables. While clinicians should continue to consider how working may affect academic success and satisfaction, this area of research requires continued attention to better support clinical interventions on these issues.

The current study provides some correlational support for the impact of work on academic success. However, until there is more empirical support for the existence and strength of this relationship, interventions on related issues, such as finances, may be more justifiable and helpful. -In the current study, 77% of working participants reported that they worked to support themselves (i.e., paying bills, buying groceries, maintaining transportation, etc.). Students who work to support themselves would be unable to terminate their employment in order to further focus on their academics without other financial support. Clinicians should aid students struggling with work-school balance in investigating other options to finance their educations. Because clinicians are likely not

qualified to provide financial advice themselves, this aid might simply be a referral to the university's financial aid department to help the student better understand his/her options. Jackson and Reynolds (2013) noted that students who utilize loans were more persistent in enrollment and were more likely to complete their program of study. However, acquiring debt does entail the possibility of future financial problems such as defaulting on loans. Another option that clinicians might explore is discussing course load with clients struggling with work-school balance. Students that work to support themselves may have to decrease their enrollment in order to maintain employment, academic success, and academic satisfaction. Clinicians should be cautious in their recommendations in order to help students make the decision best for their financial and educational goals.

Clinicians may also help students improve their work-school balance by exploring reasons for working beyond self-support. In the current study, 75.2% of working participants reported that they worked to gain extra spending money. Clinicians should explore the spending needs of a client if the work-school balance includes working to gain extra spending money and is negatively affecting the client's academic satisfaction and success. A decrease in work hours may be possible for the client that is working long hours to fund large amounts of shopping or entertainment. Clinician might work with such clients on creating a budget so that they are able to work less and devote more time to academics.

In addition to the previously proposed focuses of student support, clinicians may need to target dysfunctional thinking in order to help students with work-school balance. The current study indicated that cognitive influences such as positive and negative

thinking explained much of the variance in academic success and satisfaction. Therefore, it could be useful for clinicians to formally or informally assess students' positive and negative thinking, especially for those students presenting with problems related to the work-school balance. If assessment results appeared concerning, feedback could be accompanied by thorough discussion about the student's perspective on their academic success and satisfaction. Although formal testing and feedback should not be used as a standalone intervention for students struggling with work-school balance, gaining information about students' cognitive influence could be useful in deciding on how the students' presenting problems should be approached. For instance, students who strongly agree to items such as "I will be successful" and "There's nothing to worry about" (ATQ-P; Ingram & Wisnicki, 1988) may have less dysfunctional thinking than students who strongly agree with items such as "I'm afraid if I try out my chosen occupation, I won't be successful" (CTI; Sampson et al., 1996). Students who strongly agree to such statements may struggle with low self-confidence or career indecisiveness that clinicians could assist them with by using psychoeducation and modalities of therapy that the clinician deems appropriate along with career counseling, as addressing these issues is likely to impact academic satisfaction and success. Additionally, assessing congruence with college major would likely be a salient task for clinicians working with college students. Congruence with college major is related to positive outcomes such as persistence (Tracey et al., 2012). Therefore, students who are struggling with issues such as persisting in their major or degree may benefit from an intervention after the assessment of major fit.

Limitations and Directions for Future Research

The current study was limited by means of a restricted demographic and a skewed demographic distribution. All participants were enrolled at the same mid-sized, southeastern university. However, the entire sample was not of the traditional 18 to 25 year college age; 10.1% of the sample was over 25 years of age. As previously mentioned, the sample was heavily female (i.e., 82% female, 18% male). Additionally, 95.7% of the sample was composed of either Black or White students. These limitations in demographics may prevent the current study's findings from being generalizable to underrepresented populations, such as men, ethnic minority groups, and non-traditional students.

All of the female participants were enrolled in psychology courses and recruited through SONA. However, some of the male participants were recruited from fraternities and the campus Student Veteran Organization. This difference in recruitment may impact the generalizability of the study in that the participants were in different stages of their academic careers. Because of the demographic limitations of this study, future research should seek to recruit a more diverse students' if possible. Additionally, some of the participants in this study were provided incentives to participate (i.e., class credit), other participants were not. Future research should consider possible differences in motivation for participants who are incentivized and for those who were not.

Much of the data collected in this study did not support the hypothesized relationships between congruence, work roles, profile elevation, academic success, and academic major satisfaction. Because of the lack of support for some aspects of the hypotheses, future studies should explore the proposed relationships in this study in a

more diverse college student population. Specifically, it would be worth exploring the significance of working in a more culturally diverse student population because research suggests that values regarding work vary across cultures (Goldberg et al., 2012; Iosua et al., 2014). Additionally, future studies should explore the proposed college student population in a more socioeconomically diverse student population. As previously mentioned, the U.S. Census Bureau (2011) reported that 72% of college students held a job. In the current study, 48.5% of participants held a job. However, 30.9% of the sample were freshmen so it is possible that they do not hold jobs but might at some point in their collegiate career. The U.S. Census Bureau (2011) also reported that 52% of the aforementioned college students held jobs that averaged between 20 to 26 hours of work per week, which is higher than the recommended amount of weekly hours for college students. Among the current study's working participants, 53.5% reported working more than 20 hours per week. Of this percentage, 29.4% reported working between 20 to 26 hours per week. Outside of working rates, there are notable differences between the current sample and the population found in the U.S. Census. The current sample may differ from the sample of the U.S. as a whole regarding degree completion. As noted in the introduction, approximately 40% of students will leave an institution without attaining a degree (Newby, 2002; Porter, 1990); however, approximately 52% of the students in the institution sampled for the current study leave without a degree (Office of Institutional Research, 2015). This higher than average drop-out rate indicates that the sample studied is in particular need of understanding what contributes to students' academic success.

Although a large percentage of this study's sample reported working to support themselves, only 42.5% of working participants reported working to finance their education. Also, 45.5% of participants reported that their income, financial aid, and loans paid for 25% or less of their education. This could be due to grants and scholarships given to students in need. According to a report by CollegePortraits.org (2014), 48% of the students at the sampled university are considered low income. Future studies should clarify how parental support and scholarships contribute to students' educational financing and how such support and resources influence students' motivation to work.

Although hours worked was not found to be a significant moderator of the relationship between congruence and academic success as measured by self-report, it is worth noting that this finding could be a topic for future research. As previously mentioned in the discussion, it is possible that this moderation was not significant due to individual differences in participants' definitions of academic success. Therefore, future research should explore the variance in students' perspectives of academic success. Additionally, the inventory used to measure self-reported academic success, the ASICS, is a relatively new measure with little existing research. Future studies should consider exploring the usefulness and psychometric stability of this instrument. For instance, future research on the current study's surprising finding of a positive relationship between scores on the ASICS and scores on the CTI may reveal nuances in the structure of the ASICS that could be altered to further strengthen the instrument.

By using Holland's theory of person-environment fit and the existing literature regarding higher education, profile elevation, and student employment, the relationships between congruence, academic major satisfaction, academic success, profile elevation,

and student employment were examined in addition to exploring the impact of cognitive influence on the aforementioned variables. The current study suggests that cognitive influences such as positive thinking and negative career thoughts have an effect on how college students perceive their academic success and satisfaction. The assumption that many students work because of substantial financial need (i.e. supporting themselves) was also supported. These findings support the need for vocational professionals to address how students' intersecting roles and related skills (e.g., time management) affect students' performance and motivation to remain enrolled in higher education institutions.

APPENDIX A

INSTITUTIONAL REVIEW BOARD NOTICE OF COMMITTEE ACTION

THE UNIVERSITY OF SOUTHERN MISSISSIPPI.

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 14080704
PROJECT TITLE: Congruence with College Major in Light of Cognitive Influence and Work Roles
PROJECT TYPE: New Project
RESEARCHER(S): Erica Mathis
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: Psychology
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Exempt Review Approval
PERIOD OF APPROVAL: 08/12/2014 to 08/11/2015

Lawrence A. Hosman, Ph.D.
Institutional Review Board

APPENDIX B

DEMOGRAPHIC QUESTIONNAIRE

Directions: Please fill in the blank or check the response that best applies to you.

1. Age: _____ (You must be 18 years or older to continue)

2. Gender:
☐ Male

☐ Female

3. Racial/Ethnic Background:
☐ American Indian/Alaskan Native

☐ Asian/Pacific Islander

☐ Black (Non-Hispanic)

☐ Hispanic

☐ White (Non-Hispanic)

☐ Other: (please specify) _____

4. Marital Status
☐ Single

☐ Married

☐ Divorced

☐ Widowed/Widower

☐ Other: (please specify) _____

5. How many semesters have you been in college? _____
(Please count summer even if you did not take classes. Please count current semester.)

6. Have you declared a major yet?   ☐Yes   ☐No

7. If yes, how many semesters have you been in your current major? _____

8. Approximately what PERCENTAGE of your total college expenses (tuition, room and board, books, daily living expenses) do you personally pay for by working, borrowing

money (such as financial aid or student loans) or out of your own personal savings? Do not count expenses that are paid for by your parents, by a trust fund, or by a scholarship. _____ (The value must be between 0%-100%)

9. Current Standing
☐ Freshman
☐ Sophomore
☐ Junior
☐ Senior
☐ Other: _____

10. Current Major

_____

11. Current GPA (If possible, link to DPR will be added so student may find GPA)
USM GPA: _____

Major GPA: _____

12. Do you currently work? (If no, will be routed to question about major success)
☐ Yes
☐ No

13. How many paid positions do you currently hold?
☐ Drop down menu with choices from 1-5
☐ Other (please explain): _____

14. Current Occupational Title(s) (e.g., nurse, teacher, cashier, accountant, therapist, scientist, etc.):

    1.)_____

    2.)_____

    3.)_____

    4.)_____

    5.)_____

*Please be as specific as possible on this question. It is very important for this research.

15. Across all paid positions, how many hours do you work per week?
_____

16. Do you see your current job as part of your long-term career path?
☐ Yes

☐ No

17. What purpose does your work serve? (check all that apply)
☐ Because you like to stay busy
☐ Because you like your job
☐ Social outlet (e.g., friends with coworkers)
☐ Someone else's expectation
☐ Further your career
☐ Supplement another income (e.g., spouse/partner/significant other's income)
☐ Gain extra spending money
☐ Support yourself (e.g., pay bills, buy groceries, maintain transportation)
☐ Support a spouse/partner/significant other
☐ Support a child/dependent/other family member
☐ Provide financial support for your education (e.g., pay for your tuition)
☐ Provide financial support for another's education (e.g., pay another's tuition)
☐ Other: _____

18. Do you enjoy your work?
☐ Yes
☐ No

19. Do you feel successful in your major?
☐ Yes
☐ No

ACADEMIC SUCCESS INVENTORY FOR COLLEGE STUDENTS (ASICS)

List a course that you have taken within the past year that was the hardest or most difficult for you:

_____

For all the following questions that refer to a specific class, please answer them with regard to the course you listed above.

How difficult was the course above? _____ Enter 1 for Extremely Difficult, 2 for Moderately Difficult, 3 for Slightly Difficult, 4 for Neutral, 5 for Slightly Easy, 6 for Moderately Easy 7 for Extremely Easy.

This course was: † Required   † An Elective

For the following questions, please list the number that corresponds to your answer (1 for Strongly Disagree, 2 for Moderately Disagree, 3 for Slightly Disagree, 4 for Neutral, 5 for Slightly Agree, 6 for Moderately Agree, 7 for Strongly Agree)

___ Personal problems kept me from doing well in this class.

___ It was easy to keep my mind from wandering in this class.

___ I was nervous for tests even when I was well prepared.

___ I studied the correct material when preparing for tests in this class.

___ I had an easy time concentrating in this class.

___ I got satisfaction from learning new material in this class.

___ I needed to do well in this class to get a good job later on.

___ I worked hard to prove I could get a good grade.

___ I enjoyed the challenge of just learning for learning's sake in this class.

___ I felt confident I could understand even the most difficult material in this class.

___ I was pretty sure I could make an A or a B in this class.

___ I tried everything I could to do well in this class.

___ Sometimes I partied when I should have been studying.

___ I worked really hard in this class.

___ Studying for this class made me anxious.

___ I had a hard time concentrating in this class

___ My grades suffered because of my active social life.

___ I knew that if I worked hard, I could do well in this class.

___ This class will be very useful to me in my career.

___ I worried a lot about failing this class.

___ I got easily distracted in this class.

___ I was disappointed with the quality of the teaching.

___ I kept a good study schedule in this class.

___ I did poorly because the instructor was not effective.

___ I would have done much better in this class if I didn't have to deal with other problems in my life

___ It was important to get a good grade in this class for external reasons (my parents, a scholarship, university regulations).

___ I worked hard in this class because I wanted others to think I was smart.

___ I would have done better if my instructor was better.

___ I was pretty sure I would get a good grade in this class.

___ I felt pretty confident in my skills and abilities in this class.

___ I worked hard in this class because I wanted to understand the materials.

___ I got anxious when taking tests in this class.

___ I studied a lot for this class.

___ I think I used good study skills when working in this class.

___ The instructor in this class really motivated me to do well.

___ Anything I learned, I learned on my own. The instructor in this class was not a good teacher.

___ I got behind in this class because I spent too much time partying or hanging out with my friends.

___ This class is important to my future success.

___ I needed good grades in this class to keep up my GPA.

___ I had some personal difficulties that affected my performance in this class.

___ I think in the future I will really use the material I learned in this class

___ Sometimes my drinking behavior interfered with my studying

___ I made good use of tools such as planners, calendars and organizers.

___ I used goal setting as a strategy in this class.

___ I was good at setting specific homework goals.

___ I was well organized.

___ I am certain about what occupation I want after I graduate.

___ I know what I want to do after I graduate.

___ I am having a hard time choosing a major

___ I am certain that my major is a good fit for me

Academic Major Satisfaction Scale

Directions: Read each statement carefully and use the key below to indicate the degree to which you agree or disagree with each item by writing the number in the blank beside each item. Do not omit any items. Please keep your responses to the 1 through 5 scale indicated below (i.e., do not provide answers such as 6) Do not write your name on any of the materials.

KEY:	**1**	**2**	**3**	**4**	**5**
	(Strongly Disagree)				**(Strongly Agree)**

1. I often wish I hadn't gotten into this major.

2. I wish I was happier with my choice of an academic major.

3. I am strongly considering changing to another major.

4. Overall, I am happy with the major I've chosen.

5. I feel good about the major I've selected.

6. I would like to talk to someone about changing my major.

Positive Automatic Thoughts Questionnaire

Directions: Read each statement carefully and use the key below to indicate the degree to which you agree or disagree with each item by writing the number in the blank beside each item. Do not omit any items. Please keep your responses to the 1 through 5 scale indicated below (i.e., do not provide answers such as 6) Do not write your name on any of the materials.

	KEY:	**1**	**2**	**3**	**4**	**5**
		(Never)		**(Sometimes)**		**(All the time)**

1. I am respected by my peers.

2. I have a good sense of humor.

3. My future looks bright.

4. I will be successful.

5. I'm fun to be with.

6. I am in a great mood.

7. There are many people who care about me.

8. I'm proud of my accomplishments.

9. I will finish what I start.

10. I have many good qualities.

11. I am comfortable with life.

12. I have a good way with others.

13. I am a lucky person.

14. I have friends who support me.

15. Life is exciting.

16. I enjoy a challenge.

17. My social life is terrific.

18. There's nothing to worry about.

19. I'm so relaxed.

20. My life is running smoothly.

21. I'm happy with the way I look.

22. I take good care of myself.

23. I deserve the best in life.

24. Bad days are rare.

25. I have many useful qualities.

26. There is no problem that is hopeless.

27. I won't give up.

28. I state my opinions with confidence.

29. My life keeps getting better.

30. Today I've accomplished a lot.

Career Thoughts Inventory (CTI)

This inventory has been developed to help people learn more about the way they think about career choices. You will find statements describing thoughts that some people have when considering career choices. Please answer each statement openly and honestly as it describes you.

Directions: Read each statement carefully and use the key below to indicate the degree to which you agree or disagree with each item by writing the number in the blank beside each item. Do not omit any items. Please keep your responses to the 0 through 3 scale indicated below (i.e., do not provide answers such as 4) Do not write your name on any of the materials.

KEY: 0 = Strongly Disagree   1 = Disagree   2 = Agree   3 = Strongly Agree

1. No field of study or occupation interests me.

2. Almost all occupational information is slanted toward making the occupation look good.

3. I get so depressed about choosing a field of study or occupation that I can't get started.

4. I'll never understand myself well enough to make a good career choice.

5. I can't think of any fields of study or occupations that would suit me.

6. The views of important people in my life interfere with choosing a field of study or occupation.

7. I know what I want to do, but I can't develop a plan for getting there.

8. I get so anxious when I have to make decisions that I can hardly think.

9. Whenever I've become interested in something, important people in my life disapprove.

10. There are few jobs that have real meaning.

11. I'm so frustrated with the process of choosing a field of study or occupation I just want to forget about it for now.

12. I don't know why I can't find a field of study or occupation that seems interesting.

13. I'll never find a field of study or occupation I really like.

14. I'm always getting mixed messages about my career choice from important people in my life.

15. Even though there are requirements for the field of study or occupation I'm considering, I don't believe they apply to my specific situation.

16. I've tried to find a good occupation many times before, but I can't ever arrive at good decisions.

17. My interests are always changing.

18. Jobs change so fast it makes little sense to learn about them.

19. If I change my field of study or occupation, I will feel like a failure.

20. Choosing an occupation is so complicated, I just can't get started.

21. I'm afraid I'm overlooking an occupation.

22. There are several fields of study or occupations that fit me, but I can't decide on the best one.

23. I know what job I want, but someone's always putting obstacles in my way.

24. People like counselors or teachers are better suited to solve my career problems.

25. Even though I've taken career tests, I still don't know what field of study or occupation I like.

26. My opinions about occupations change frequently.

27. I'm so confused, I'll never be able to choose a field of study or occupation.

28. The more I try to understand myself and find out about occupations, the more confused and discouraged I get.

29. There are so many occupations to know about, I will never be able to narrow the list down to only a few.

30. I can narrow down my occupational choices to a few, but I don't seem to be able to pick just one.

31. Deciding on an occupation is hard, but taking action after making a choice will be harder.

32. I can't be satisfied unless I can find the perfect occupation for me.

33. I get upset when people ask me what I want to do with my life.

34. I don't know how to find information about jobs in my field.

35. I worry a great deal about choosing the right field of study or occupation.

36. I'll never understand enough about occupations to make a good choice.

37. My age limits my occupational choice.

38. The hardest thing is settling on just one field of study or occupation.

39. Finding a good job in my field is just a matter of luck.

40. Making career choices is so complicated, I am unable to keep track of where I am in the process.

41. My achievements must surpass my mother's or father's or my brothers' or my sister's.

42. I know so little about the world of work.

43. I'm embarrassed to let others know I haven't chosen a field of study or occupation.

44. Choosing an occupation is so complex, I'll never be able to make a good choice.

45. There are so many occupation that I like, I'll never be able to make a good choice.

46. I need to choose a field of study or occupation that will please the important people in my life.

47. I'm afraid if I try out my chosen occupation, I won't be successful.

48. I can't trust that my career decisions will turn out well for me.

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