PERSONALITY AND ACADEMIC PERFORMANCE OUTCOMES:
THE MEDIATING ROLE OF ENGAGEMENT

BY

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DISSEPTION

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Abstract

Attention to the factors that contribute to academic success has increased over the past decade with the fluctuating changes in the U.S. economy and unemployment rates (D’Allesandro, 2012; Rose, 2013). Historically, one of the most commonly studied predictors of academic performance has been cognitive ability. In recent years, research has shifted beyond cognitive ability to identifying additional individual difference factors, including noncognitive factors. This study aims to contribute to the literature examining noncognitive factors. This study considered two samples consisting of $n = 267$ and $n = 190$ college students from a midwestern university. The study investigated the variables core self-evaluations (CSE), developmental work personality (DWP) and Type D personality (DS14) their direct effect on academic success. In addition, engagement was examined as a potential mediator between these variables and academic success. Key findings illustrated (a) the variables CSE and DWP had a significant positive direct effect on effort predicting a total of 6% of the variance while controlling for gender; (b) the variable CSE had a significant positive direct effect on perceived fit predicting a total of 19% of the variance while controlling for demographic variables (age, gender, and year in school); (c) the variable engagement significantly mediated the relationship between CSE and effort, DWP and effort, and CSE and perceived fit. Conclusions from this study revealed that the noncognitive factors of CSE, DWP and engagement impact academic performance outcomes. Through continuing research, it is hoped that the findings from this study will contribute to the development of interventions at the university level with the goal of facilitating positive retention outcomes and individual academic success rates.
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Chapter 1

Introduction

One key aim of post-secondary education is successful academic performance outcomes. Academic achievement or performance has been defined as outcomes of education that indicate the extent to which an individual, teacher or institution has achieved their specific educational objectives. There are several criteria considered to be indicators of academic performance including procedural knowledge (e.g., skills), declarative knowledge (e.g., facts), curricular-based knowledge (e.g., grades and test scores), and cumulative knowledge (e.g., degrees or certificates; Steinmayr, Meibner, Weidinger, & Wirthwein, 2014). Academic achievement has been identified as important for a variety of reasons. Consequently, the importance of the construct can be viewed from multiple perspectives ranging from a broader societal view to a narrower individual view.

Academic success has been recognized as imperative for societal and economic prosperity. Higher education fosters equity, promotes success and encourages advancement of citizens within a society. Attention to such aspects has increased over the past decade with the fluctuating changes in the U.S. economy and unemployment rates (D’Allesandro, 2012; Rose, 2013). The most recent economic recession has contributed to our nation’s hyper focus on education as a way to remain competitive in a growing global economy. Because academic performance is strongly associated with positive socioeconomic development (Berger & Fisher, 2013), our society values high performance rates and continues to explore factors that may contribute to an increase in U.S. citizen’s achievement levels. It is with this intention in mind, along with other international societies, that an association has been established called the Organization for Economic Co-Operation and Development (OECD). Through this organization,
data is collected in order to engage in comparative studies assessing worldwide academic achievement (Steinmayr, Meibner, Weidinger, & Wirthwein, 2014). One international study analyzing performance is known as the Program for International Student Assessment (PISA). It is the intent of the OECD to provide information to help monitor the various education systems. Conclusions from the studies help guide empirical research and educational policy makers in their ambition to address educational system strengths and weaknesses to achieve their goal of producing high academic performance outcomes.

High achievement outcomes are also a primary focus of colleges and universities. Similar to other types of organizations that hire employees, universities seek to recruit and admit individuals they perceive as the “best” students. Institutions are interested in low attrition and high success rates, as “attrition represents a direct loss of tuition, income, and other things being equal, a failure to accomplish their educational mission” (Bean, 1990, p. 170). Success rates are also important, as they represent the school’s ability to produce academically achieving students, and they serve as an indicator to either praise or criticize a university. Many educators at the institutions are concerned with identifying the determinants of academic success to improve the development of curricula and hence their students’ performance (Hightower, Delgado, Lloyd, Wittenstein, Sellers, & Swanson, 2011).

Finally, on an individual level successful academic performance is one of the most important predictors of vocational careers and socioeconomic prosperity. When hiring an employee and selecting students for higher education, organizations often consider one’s grades, scholastic tests, and academic degree as selection criteria. In addition, higher achievement levels result in more choices such as what university one attends, their major and course of study pursued (e.g., engineering, pre-med, and education), which both ultimately impact one’s long-
term career outcomes (Ramachandran, 2012). Thus, the more successful one is in their academic performance the greater amount of choices they may have. According to Person-Environment Fit Theory (PE), choice is important. PE fit is defined as a match between an individual (i.e., interests, values and abilities) and the characteristics of the work or academic environment. Research has supported a link between PE fit and positive outcomes, including longer persistence, higher psychological and physical well-being and job performance (Kristof-Brown, Zimmerman, & Johnson, 2005). An individual who has more opportunities is more likely to be able to pursue a working environment that fits their personal needs. In contrast, someone who is not as successful in their performance may be limited in their choices potentially resulting in a lack of PE fit. Those who attain a college degree via their successful performance have been found to achieve higher financial success and employment rates. In fact, according to the U.S. Department of Labor as of 2014, an individual with some college education but no degree was found to have a median weekly salary of $741 and an average unemployment rate of 6.0%. In contrast, an individual with a bachelor’s degree had a median weekly salary of $1,101 and an average unemployment rate of 3.5%.

Taking all of this together, it is evident that academic achievement is imperative for societal, institutional, and individual prosperity. Higher education serves as a platform for ensuring this success. The study of academic performance is a valued subject for both psychological and educational research and henceforth is one of the most investigated areas of study. Consideration of the factors that could potentially impact academic achievement could lead to closing gaps between groups of learners and to determining appropriate interventions at the individual or contextual level.
Based on this, the purpose of the current study was to consider potential factors associated with academic performance in a group of college students pursuing a higher education degree. Historically, one of the most commonly studied predictors of academic performance has been cognitive ability. This literature has consistently found that cognitive ability is indeed a successful predictor of performance outcomes (Ackerman & Heggestad, 1997). In recent years, research has shifted beyond cognitive ability to identifying additional individual difference factors, including noncognitive factors. Noncognitive factors have been defined as a set of behaviors, skills, attitudes, and strategies that are crucial to students’ academic performance and persistence in higher education (Farrington, Roderick, Allensworth, Nagaoka, Keyes, & Beechum, 2012). In 1965, Cattell argued that noncognitive factors, such as motivation and personality, would be just as important as intelligence in predicting academic achievement. Recent research has shown that indeed noncognitive factors, including engagement levels and personality, account for variance in performance outcomes above what intelligence can predict (Bratko, Chamorro-Premuzic, & Saks, 2006; Noftle & Robins, 2007; Poropat, 2009). In the higher education setting, personality may have even more predictive ability than intelligence (Conard, 2006; Di Fabio & Busoni, 2007; Furnham, Chamorro-Premuzic, & McDougall, 2003).

A large portion of the personality research has examined the broad Big Five personality traits also known as the Five-Factor Model of personality. This model posits that there are five domains of personality: neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness (O’Connor & Paunonen, 2007). Empirical studies have found that the Big Five personality trait of conscientiousness is the most consistent trait linked to post-secondary success. The trait has been positively associated with GPA and more narrow indicators of academic performance such as final grades in a course (Conard, 2006), written essay grades, and
thesis research grades (Chamorro-Premuzic, 2003b). In terms of the other Big Five factors, the literature suggests mixed results.

Openness to experience has been positively associated with post-secondary outcomes including GPA (Farsides & Woodfield, 2003; Philips et al., 2003) and class participation grades (Rothstein et al., 1994). However, a meta-analysis suggests that the average population correlation has been nonsignificant providing little evidence of an overall association between this personality trait and academic success. Similar results exist for the personality trait of extroversion. Several studies have identified negative correlations between GPA (Bauer & Liang, 2003) and grades on exams (Furnham & Chamorro-Premuzic, 2004). While other research has identified a positive association between extroversion and academic performance (Rothstein et al, 1994). In regard to neuroticism, studies have found negative associations between the trait and post-secondary outcomes (i.e., GPA and performance on thesis research; Chamorro-Premuzic & Furnham, 2003a; De Fruyt & Mervielde, 1996). Finally, the Big Five personality trait of agreeableness has mostly been unassociated with post-secondary academic performance (O’Connor & Paunonen, 2007).

Narrow personality traits presumed to underlie the broad Big Five personality factors have also been considered as predictors of academic performance. For example, impulsivity and anxiety are narrow or lower level traits that are considered to make up the broad trait of neuroticism, facets of conscientiousness include self-discipline and achievement striving, facets of openness to experience include openness to fantasy and aesthetics, and facets of extroversion include enthusiasm and energy. Conclusions from research in this area have suggested that these narrow personality traits tend to be stronger predictors of academic performance than the Big Five traits themselves (Chamorro-Premuzic & Furnham, 2003a; Rothstein et al, 1994).
Given the prior research with the Big Five personality indicating that conscientiousness is significantly correlated with positive academic performance outcomes, while the other broad traits produced mixed results (Chamorro-Premuzic & Furnham, 2003a; Rothestein et al, 1994). It would appear to be important to extend this research to identify more nuanced aspects of personality that could contribute to increased academic performance and academic outcomes. It is my intention to contribute to this area of research by extending the study of personality to a focus on two traits whose relationship with job performance has been well established in the organizational psychology literature but remain in the early stages in the educational psychology research. These two personality traits are core self-evaluations and developmental work personality. Both traits are highly correlated with work performance and newer research has indicated similar outcomes in the academic setting. Hence, it is anticipated that these relationships should demonstrate a similar outcome in this study. To further the research in this area, I will consider whether a health variable, Type D personality, may add any new information regarding the relationship between personality and academic success. To this point, no such research has been done in this area. However, because the trait has consistently been linked to negative occupational performance one can argue the value in identifying whether this trait may serve as a potential risk factor impacting one’s success in academia.

Core self-evaluations (CSE) is broadly defined as an individual’s fundamental and enduring assessment of one’s own worth and competence (Judge, Locke, Durham, & Kluger, 1998). It is a broad, higher-order trait indicated by four well established traits found in the personality literature: self-esteem, generalized self-efficacy, emotional stability, and locus of control. The research in this area originated in organizational science and has focused on the impact the trait has on occupational performance, satisfaction, and motivation. Literature
suggests that individuals with high core self-evaluations are more likely to report job and life satisfaction (Azalea, Omar, & Mastor, 2009; Bowling, Watson, & Beehr, 2004; Chu, 2007; Judge & Bono, 2001; Judge et al., 1998). In addition, core self-evaluations have shown positive relations with occupational performance (Erez & Judge, 2001; Grant & Wrzesniewski, 2010; Judge & Bono, 2001) as well as with occupational motivation (Bipp, 2010; Chang et al., 2012; Erez and Judge, 2001).

Because of the positive outcomes associated with CSE and occupational performance, satisfaction, and motivation, authors have recently extended the research in this area by considering how CSE impacts student performance and satisfaction outcomes. Results have found that core self-evaluations are positively associated with student academic performance and satisfaction (Brouck, 2005). In addition, the construct serves as a moderator between cognitive ability and academic achievement (Rosopa & Schroeder, 2009). Furthermore, CSE has been positively associated with motivation, a factor found in the literature to be positively related with academic success (Griffin et al., 2012a; Griffin et al., 2012b). Given the dearth of research on the personality trait of CSE and its relation to academic performance, it is my intention to fill this gap by further examining the relationship between these two concepts.

Another trait of focus in this study is on work personality. Work personality is a developmental concept that has been linked to meeting the contextual demands (e.g. ability to complete tasks, get along with coworkers, and learn from role models) of a work environment and to positive adult work behavior (Bolton, 1992; Strauser, Waldrop, & Ketz, 1999). Studies have shown an association between developmental work personality and academic success (Lange, D., Strauser, D., Alston, R., Chiu, C. & Wong, 2015; Strauser, O’Sullivan, & Wong, 2012). More research is needed to replicate these early findings.
I am interested in furthering the research in this area by considering a health variable, Type D personality, and how relates to success in school. To this point, no research has been completed ion this area despite the fact that this trait has consistently been linked to negative occupational performance and could have the potential to impact academic success. Type D personality is defined as the tendency to experience high scores on the stable personality traits, negative affectivity (NA) and social inhibition (SI; Mols & Denollet, 2010). Research regarding this construct originated in the medical literature and has focused on health outcomes. Scholars have extended the construct to the study of vocation and academics. The trait has been identified as a risk factor for health (Denollet & Sys, 1996; Pedersen, Lingen, De Jonge, & Scherer, 2010; Schiffer, Pedersen, Widdershoven, & Denollet, 2008) and psychological and work concerns (Hanebuth, Meinal, & Fisher, 2006; Mommersteeg, Denollett, & Martens, 2012; Oginska-Bulik, 2006).

Finally, in accordance with the field of psychology’s call to identify factors that can be shaped or changed as a means of determining interventions, the construct of engagement was considered. Work engagement is a construct that has received attention in this area as it incorporates positive psychological traits to examine how noncognitive factors affect positive vocational and academic outcomes (Bakker, Schaufeli, Leiter, & Taris, 2008). The association between engagement and academic performance has been established (Casuso-Holgado et al., 2013; Strauser, O’Sullivan & Wong, 2012). A few studies have considered engagement as a process variable for academic performance outcomes and have found positive results (Lee, 2014; Reyes, Brackett, Rivers, White, and Salovey, 2012). Findings have suggested that engagement acts as a mediator between personal characteristic variables and academic success and may serve as a foundation for practical interventions.
Significance of the Problem

In the past 25 years, variations in the economy have contributed to an influx in the number of individuals seeking higher education. There are several reasons for seeking higher education. For some, pursuing higher education means a delay in having to seek employment, for others it serves as a way to make oneself more competitive for the job market. Consequently, what once was an aspiration for some has become a necessity for all. In today’s society, individuals who do not have a college education are at a disadvantage to those who have a higher education degree. It has been found that higher education in comparison to a lack of higher education is related external gains including higher salary, lower unemployment rates, and better job opportunities (Fogg, Harrington, & McMahon, 2010; Lonnquist 1979; Rosenberg 1978). Being employed has been associated with an overall sense of self-esteem and self-determination, opportunities for advancement, opportunities for social support and general psychological health (Bluestein, 2008; Neff, 1986).

There continues to be an increase in the number of individuals seeking higher education. According to the NCES (2013), in 2011 approximately 68% of high school graduates enrolled in higher education immediately following graduation, a rise over the last decade (2001 to 2011) by 32%. It is clear that more students are attending college; however, statistics reveal that not everyone is exiting with a degree. Approximately 59% of individuals attained a bachelor’s degree within 6 years of entering a four-year institution (NCES, 2013). This suggests that a little over half of individuals entering college are actually receiving their degrees. This is not only a concern for the student and their potential career outcomes, but it is also a concern for the college or university that admits the student. Just like other types of organizations that hire employees, college and universities seek to recruit and admit individuals they perceive as the “best” students
with the interest of low attrition and high success rates. In addition, our society as a whole is interested in economic prosperity, which has been found to be associated with academic achievement.

Just like determining a good employee, there are factors used to determine a potential good student. In the educational context, some of these factors are high school grades (GPA), standardized tests of cognitive abilities (SAT/ACT), and tests of achievement in specific subject areas, to name a few (Schmill, Kennedy, & Oswald, 2009). Cognitive ability has been found to be a successful predictor of academic performance (Ackerman & Heggestad, 1997). While this has been well established, an overall trend in the field has shifted to emphasizing the concept of individual differences and its importance when considering academic success. Ability factors alone are no longer sufficient to account fully for individual differences. The need to incorporate more than just cognitive factors into admission processes and interventions henceforth has led to an increased interest in identifying what are known as noncognitive factors as predictors of academic success.

**Purpose of the Study**

The primary purpose of this study was to extend the research being conducted in the area of noncognitive factors and academic performance by examining the relationship between CSE, work personality, and DS-14 with the outcomes of effort and perceived fit. In addition, this study will examine engagement as a process variable that could potentially mediate the relationship between the personality traits and academic performance. As mentioned above, two indicators will serve as measures of academic success. When it comes to assessing performance, most studies have used grade point average (GPA) as an indicator of academic success. However, research has shown that effort is a better predictor of performance than grade point average.
(Strauser, O’Sullivan, and Wong, 2012; Volet, 1997). So, this study will use effort as an indicator of academic performance. The second outcome measure that will be used in this study is perceived fit perceptions. The relationship between person-environment fit (PE) and outcomes has been studied frequently in vocational and educational psychology. PE fit is defined as a match between an individual (their interest) and the characteristics of the work or academic environment. Nye, Su, Rounds, & Drasgow (2012) reviewed 60 years worth of the interest literature to examine the relationship between P-E fit and performance outcomes. They found that PE fit is related to performance in both the work and academic contexts. Because the relationship between PE and performance is similar to other nonability predictors that have been utilized as indicators of academic success, one can argue that PE should also be considered an indicator (Barrick & Mount, 1991; Hurtz & Donovan, 2006). Given said research, this study will use fit perceptions as an indicator of university students’ academic performance outcomes.

To achieve the aforementioned aims, this study will be conducted in two phases. Phase 1 will examine the factor structure of core self-evaluations and Type D personality to determine the independence of the constructs. It is hypothesized that the constructs will have a moderate degree of relationship but are unique constructs measuring different aspects related to academic performance.

Phase 2 of this study will examine whether personality has a direct effect on effort and perceived fit. It is hypothesized that high levels of the independent variables core self-evaluations and developmental work personality will have a positive direct effect on effort and perceived fit, while high levels of Type D personality will have a negative direct effect on these performance outcomes (Broucek, 2005). In phase 2, I will also examine whether engagement mediates the effects of CSE, work personality, and DS-14 on effort and perceived fit. Based on
prior research, it is hypothesized that core self-evaluations and developmental work personality will have a positive indirect effect on effort and perceived fit through engagement, while Type D personality will have a negative indirect effect on the performance outcomes (Bauer & Liang, 2003; Denollett, 2009). The following research questions will guide this study:

**Phase 1**
Research Question 1: Are the constructs core self-evaluations and Type D personality discrete?

**Phase 2**
Research Question 2: Does core self-evaluations, work personality, and Type D personality have direct effects on predicting academic success?

Research Question 3: Does engagement mediate the relationship between core self-evaluations, work personality, and Type D personality and academic success?

**Definitions**

**Academic achievement (performance).** The term academic achievement (performance) has been defined as outcomes of education that indicate the extent to which an individual, teacher or institution has achieved their specific educational objectives. There are several criteria considered to be indicators of academic performance including procedural knowledge (i.e., skills), declarative knowledge (i.e., facts), curricular-based knowledge (i.e., grades and test scores), and cumulative knowledge (i.e., degrees or certificates; Steinmayr, Meibner, Weidinger, & Wirthwein, 2014). Previous research has shown self-reported effort or grade point average as the most common determinant of academic performance. More recently, the indicators academic effort and perceived fit have been found to be stronger determinants of performance (Nye, Su, Rounds, & Drasgow, 2012; Strauser, O’Sullivan, and Wong, 2012; Volet, 1997).

**Academic effort.** Academic effort is defined as the students’ degree of willingness to invest time and energy into a particular task. In one study, it was found to be a better predictor of
a college student’s academic performance than GPA (Volet, 1997). Academic effort will be conceptualized as a determinant of one’s academic performance in this study.

**Big Five personality traits.** Broad Big Five personality traits, also known as the Five-Factor Model of personality, posits that there are five domains of personality that explain human personality: neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness (O'Connor & Paunonen, 2007). The five domains are defined in the literature as the following: (a) Conscientiousness describes people who are ordered, organized, hardworking, or ambitious (Zhang, 2002). (b) Openness to experience is defined by six facets including active imagination (fantasy), aesthetic sensitivity, attentiveness to inner feelings, preference for variety, and intellectual curiosity (O’Brien & DeLongis, 1996). (c) Extroversion refers to the extent to which a person is talkative, outgoing, and sociable. (d) Agreeableness is defined as someone who tends to be kind, cooperative, warm, and considerate. (e) Neuroticism is characterized by anxiety, fear, worry, frustration, and loneliness (Costa & McCrae, 1992).

**Core self-evaluations (CSE).** Core self-evaluation is broadly defined as an individual’s fundamental and enduring assessment of one’s own worth and competence (Judge, Locke, Durham, & Kluger, 1998). More specifically, it is a broad, higher-order trait indicated by four well-established traits found in the personality literature: self-esteem, generalized self-efficacy, emotional stability, and locus of control. The four traits are defined in the literature as the following: (a) Self-esteem is the value that one places on oneself as a person (Harter, 1990). (b) Generalized self-efficacy is the evaluation of how well one can perform across a variety of situations. (c) Emotional stability is the propensity to feel calm and secure (Eysenck, 1990). (d) Locus of control is the belief that the desired events in one’s life result from one’s own behavior rather than by some external person or fate (Rotter, 1966). The authors suggest that these four
traits comprise the overarching construct core self-evaluation (Judge et al, 1998) and empirical findings reveal the traits as highly correlated and loading on to the higher order factor, which support this view (Judge & Bono, 2001; Judge, Locke, et al., 1998).

**Engagement.** Engagement is operationally defined as a positive, fulfilling, affective-motivational state of work related to well-being and is characterized by three constructs: vigor, dedication, and absorption (Bakker et al., 2008). Vigor is defined by high levels of energy and mental resilience while working, the willingness to invest effort in work, and persistence even when struggling with difficulties. Dedication is described as being strongly involved in one’s work, and experiencing a sense of enthusiasm, inspiration, significant, pride, and challenge. Finally, absorption refers to being fully concentrated and happily engrossed in the work one is performing (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002, p. 74).

**Narrow personality traits.** Narrow personality traits reside at a lower level of the personality hierarchy. They are more specific traits presumed to underlie the broad Big Five personality factors. For example, impulsivity and anxiety are narrow or lower level traits that are considered to make up the broad trait of neuroticism, facets of conscientiousness include self-discipline and achievement striving, facets of openness to experience include openness to fantasy and aesthetics, and facets of extroversion include enthusiasm and energy.

**Noncognitive factors.** Noncognitive factors have been defined as a set of behaviors, skills, attitudes, and strategies that are crucial to students’ academic performance and persistence in higher education (Farrington, Roderick, Allensworth, Nagaoka, Keyes, & Beechum, 2012). The following are examples of noncognitive factors: study attitudes, study motivation, engagement, metacognitive skills, and personality traits.
Perceived fit scale. P-E fit perspective is that individuals will experience more positive work-related outcomes when they choose an environment that is more congruent with their personal characteristics is a three-dimensional construct. According to Cable and DeRue (1996), P-E fit is comprised of person-organization, person-job, and needs-supplies fit. Person-organization fit refers to congruence between the values and interests of the employee and characteristics of the organization. Person-job fit refers to the congruence between employee abilities and skills and the demands of the job. Needs-supplies fit perceptions are judgments of congruence between the employees’ needs and the rewards they receive in return for their service and contributions on the job.

Personality. Personality has been defined as both dynamic and constant. It is a construct described as the “dynamic mental structures and mental processes that determine an individual’s emotional and behavioral adjustment to environments (James & Mazerolle, 2002, p. 1). In addition, personality is considered constant in that there are behavioral tendencies that are consistent over time and context, which helps predict behavior when certain traits are present.

Type D personality. According to Mols and Denollet (2010), Type D personality is defined as the tendency to experience high scores on the stable personality traits, negative affectivity (NA) and social inhibition (SI). People who are high on both NA and SI are considered to have a “distressed” or Type D personality, given their vulnerability to chronic distress. Individuals with this personality type are known to be gloomy, feel sad all of the time, and have a negative view on the world and themselves (high negative affectivity), while at the same time tend to keep these emotions from others due to the fear of other’s responses (high social inhibition).
Developmental work personality. Developmental work personality (DWP) is based on the combination of three well-known theoretical models found in the psychological literature: Bandura’s social learning theory, Erikson’s developmental stage theory, and Neff’s workplace personality theory. The Revised Developmental Work Personality Scale (RDWPS) consists of the following three subscales: role models, work tasks, and social skills. Role models are described as the parents’ and other observed adults’ work habits. Work tasks are described as individual’s schoolwork completions, feelings about completing schoolwork, and school attendance/participation. Social skills are an individual’s ability to get along with others and ability to avoid conflict with authority figures.
Chapter 2

Literature Review

One key aim of post-secondary education is positive academic performance outcomes. This is a goal that has come to be valued on several levels including the individual, university, and societal (O’Connor & Paunonen, 2007). In order to address this objective, universities have utilized several methods, including high school grades and scores from standardized tests (i.e., SAT or ACT; Schmill, Kennedy, & Oswald, 2009). Research has found that cognitive ability factors such as these are indeed one successful predictor of success in post-secondary education (Ackerman & Heggestad, 1997). However, more recently, there has been a shift in the field. Now, scholars are interested in considering an individual as a whole comprised of many parts or individual differences. With this in mind, it has been argued that perhaps a person’s success is based on more than their cognitive ability. So, recent studies have examined noncognitive factors including motivation, engagement, and personality as contributors to success. The literature has established that noncognitive factors account for an incremental variance in academic success that goes beyond previous grades and standardized tests.

Personality is one factor that has been studied a great deal in this area. Most of the literature has focused on the role that the well-known Big Five personality traits play in predicting performance outcomes; however, less research has considered the role other personality traits outside of the broad big five play in predicting success. Three more nuanced personality traits that have been studied less are the higher-order trait core self-evaluations, Type D personality, and developmental work personality (Broucek, 2005; Lange, Strauser, Alston, Chiu, & Wong, 2015; Oginska-Bulik, 2006; Preckel, Von Kenel, Kudielka, & Fisher). Furthermore, there is a dearth of research considering the construct of engagement as a mediator.
between personality and academic performance outcomes. Given the importance to achieve success in post-secondary education, it is critical to examine potential nuanced personality factors associated with academic success, a process variable (engagement) that may be shaped and therefore inform our interventions. Results may help universities identify both successful and at risk students during their admissions process and provide a potential path for intervention to ensure the best possible academic performance outcomes. Thus, the present study examines the direct effects of three personality traits on academic success outcomes and a potential mediator variable impacting this relationship.

Noncognitive Factors

Researchers have sought to identify noncognitive predictors of academic success, such as study attitudes, study motivation, engagement, metacognitive skills, and personality traits. Noncognitive factors have been defined as a set of behaviors, skills, attitudes, and strategies that are crucial to students’ academic performance and persistence in higher education (Farrington, Roderick, Allensworth, Nagaoka, Keyes, & Beechum, 2012). Studies have found that noncognitive factors, like engagement and personality, account for an incremental variance in academic success that goes beyond previous grades and standardized tests. In addition, noncognitive factors have been considered because of their potential to explain differences in gender performance. According to Jacob (2002), academic difficulties in boys are often attributed to poor “noncognitive skills” such as inattention. Thus, researching noncognitive factors contributes to understanding student academic performance as well as gender differences in this area. This study is interested in focusing on the noncognitive factor of personality.

During the last two decades, accumulated evidence has indicated that personality plays an important role in post-secondary performance. It has been suggested that personality is central as
it affects certain habits one forms that can influence academic success. Personality traits reflect what an individual will do as opposed to what they can do as do cognitive factors (Furnham & Chamorro-Premuzic, 2004). Personality has been defined as both dynamic and constant. It is a construct described as the “dynamic mental structures and mental processes that determine an individual’s emotional and behavioral adjustment to environments (James & Mazerolle, 2002, p.1). In addition, personality is considered constant in that there are behavioral tendencies that are consistent over time and context, which helps predict behavior when certain traits are present. A large portion of the personality research in this area has examined the broad Big Five traits as well as narrow personality traits presumed to underlie the broad Big Five personality factors. The Big Five also known as the Five-Factor Model of personality posits that there are five domains that explain the human personality: neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness (O’connor & Paunonen, 2007).

The five domains are defined in the literature as the following: (a) Conscientiousness describes people who are ordered, organized, hardworking, or ambitious (Zhang, 2002). (b) Openness to experience is defined by six facets including active imagination (fantasy), aesthetic sensitivity, attentiveness to inner feelings, preference for variety, and intellectual curiosity (O’Brien & DeLongis, 1996). (c) Extroversion refers to the extent to which a person is talkative, outgoing, and sociable. (d) Agreeableness is defined as someone who tends to be kind, cooperative, warm, and considerate. (e) Neuroticism is characterized by anxiety, fear, worry, frustration, and loneliness (Costa & McCrae, 1992).

Empirical studies have found that the Big Five personality trait of conscientiousness is the most consistent trait linked to post-secondary success (O’Connor & Paunonen, 2007). Conard (2006) investigated the incremental validity of the Big Five for predicting academic criteria
defined in the study as college GPA, course performance, and attendance. Results demonstrated that conscientiousness predicted the three academic outcomes, incrementally over cognitive ability and other traits. More specifically, for every one standard deviation increase in conscientiousness there was a 0.11 increase in GPA (measured by a 4.0 scale) and a 2% increase in course performance, even while controlling for SAT. In addition, a 3-year longitudinal study of two university student samples investigated personality traits and academic performance (i.e., exams and final-year project). Conclusions from this research found that the Big Five personality factors predicted overall final exam marks over and above several other academic predictors (i.e., absenteeism), accounting for more than 10% of unique variance in overall exam marks. In this model conscientiousness and neuroticism were significant suggesting that conscientiousness may lead to higher academic achievement while neuroticism may impair it (Chamorro-Premuzic & Furnham, 2003b). In a similar study, the same authors investigated a sample of 247 students and found that conscientiousness was significantly associated with academic performance (Chamorro-Premuzic & Furnham, 2003a). Finally, according to a study by Busato, Prins, Elshout, & Hamaker (2000), the personality trait conscientiousness was a consistent and positive predictor of four indicators of academic success.

The literature examining the openness to experience factor of personality as a predictor of performance has found mixed results. Farsides and Woodfield (2003) investigated the potency of the five factor traits in predicting success up to 3 years later. In their sample of 432 undergraduate students, they found that openness to experience had the most prominent association with academic success and explained unique variance in final grades even in the presence of intellect. Lounsbury, Sundstrom, Loveland, and Gibson (2003) examined the relationship between course grades and the Big Five personality constructs along with general
intelligence and a measure of work drive. It was found that the Big Five personality traits accounted for 7% of the variance with openness to experience being significantly, positively related to final grades. Other studies have also found openness to experience is positively related to GPA (Philips et al., 2003) and class participation grades (Rothstein et al., 1994). In contrast, several other studies have found no significant association between openness to experience and academic performance (Busato, Prins, Elshout, & Hamaker, 2000; Chamorro-Premuzic & Furnham, 2003a; Chamorro-Premuzic & Furnham, 2003b). The results of O’connor and Paunonen’s (2007) meta-analysis suggests that the average population correlation between openness to experience and academic performance is nonsignificant ($r = 0.06$), offering little evidence of an overall association between this personality trait and academic success.

There are similar results for the personality trait of extroversion. An investigation of 91 undergraduate student’s academic performance as measured by average exam grades (Furnham & Chamorro-Premuzic, 2004) found that cognitive ability accounted for 3% of the variance in overall performance while personality traits accounted for an additional 12% of the variance. Extroversion was found to be significantly and negatively associated with performance ($r = -.24$). In a longitudinal study (2-year period) examining the impact of the Big Five personality traits on GPA, Furnham et al. (2003b) identified extroversion as a potential threat to academic performance as it was found to be negatively associated ($r = -.29$) with GPA. Goff and Ackerman found similar results ($r = -.17$) to that of Furnham et al. (2003b) via their examination of 147 undergraduate students from the University of Minnesota. This negative association has been interpreted as suggesting that extraverts tend to spend more time socializing rather than focusing on their studies. However, other studies have revealed no correlation between the personality trait of extroversion and academic performance. In Farside and Woodfield’s study
(2003), they investigated the five factor model as it related to academic success (GPA) and found that extroversion had a .00 correlation with GPA. Finally, Rothstein et al. (1994) revealed a positive correlation between extroversion and GPA ($r = .19$). As evidenced above, the research in regard to extroversion demonstrates inconsistent results.

The Big Five personality trait of agreeableness has mostly been unassociated with post-secondary academic performance (O’Connor & Paunonen, 2007). For example, Lounsbury, Sundstrom, Loveland, and Gibson (2003) found agreeableness to be unassociated with both course grades ($r = -.01$) and GPA ($r = -.01$). Equally, agreeableness was found to be unassociated with average exam grade ($r = -.04$; Furnham & Chamorro-Premuzic, 2004) and essay grade ($r = .10$; Dollinger & Orf, 1991). While less common, Rothstein et al. (1994) found agreeableness to be significantly, negatively correlated with written performance ($r = -.20$) and GPA ($r = -.19$). It has also been significantly, positively correlated with course grade ($r = .17$; Conard, 2006).

Finally, when it comes to neuroticism majority of studies have revealed no association between the trait and post-secondary education. More specifically, authors have found no association between neuroticism and written ($r = -.09$) and classroom performance ($r = -.02$; Rothstein, Paunonen, Rush, & King, 1994), exam grade ($r = .06$; Busato, Prins, Elshout, & Hamaker, 2000), course grade ($r = .00$; Paunonen & Ashton, 2001), and GPA ($r = .00$; Gray & Watson, 2002). Furthermore, O’Connor et al.’s (2007) meta-analysis estimated the mean population correlation between neuroticism and various measures of academic performance to be $r = -.03$. While majority of studies have found no association, some have demonstrated a significant negative association between neuroticism and post-secondary outcomes (i.e., GPA and performance on thesis research; Chamorro-Premuzic & Furnham, 2003a; Chamorro-Premuzic & Furnham, 2003b).
Another route researchers have gone to examine personality as it relates to academic success is via narrow personality traits. Narrow personality traits are considered lower level traits of the broad Big Five factors. There have been measures created to assess personality traits or facets presumed to underlie the Big Five personality traits including the NEO-PI-R which assesses 30 narrow personality traits, six for each of the broad Big Five factors (Costa & McCrae, 1992). The conscientiousness facets of achievement striving and self-discipline have been found to be the strongest and most consistent predictors of academic performance, which is consistent with the literature on the broad factor conscientiousness. Several studies have revealed positive associations between the facets and academic success with correlations ranging from \( r = .15 \) to \( r = .39 \) for achievement striving and from \( r = .18 \) to \( r = .46 \) for self-discipline (Chamorro-Premuzic & Furnham, 2003a; Gray & Watson, 2002; Lievens, Coetsier, De Fruyt, & De Maeseneer, 2002).

Empirical evidence considering openness to experience has demonstrated mixed results. For example, De Fryut and Mervielde (1996) found a negative association between GPA and openness to fantasy for males \( (r = -.22) \) and openness to aesthetics for females \( (r = -.19) \) but this has yet to be replicated. In contrast, another study found a positive association between openness to experience facet and academic success \( (r = .22) \), which again has not been replicated (Dollinger & Orf, 1991).

Research on the facet of extroversion (i.e., energetic, hurried, activity, enthusiastic) has demonstrated a positive association between activity and GPA for males \( (r = .26) \) and females \( (r = .21; \) De Fruyt & Mervielde, 1996), while other authors have found a negative association in regard to this relationship \( (r = -.24; \) Chamorro-Premuzic & Furnham, 2003a). The literature considering neuroticism has revealed that the two facets of impulsivity and anxiety both have a
negative association with academic success suggesting that not being able to control one’s urges and experiencing nervousness may be detrimental to academic performance (Chamorro-Premuzic & Furnham, 2003a; De Fruyt & Mervielde, 1996). Conclusions from the research in this area have suggested that narrow personality traits presumed to underlie the Big Five factors tend to be stronger predictors of academic performance than the broad Big Five traits themselves (Rothestein et al., 1994; Chamorro-Premuzic & Furnham, 2003a).

In conclusion, while there is robust evidence suggesting that the broad Big Five personality trait of conscientiousness is strongly correlated with academic success, there are mixed outcomes when it comes to the other traits within the Big Five model. The literature on narrow personality traits suggests that a focus on more specific aspects of personality may serve as stronger predictors of academic success (Rothestein et al., 1994; Chamorro-Premuzic & Furnham, 2003a). Hence, there is a need and call to go beyond the broad Big Five. Outside of serving as potential stronger predictors, understanding the finer nuances of personality may contribute to pinpointing where explicitly to intervene. So, gaining knowledge on these aspects of personality will help scholars, educators and practitioners gain perspective and understanding of where to specifically focus their interventions when working to achieve high performance outcomes. In addition, it could serve as evidence for potentially including these personality measures into the admissions process. This presents a drawback to the present work, which to this point has significantly focused on the broad Big Five personality traits. Thus, one can argue that it is critical to consider more nuanced types of personality as they relate to academic performance. To further the research in this area, this study examined two personality measures, core self-evaluations and developmental work personality. Both traits have been well established in the organizational psychology literature as being associated with work performance but are in
the early stages in the educational psychology literature. So, this study added to this dearth of literature. In addition, this study took the literature further by examining Type D personality as a predictor of performance outcomes for the first time as it could serve as a potential risk factor.

**Academic Success Indicators**

In order to aid in the study of these personality traits as they relate to academic success multiple indicators of academic achievement were utilized. As evidenced above, most studies have used grade point average (GPA) as an indicator of academic success. However, according to Volet (1997), effort serves as a better predictor of performance than grade point average. Volet investigated the significance of cognitive, affective and motivational processes in students’ learning. Consistent with others, the author argues that academic performance cannot be explained solely by general cognitive ability. Hence, Volet (1997) wanted to distinguish between the usefulness of two aspects of university students’ learning goals, direction and effort. Results indicated that both GPA and effort predicted performance outcomes. Effort accounted for 21% of the variance while GPA accounted for 14%. Effort was determined to be a better predictor than GPA.

Based on the above results, studies are beginning to utilize effort as an indicator of successful academic performance. For example, Strauser, O’Sullivan, and Wong (2012) utilized academic effort as a determinant of success in a group of college students ($N = 65$). The authors investigated the relationship between effort and the following variables: work engagement and work personality. Findings revealed that both work personality and engagement are significantly and positively associated with effort. The factors also had an incremental effect in predicting effort. Engagement accounted for 14% of the variance, while work personality accounted for 19% of the variance. Furthermore, Lange, Strauser, Alston, Chiu, and Wong (2015) identified
effort as an indicator of successful performance in their study of 595 college students. Similar to Strauser et al. (2012), the authors concluded that work personality accounted for 6% of the variance in effort while engagement accounted for 12%. So, one goal of this study is to extend the use of effort as an indicator of academic performance. Similar to the aforementioned work, students were asked to rate their academic effort using a 0 to 10 scale with 0 indicating no effort and 10 indicating maximum effort.

A second outcome variable considered in this study was perceived fit perceptions. The relationship between person-environment fit (P-E) and outcomes has been studied frequently in vocational and educational psychology. P-E fit is defined as a match between an individual (their interest) and the characteristics of the work or academic environment. Research in this area examines various types of person-environment fit including the fit between a person’s needs and the supplies available in the work environment (Edwards, 1991), the fit between the demands of the job and the person’s abilities (Kristof-Brown, 2000), and the fit between a person’s values and the culture of an organization (Cable & Judge, 1996). Irrespective of the type of P-E fit studied, results have demonstrated several positive outcomes associated with an individual’s fit within their work environment including job satisfaction, performance on the job and academic setting, psychological and physical well-being (Kristof, 1996; Verquer, Beehr, & Wagner, 2003).

The positive outcome of interest for this study was performance in the academic setting. Nye, Su, Rounds, and Drasgow (2012) reviewed 60 years worth of the interest literature to examine the relationship between P-E fit and performance outcomes. The meta-analysis consisted of 60 studies with approximately 568 correlations addressing the aforementioned relationship. Results of the comprehensive review revealed that P-E fit is related to performance in both the work and academic contexts and is considered more predictive of performance than
interest alone. Based on the outcome of this study, the authors suggest that measuring one’s fit is an important predictor of performance, especially because it has criterion-related validities comparable to other nonability predictors of performance (e.g., personality; Barrick & Mount, 1991; Hurtz & Donovan, 2006).

One way to measure P-E fit has been to look at individual’s perceptions of their perceived fit. Historically, perceived P-E fit has been studied via a one or two factor conceptualization. However, Cable and DeRue (2002) established a scale based on a three-factor conceptualization combining person-organization fit, needs-supplies fit, and demands-abilities fit. Person-organization (P-O) fit refers to congruence between the values and interests of the employee and characteristics of the organization. Person-job (P-J) fit refers to the congruence between employee abilities and skills and the demands of the job. Needs-supplies (N-S) fit perceptions are judgments of congruence between the employees’ needs and the rewards they receive in return for their service and contributions on the job. It has been argued that this model of P-E fit is one of the most important frameworks of perceived fit perceptions (Etzel & Gabriel, 2016).

Research on the measure has found that each type of fit is related to a number of positive outcomes, including organizational identification, job satisfaction and job performance. Cable and DeRue (2002) argue that the scale serves as a more complete measurement of perceived fit since it considers three factors and their outcomes rather than just one or two of the common conceptualizations of fit. In addition, they believe it is able to better predict people’s attitudes and behaviors. Hinkle and Choi (2009) validated the psychometric properties of the perceived fit measure on 317 certified public accountants. The results provided further support for the three-dimensional construct.
In an attempt to replicate these findings in an academic setting, Li, Yao, Chen, and Wang (2013) reported similar results concerning perceived fit perceptions and academic outcomes with university students. In their study, the scale was adapted from the original Cable and DeRue (2002) model. The authors modified the N-S and J-S scales and replaced the P-O scale with items from a perceived academic fit scale developed by Schmitt, Oswald, Friede, Imus and Merritt (2008). The results from their study indicated that students also differentiate between the three types of fit and each type has a unique role in predicting academic outcomes. All three P-E fit types were positively related to well-being, academic satisfaction, and academic performance.

Similarly, Etzel and Nagy (2016) examined the three-factor model in a sample of German university students (N = 326). The authors were interested in building on Li et al.’s. (2013) study by further examining perceived fit as it relates to academic success. The study not only supported the three-factor structure of perceived fit but also found that the match between one’s interest and their major was a key predictor of academic satisfaction, while the person-job factor of the model was the strongest predictor of academic performance. Furthermore, they considered whether perceived fit perceptions were a stronger predictor of academic success than the Big five personality traits. It was concluded that both personality and fit contributed to predicting the outcomes, but in a combined regression model when personality was added it did not improve the model. The authors suggested that it is important to consider perceived fit as a predictor of positive academic outcomes.

As demonstrated above, P-E fit has been established as a predictor of performance in both work and academic settings. Because the relationship between P-E and performance is similar to other nonability predictors that have been utilized as indicators of academic success, one can argue that P-E should also be considered an indicator (Barrick & Mount, 1991; Hurtz &
Donovan, 2006). Given said research, another aim of this study was to extend the literature on P-E fit by considering fit perceptions as an indicator of university students’ academic performance outcomes.

**Core Self-Evaluations**

Core self-evaluation is a newer construct that has begun to receive some attention. CSE originated in the organizational science literature, as it has been linked to a variety of outcomes such as job satisfaction, engagement, and performance (Judge & Bono, 2001; Rich, LePine & Crawford, 2010). The origins of CSE come from Edith Packer who argued that evaluations of specific situations are affected by more fundamental appraisals or core evaluations. Judge et al. (1998) extended her ideas by drawing on the developmental psychology and philosophy literature and developing an integrative theoretical framework that explains dispositional influences on job satisfaction.

According to Judge, Locke, and Durham (1998) core self-evaluation is an individual’s fundamental and enduring assessment of one’s own worth and competence. It is posited that CSE is the most fundamental evaluation people hold, reflecting a “baseline” appraisal that implicitly is a part of all other evaluations and beliefs. It encompasses evaluations of oneself in “general” rather than within “particular domains” (Judge et al., 1998). Research has shown that it is a broad, higher-order trait indicated by four well-established traits found in the personality literature: self-esteem, generalized self-efficacy, emotional stability, and locus of control. It is a fundamental appraisal of one’s worthiness, effectiveness, and capability as a person (Judge et al., 2003).

Although these four traits are among the more prominent variables studied in psychology, Judge and Bono (2001) noted that typically the traits are studied in isolation not in combination.
The four traits are defined in the literature as the following: (a) *Self-esteem* is the value that one places on oneself as a person (Harter, 1990). (b) *Generalized self-efficacy* is the evaluation of how well one can perform across a variety of situations. (c) *Emotional stability* is the propensity to feel calm and secure (Eysenck, 1990). (d) *Locus of control* is the belief that the desired events in one’s life result from one’s own behavior rather than by some external person or fate (Rotter, 1966). The authors suggest that these four traits comprise the overarching construct core self-evaluation (Judge et al., 1998) and empirical findings reveal the traits as highly correlated and loading on to the higher order factor, which support this view (Judge & Bono, 2001; Judge, Locke, et al., 1998). An individual who scores high on their core self-evaluation is said to be well adjusted, positive, self-confident, and efficacious, and possesses a belief in his/her agency. In short, general positive self-regard is at the heart of the four fundamental traits.

Research in this area has focused on the impact the personality trait has on occupational satisfaction and performance. With such it has been found that individuals with high core self-evaluations are more likely to report job and life satisfaction (Azalea, Omar, & Mastor, 2009; Bowling, Watson, & Beehr, 2004; Chu, 2007; Judge & Bono, 2001; Judge et al., 1998). Judge et al. (1998) led the very first investigation considering this relationship between job satisfaction and core self-evaluations. Data collected and analyzed from three diverse samples: (a) physician sample (*n* = 1,300), (b) college graduate sample (*n* = 1,086), and Israeli sample (*n* = 200) revealed a correlation of 0.48 between job satisfaction and CSE when both were self-reported, and a 0.36 correlation when CSE and satisfaction was reported by a significant other. Similarly, the authors considered the effect that CSE has on life satisfaction and found a statistically significant relationship (direct and indirect). Furthermore, in Judge and Bono’s (2001) review of the core traits and job satisfaction from 169 studies, it was found that correlations between the
traits and satisfaction ranged from 0.24 for emotional stability to 0.45 for generalized self-efficacy. However, when the authors considered the four traits as indicators of the higher order trait CSE, they found a correlation between the construct and job satisfaction of 0.41. Similarly, more recent research considering 400 Indonesian and Malaysians between the ages of 23 and 65 who received a degree from abroad found that CSE is significantly correlated with job satisfaction (Azalea, Omar, & Mastor, 2009).

Scholars have also found high levels of CSE to be related to motivation (Bipp, 2010; Chang et al., 2012; Erez & Judge, 2001). Bipp (2010) looked at 114 students to assess the role that CSE has on work motivation. In his study, he found that CSE had a significant positive correlation with two of the motivation factors (meaningfulness and autonomy) demonstrating incremental validity with regard to these factors. In Chang et al.’s (2012) review of the literature, they found that CSE and motivation are positively related to both goal commitment ($r = 0.42$) and intrinsic motivation ($r = 0.33$). The results from this meta-analysis suggest that people with high CSE are more likely to be autonomously motivated and committed to their goals. Thus, these individuals tend to focus on positive aspects of a task resulting in more internal motivation and persistence.

Not only has core self-evaluation been associated with job satisfaction and motivation, but research has also shown positive relations with performance (Erez & Judge, 2001; Grant & Wrzesniewski, 2010; Judge & Bono, 2001; Qadeer & Arshad, 2014). Specifically, Judge and Bono (2001) extended the research in this area through their consideration of performance. In their meta-analysis, they took 105 correlations and found that the weakest correlation between CSE and performance was emotional stability (0.19), while the strongest correlation was self-esteem (0.26). Across the four traits, they found the average correlation to be 0.23. This
correlation is similar to that of the well-known trait conscientiousness and job performance (Barrick and Mount, 1991). In Erez and Judge’s (2001) study of 112 undergraduate students, it was found that the relationship between performance and CSE was positive and significant (0.34) suggesting that those with positive CSE performed better on work tasks than their counterparts. The authors also found that much of this relationship was mediated by motivation. Moreover, Qadeer and Arshad (2014) extended this literature by going beyond the examination of the western world and looking at 310 employees in a Pakistan bank. Through their research, they found a positive and significant relationship between CSE and job performance (0.627), arguing that high CSE results in self-potency and a strong conviction that one will prevail. Their findings are congruent with the aforementioned authors.

As demonstrated, core self-evaluations have been linked to motivational concepts including overall task motivation and goal setting (Erez & Judge, 2001). However, only more recently has CSE been linked to the construct of engagement. Rich, LePine, and Crawford (2010), examined the direct relationship of CSE on engagement and found that CSE was positively related ($\beta = .36^*$). In addition, they tested engagement as a mediator between CSE and performance. Results of the study revealed that CSE exhibited statistically significant indirect effect on performance through engagement ($\beta = .18$).

Because of the relationships that have been established with CSE and positive outcomes, authors have extended the research to the academic setting (i.e., the study of academic success). The thought has been that if individuals identify themselves as worthy and as having the ability to cope with the unexpected pressures of life bring a positive frame to the situations they encounter in the work setting and in their life, then students who hold positive self core-evaluations should also bring a positive frame to both the school and life context. Broucek
(2005) examined the relationship between CSE and student satisfaction, life satisfaction, and academic performance. Results of the study indicated that CSE is significantly and positively correlated with student satisfaction ($r = .40$), life satisfaction ($r = .53$), and academic performance ($r = .28$). Another study by Rosopa and Schroeder (2009) considered CSE as a moderator between cognitive ability and academic achievement. It was found that CSE strengthened the positive relationship between cognitive ability and academic achievement. Both studies indicate a positive association between CSE and academic performance.

Given the aforementioned research on CSE and its relation to work performance, I am interested in contributing to the literature that has extended this relationship to the academic setting. It is imperative to continue to build on the literature in this area as success in the workplace often begins with success in academia. So, by examining this relationship in the academic setting we are aiding in an individual’s chance of being successful in the workplace later in life.

**Work Personality**

Developed in the field of rehabilitation and organizational psychology, work personality has been identified as an important construct that significantly impacts career development, vocational behavior, and academic efforts (O’Sullivan & Strauser, 2010). Work personality is a developmental concept that has been linked to meeting the contextual demands (e.g. ability to complete tasks, get along with coworkers, and learn from role models) of a work environment and to positive adult work behavior (Bolton, 1992; Strauser, Waldrop, & Ketz, 1999). Over the years, several scholars have defined the term. According to Neff (1985), work personality is a concrete set of interrelated motives and styles of coping that an individual uses to confront the demands of the workplace. Neff (1985) argued that we may self-govern our personality for
specific environments (i.e., work) but our work personality still remains influenced by our overall personality. Hershenson (1996) posited that individuals begin to develop this construct in early childhood and it consists of motivation, self-concept, and needs as they relate to work behavior. While there are multiple definitions of work personality, each perspective identifies a developmental process that includes a full range of abilities, motivation, values, and temperament (Strauser, O’Sullivan, & Wong, 2012).

Work personality addresses the congruence between the person and environment. It is believed that if one has a more developed work personality then they will have better P-E congruence. In other words, developing an effective work personality will result in positive work behavior as an adult and increase the likelihood that the person will be capable of meeting the contextual demands of the workplace leading to better P-E fit. In this study, the developmental model of work personality (DWP) as defined by Strauser and Waldrop (1999) is of interest. It considers work personality within the context of the school and home environment, the role models they encounter in these environments, and the learning that the role models provide. This model is theoretically grounded in several well-established psychological theories including Erik Erikson’s theory of human development, Robert Bandura’s theory of observational learning, and Walter Neff’s model on work personality (Wong, O'Sullivan, & Strauser, 2012). Through the integration of these theories, this model provides both a structure for the development of and a process by which work personality is developed.

In terms of structure, DWP conceptualizes an individual’s work personality as developing early on in life, beginning to develop during middle childhood. According to Erikson’s human development model, an individual begins to consider aspects of work and to develop their work personality during the industry vs. inferiority stage of life (fourth stage). Thus, if during this
stage individuals are able to navigate their way through, they will view themselves as industrious (Erikson, 1968). They will develop the ability to work on tasks, display appropriate emotional response patterns to supervisors and coworkers, and attribute a positive meaning and value to work. In the case that they are unable to move through this crisis stage, they will come to view themselves as inferior and are more likely to experience difficulty in making the transition to work (O’Sullivan & Strauser, 2010). In terms of process, the DWP identifies the work personality as being achieved via Bandura’s theory of observational learning. More specifically, a child’s work personality is influenced by role models in their life including parents, siblings, teachers, and other community members that are relevant to the life of the child (Wong, O’Sullivan, & Strauser, 2012).

Strauser and Keim (2002) operationalized the construct of developmental work personality through the Developmental Work Personality Scale (DWPS). The authors tested the developmental perspective on a sample of college students (n = 295) and human service clients (n = 126). The results from the factor analysis suggested that a 26-item measure of DWP captured the overall construct of work personality and the three subscales: work tasks, role models, and social skills. Research using this scale has found significant convergent validity with the NEO-FFI subscales of Agreeableness and Conscientiousness (O’Sullivan & Strauser, 2010). In 2012, the scale was revised to reduce the items from 26 to 14. At that time, the scale was renamed to the Revised Developmental Work Personality Scale (RDWPS; Wong, O’Sullivan, & Strauser, 2012).

The majority of the work considering DWP has focused on individuals with chronic illness and/or mental or physical disability. For example, the construct has been studied with groups experiencing psychological symptoms as a result of trauma. In 2006, Strauser and
colleagues investigated the relationship between symptoms of trauma, work personality, and career development in a group of college students. High levels of trauma predicated lower levels of work personality and dysfunctional career thoughts. The group of individuals with high trauma symptoms accounted for 32% of the variance in work personality suggesting that people who experience extreme trauma have underdeveloped work personality and may be more likely to demonstrate negative work behaviors on the job. Following this study, Keim, Strauser, Olguin (2009) wrote a case study suggesting that DWP may be an important construct to consider when working with individuals who have experienced trauma as a result of partner violence. The authors presented a case study demonstrating the use and assessment of DWP in a rehabilitation counseling setting. They recommended the use of the measure in order to contribute to successful employment outcomes for individuals who have experienced partner violence.

A study by O’Sullivan, Strauser, and Wong (2012) analyzed DWP in a sample of 84 individuals with a diagnosis of a physical, learning, or psychiatric disability. The authors were interested in determining whether differences in levels of DWP existed between the groups and what those differences would mean in regard to the one’s work behaviors. Individuals with psychiatric disabilities demonstrated lower levels of DWP compared to those with a physical disability. More specifically, this group appeared to struggle with work tasks and social skills. Results were consistent with prior research that suggests individuals with mental illness tend to have more vulnerability in the workplace and struggle with the behaviors required to meet the demands of the work environment. The authors recommended using the DWP scale as a screening tool to alert counselors of individuals that may need more training in social skills and/or work tasks.
More recently, authors have extended the research in this area outside of disability to the academic setting. The analyses have suggested a correlation between DWP, engagement, and academic effort (Lange, Strauser, Alston, Chiu, & Wong, 2015; Strauser, O’Sullivan, & Wong, 2012). These findings have shown a positive relationship between the variables DWP, engagement, and academic effort. In addition, both DWP and engagement were found to individually contribute to positive academic outcomes. Strauser et al. (2012) found that work personality contributed to 14% of the variance in effort while engagement contributed to 19% of the variance in effort. In a study by Lange et al. (2015), it was found that work personality accounted for 6% of the variance in effort while engagement accounted for 12%. This study also considered the outcome variable of GPA but found that neither predictor variable was significant in impacting GPA. Gender differences in effort levels were determined with engagement appearing more meaningful for women and work personality for men. Results from these studies indicate several things. First, the finding that DWP is positively related to work engagement suggests that individuals who report higher DWP are more likely to be engaged as students in college. In addition, those that are engaged tend to feel better about their academic/work situation and in turn put forth more effort.

As demonstrated, previous studies have found an association between DWP, engagement and academic outcomes (effort). In order to contribute to the literature, this study also considers the direct relationship of DWP on academic effort in an attempt to replicate these newly established relationships. Given the previous research, one can argue that DWP would have a direct and significant impact on academic performance outcomes in this study. This makes sense not only from previous research but also from a theoretical perspective. Individuals who have high levels of DWP are considered to have a high ability to work on tasks, display appropriate
emotional response patterns to supervisors and coworkers, and attribute a positive meaning and value to their work (Bolton, 1992; Strauser, Waldrop, & Ketz, 1999). So, in regard to the academic setting, one can imagine that if someone is capable of working on tasks and they find meaning in their work, then they are likely to put more effort into their required academic tasks (e.g., course work, exams), hence contributing to their success. Furthermore, literature on work personality states that if one has a more developed work personality, then they will have better P-E congruence, which has been associated with positive work and academic performance outcomes (Cable & DeRue, 2002; Nye, Su, Rounds, & Drasgow, 2012).

**Type D Personality**

In addition to the noncognitive factors of CSE and DWP, there is a growing body of literature attempting to understand the importance of the personality trait, Type D personality. Johan Denollet, a professor of Medical Psychology at Tilburg University in the Netherlands, founded the construct based on his personal clinical observations in cardiac patients, empirical evidence, and already existing personality theory. Since then, it has been found that the prevalence of Type D personality is approximately 21% of the general population. According to Mols and Denollet (2010), Type D personality is defined as the tendency to experience high scores on the stable personality traits negative affectivity (NA) and social inhibition (SI). People who are high on both NA and SI are considered to have a “distressed” or Type D personality given their vulnerability to chronic distress. Individuals with this personality type are known to be gloomy, feel sad all of the time, and have a negative view on the world and themselves (high negative affectivity), while at the same time tend to keep these emotions from others due to the fear of others’ responses (high social inhibition; Spindler, Kruse, Zwisler, & Pedersen, 2009).
Type D personality has some similarities and differences to Type A personality, Type C personality, and more importantly, personality traits from the well-known Five-Factor Model of personality. In terms of the Five-Factor model, Type D has been found to be associated with the personality traits neuroticism, extroversion, conscientiousness, and agreeableness. NA has been shown to positively correlate with neuroticism (0.68), while SI has been shown to negatively correlate with Extroversion (-0.52). Both traits also correlated negatively with conscientiousness and agreeableness (5% to 15% shared variance). Hence, these personality constructs are closely related but not identical (Denollet, 2005).

It is important to note that research on Type D personality has distinguished it from depression and other mood disorders. Some have speculated that Type D personality and depression have substantial overlap and could be measuring the same thing. However, studies have shown that these two constructs only partly overlap and consistently provide distinct information and outcomes when tested together (Denollet, et al., 2009; Gupta, 2013; Starrenburg, Kraaier, Pedersen, Van Hout, Scholten, & Van Der Palen, 2013). Type D personality is considered a personality construct in that it is a chronic risk factor in contrast to depression, which is defined as psychopathology and is considered an episodic risk factor (Denollet & Sys, 1996; Pedersen & Denollet, 2006). Studies on Type D personality have increased over the past decade and are continuing to rise due to the risk factors associated with the personality trait.

Research examining the impact of Type D personality originated in the medical literature, and it has been found that elevated levels of Type D personality are associated with chronic health conditions ranging from cardiovascular conditions, arthritis, to malignant melanoma (Polman, Borkoles, & Nicholls, 2010). Most commonly, Type D has been associated as a risk factor for cardiovascular medical concerns including cardiovascular disease, chronic heart
failure, and myocardial infarction (Denollet, 1997); however, it has also been linked to other negative outcomes including diabetes, exhaustion, and work-related problems (Mols & Denollet, 2010).

Individuals with Type D personality are at an increased risk for negative health concerns. Schiffer, Pedersen, Widdershoven, and Denollet (2008) examined the effects of Type D personality on chronic heart failure patients and found that individuals with Type D personality traits reported more significantly impaired health status compared to their counterparts. Pedersen, Lingen, de Jonge, and Scherer (2010) found that the presence of Type D personality traits influence the quality of life for patients with heart failure. The authors examined 251 individuals with heart failure from primary care facilities and found that Type D personality was related to poorer quality of life (i.e., emotional functioning) for these patients compared to the patients without Type D personality traits.

Type D has not only been associated with negative health outcomes, but it has also been related to increased rates in long-term mortality. Findings from Denollet and Sys (1996) suggest that Type D personality is indeed an independent predictor of long-term mortality in patients with coronary heart disease (CHD). More specifically, it was found that the existence of Type D personality traits in CHD patients was an independent predictor of cardiac and non-cardiac mortality. With such evidence, there has been a push to focus on identification of this personality type and the association it has between emotional anguish and death in patients with CHD.

While there has been an emphasis on examining Type D personality in the medical literature, more recently researchers have shifted their focus to examining the presences of Type D personality in the general population. Mols and Denollet (2010) examined the impact of Type D personality among the general population or non-clinical population. In order to do so, the
researchers conducted a literature review on studies of Type D personality among this population. From their collection of 19 studies, it was found that Type D personality negatively impacted both the physical (lower health status, more somatic complaints) and psychological well-being (anxiety, depression, less social support) of the general population. Furthermore, the personality type was associated with disease promoting mechanisms and work related problems including higher levels of burnout, absence-leave, exhaustion, and work-related stress.

More current studies have looked at the impact of Type D personality on work-related problems in the general population with healthy people. Results from these studies have found an association between Type D personality and over commitment, perceived adverse physical working conditions, effort-reward imbalance, and substantial problems in interactions with supervisors and co-workers (Hanebuth, Meinal, & Fisher, 2006; Oginska-Bulik, 2006; Preckel, Von Kenel, Kudielka, & Fisher, 2005). In addition, research has found that individuals with this personality type were more often absent from work, report higher levels of burnout, perceive their workplace as more stressful, and show a lower sense of personal accomplishment (Hanebuth, Meinal, & Fisher, 2006). A study by Mommersteeg, Denollet, and Martens (2012), examined the role of Type D personality in relation to sick leave, burnout, adverse health outcomes, and disability pension. Results indicated Type D personality was significantly related to increased burnout, disability pension, and short-term sick leave in comparison to individuals without Type D personality traits.

While a majority of studies on Type D personality have focused on the medical population, more recent research has considered the general population and work-related problems. Thus, there is some indication that Type D personality may negatively affect the health and vocational outcomes of people from the general population as well. Associations
between Type D personality, health status, and work-related concerns may not only have an impact on problems for the general population in the occupational setting but also may impact the academic setting. However, to date, there is little research considering Type D personality in the academic setting. Recent work within the Work and Disability Lab at the University of Illinois has revealed a relationship between Type D personality and lower levels of health and vocational constructs in a group of college students. More specifically, Wong and Strauser (2012) explored this relationship by gathering data from 255 young healthy adults. Results from MANOVA found that individuals with Type D personality reported significantly lower levels of developmental work personality, lower resolution of psychosocial development, lower satisfaction with life, and lower health status than individuals without Type D personality. Conclusions suggest that Type D personality may represent a general risk factor associated with poor health and vocational outcomes for college students. These results support the previously mentioned study performed by Mols and Denollet (2010). In addition, according to Yates, Wong, Strauser, and Sears (2015), Type D personality significantly impacts different dimensions of college student’s career readiness.

As previously mentioned, there has been an increase in research directed toward understanding the relation between personality traits and academic performance, because personality has been found to contribute to an incremental increase in variance in academic success that goes beyond previous grades and standardized tests. As a secondary focus of this study, I am interested in taking the research further by examining how a health variable, Type D personality, may impact academic performance. Given the previously mentioned research on Type D personality, one can argue that Type D personality would be an important risk factor to
consider when it comes to academic performance because of the negative outcomes associated with it.

While a number of factors may negatively impact academic performance, this study examined Type D personality. Type D personality could be associated with academic performance for several reasons. First, Type D personality is linked with the experiences of negative emotions, such as anxiety, depression, and low levels of self-esteem (Spindler, Kruse, Zwisler, & Pedersen, 2009). Second, individuals with Type D have the disposition to interpret events negatively, which has been found to be associated with perceiving the workplace as more stressful and leading to higher levels of burnout (Oginska-Bulik, 2006; Preckel, Von Kenel, Kudielka, & Fisher, 2005). Plausibly, this disposition could also negatively impact the perception of the academic setting as stressful and result in higher levels of burnout leading to lower academic performance. Third, individuals with Type D have a tendency to feel inhibited, tense, and insecure with others, which as a result tend to avoid social situations (Denollet, 2005; Svansdottir, Broek, Karlsson, Gudnason, and Denollet, 2012). Thus, individuals with this personality type may be less likely to ask others for help with an assignment when needed or even to ask for support when feeling stressed or burned out potentially negatively impacting academic performance.

As evidenced above, one can argue that the separate constructs of negative affect and social inhibition may have a negative impact on academic performance considering the aforementioned research. Taken together, one can surmise that an individual who possesses Type D Personality as a whole, comprised of both social inhibition and negative affect, may have an even stronger negative impact on academic performance. In summation, Type D personality may be an immediately relevant risk factor for the undergraduate student population and academic
success. Looking at Type D personality takes research further by considering a well-known health and psychological risk factor that could serve as a potential negative impact academic performance outcomes.

**Work Engagement**

Complementing the movement in educational psychology calling researchers to consider noncognitive factors that may affect academic performance, there has also been a call to focus on positive states and their impact on outcomes (Seligman & Csikszentmihalyi, 2000). Work engagement is a construct that has received recent attention in this area as it incorporates positive psychological traits to examine how noncognitive factors affect positive vocational and academic outcomes (Bakker, Schaufeli, Leiter, & Taris, 2008). It is also of interest in this study as levels of engagement can be manipulated in comparison to personality traits, which tend to be less malleable. Hence, it is imperative to consider engagement as a potential process variable that may underlie the relationship between the aforementioned personality traits and academic performance.

Research on work engagement has increased over the past two decades. With this increase, several scholars have attempted to define the term. Authors Maslach and Leiter (2008) define work engagement as related to energy, involvement, and efficacy, the direct opposites of the three dimensions of burnout. They believe that when an individual experiences burnout, energy turns into exhaustion, involvement into cynicism, and efficacy into ineffectiveness. Similarly, another view by Bakker et al. (2008) considers work engagement as an independent, distinct concept that is related negatively to burnout. This perspective operationally defines work engagement as a positive, fulfilling, affective-motivational state of work related to well-being that is considered the opposite of burn-out and is characterized by three constructs: vigor,
dedication, and absorption (Bakker et al., 2008). Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in work, and persistence even when struggling with difficulties. Dedication is defined as being strongly involved in one’s work, and experiencing a sense of enthusiasm, inspiration, significant, pride, and challenge. Finally, absorption refers to being fully concentrated and happily engrossed in the work one is performing, which as a result allows for time to pass quickly and one may have a difficult time detaching themselves from the work (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002, p. 74).

Rothbard (2001) took a different perspective and defined work engagement as a two-dimensional motivational construct that includes attention and absorption. Attention is the cognitive availability and the amount of time one spends thinking about a role, while absorption is defined as the intensity of one’s focus on their role (Rothbard, 2001). According to Kahn (1990), work engagement is “harnessing of organization member’s selves to their work roles: in engagement, people employ and express themselves physically, cognitively, emotionally and mentally during role performances” (p. 649). While there are several definitions of work engagement, most scholars agree that engagement includes an energy dimension (high) and an identification dimension (with work).

While being a student is not formally considered a profession, it is assumed from a psychological perspective that the most basic activities of being a student (mandatory activities such as attending a course, successfully completing assignments or activities related to the course all with the intention of passing the course or exams) can be defined as “work” (Schaufeli and Taris, 2005). From this perspective, work engagement and burnout, both originating in the occupational/professional fields, are now examined in student populations. Even common work
engagement measures have been adapted with the purpose of applying them to student populations. Such measures include the widely used Maslach Burnout Inventory-General Survey and the Utrecht Work Engagement Scale–Student version (UWES-S).

The association between work engagement and academic performance has been established. For example, in a study by Casuso-Holgado et al. (2013) engagement and achievement in health science students \((n = 304)\) were found to be associated. The results showed positive correlations between grade point average and engagement. In this study, female’s grade point average was mainly associated with the dedication aspect of engagement \((r = 0.211; p < .01)\), while male grade point average was mainly associated with the vigor construct of engagement \((r = 0.503; p < .01)\). More recent research has found that work engagement is associated with academic effort, a measure of academic performance, in a group of college students (Strauser, O’Sullivan, & Wong, 2012). The relationship between engagement and academic performance makes sense for several reasons. First, individuals who report higher levels of work engagement experience better psychological and physical health, experience positive emotions on the job and within their engagements with others, and receive higher work performance ratings (Bakker, 2009; Bakker & Demerouti, 2008; Bakker, Demerouti, & Verbeke, 2004). Thus, individuals who are engaged in their “work” would conceivably have similar outcomes in another work setting, the academic setting. Second, it has been found that engaged students are able to cope with academic stress better and tend to be more satisfied, which have both been related to greater academic success (Scrimin, Mason, & Mascardino, 2014).

Because of this established relationship, a few studies have considered engagement as a process variable for positive outcomes of academic performance. One such study by Reyes, Brackett, Rivers, White, and Salovey (2012) considered the role of engagement between
classroom emotional climate and academic achievement outcomes. In order to examine this question, the authors collected data from students ($n = 1,399$) across several classrooms and ages. A multilevel mediation analysis showed a positive association between the classroom emotional climate and grades. Student engagement levels mediated this relationship.

Lee (2014) investigated the relationship between engagement and academic success. The authors examined 15-year-old participants ($n = 3,268$) from 121 schools in the United States. A multilevel analysis was conducted to determine the individual impact that behavioral and emotional engagement have on academic success (i.e., reading literacy). In addition, the authors considered behavioral engagement as a mediator between emotional engagement and success. Results indicated that both emotional and behavioral engagement were positively associated with success. Furthermore, behavioral engagement did serve as a mediator between emotional engagement and academic success. The findings suggest the importance of focusing interventions on student behavioral engagement as a way to increase one’s academic success. The author’s argue that focusing on engagement as a process variable for academic success could inform the work of educators, practitioners, and policy maker’s practice. In addition, they call for the research community to pay more attention to ways we can enhance engagement.

In the last two decades, the study of academic engagement has significantly grown because it has been shown to be both a robust predictor of students’ performance in school (e.g., grades, retention, test scores, and graduation) and a construct that can actually be shaped by academic programs. Even though, scholars have identified this relationship few empirical studies have examined the role of engagement as a mechanism that links personal characteristics (i.e., personality) to performance outcomes. Thus, another focus of this study is on engagement as a potential process variable that explains these relationships.
To this point, it has been argued that a relationship exists between the personality traits core self-evaluations, Type D personality, and DWP and academic performance. Now, it is argued that engagement plays an important role in explaining these relationships. As discussed earlier, core self-evaluations have been associated with the construct of engagement (Rich, LePine, and Crawford, 2010). In this study, academic engagement as defined by Bakker et al. (2008) was considered. From this perspective, engagement is a positive and fulfilling affective-motivational state comprised of vigor, absorption, and dedication. Academic engagement suggests high levels of energy and mental resilience during one’s studies, the ability to derive feelings of significance and inspiration from one’s studies, and being “happily” engrossed in the work. The positive motivational state and ability to have high levels of mental resilience/energy from studying discussed in this definition are reflected in the concept of CSE. People with high CSE tend to appraise demands (e.g., work) with more positivity, have a greater ability to cope with demands in an effective manner and have more resources available to invest in the performance of their work (Judge, Locke, & Durham, 1998). In addition, individuals with high levels of CSE are well-adjusted, positive, and possess feelings of efficacy (Judge, Erez, Bono, & Thoresen, 2003). It is plausible that because people with high core self-evaluations tend to feel more capable when it comes to meeting the demands of work and tend to experience an overall positive assessment of their worth and effectiveness that they should also perceive themselves as more capable and confident while engaging in their studies. This in turn would perceivably increase one’s energy and mental resilience as well as their feelings of positivity while completing the work demands. In addition, they are likely to dedicate the necessary time and effort toward completing the tasks at hand as they have a sense of “control” and “confidence” in their ability to excel. Thus, CSE should be positively related to academic engagement. Given the
aforementioned research on CSE and its relation to work performance and engagement, I am interested in adding to the dearth of research considering engagement as a mechanism by which CSE impacts performance outcomes.

In regard to the personality variable DWP, previous studies have found an association between DWP, engagement and academic outcomes (Lange, Strauser, Alston, Chiu, & Wong, 2015; Strauser, O’Sullivan, & Wong, 2012). The finding that DWP is positively related to work engagement suggests that individuals who report higher DWP are more likely to be engaged as students in college. Given the previous research, one can argue that engagement may serve as a mediator between DWP and academic performance outcomes in this study. This makes sense not only from previous research but also from a theoretical perspective. Individuals who have high levels of DWP are considered to have a high ability to work on tasks, display appropriate emotional response patterns to supervisors and coworkers, and attribute a positive meaning and value to their work (Bolton, 1992; Strauser, Waldrop, & Ketz, 1999). If someone has the tendency to place positive meaning and value on their work then they will be more likely identify with or take pride in their work related tasks resulting in dedication. In addition, someone who considers themselves to have a “high ability” to work on a task will plausibly place more effort/persistence on their tasks hence demonstrating vigor.

This study also examined engagement as a mediator between Type D personality and academic success. To this point, no studies have directly considered the link between Type D and engagement. So, this will be the first study to do such. However, one key aspect of the definition of engagement is that it is considered the “opposite” of burnout. And, it has been found that individuals with Type D have the disposition to interpret events negatively, which has been associated with perceiving the workplace as more stressful and leading to higher levels of
burnout (Oginska-Bulik, 2006; Preckel, Von Kenel, Kudielka, & Fisher, 2005). With that said, one reason Type D personality may be associated with engagement is because of the research indicating that high levels of Type D lead to burnout in the work-place. One could also argue that if someone is more likely to have poor health outcomes and to experience more negative psychological concerns (i.e., anxiety, depression, and less social support), it is plausible to say that together these factors could impact engagement levels. More specifically, if one is consistently feeling down, anxious, or depressed it is likely they are going to experience feelings of low motivation and energy when it comes to the demands of their studies. In addition, if they are having additive health concerns one may feel physically strained or burned out and therefore less engaged in certain activities such as their school-work or attending courses. Thus, it extends the research in this area by considering whether engagement serves as a process variable by which Type D personality is related to academic performance outcomes.

For the reasons mentioned above, it was expected that core self-evaluations, DWP, and Type D personality would affect academic performance through engagement.
Chapter 3
Methodology

Participants

Two independent samples will be used to address the two phases of this study. For phase one, I will use a combined Sample 1 and 2. For phase two, I will use Sample 2 and the combined Sample 1 and 2.

**Sample 1.** Sample 1 is a convenience sample of 267 participants. The mean age of the participants is 20.2 (SD = 1.39) years old. Of the sample, 38.2% (n = 102) are males, while 60.7% (n = 162) are females. The majority of participants are Caucasian 47.6% (n = 127), followed by 19.5% (n = 52) African American, 17.6% (n = 47) Asian/Pacific Islander, 11.2% (n = 30) Hispanic/Latino (a), and 0.7% (n = 2) identifying as other. The majority of the sample identified as seniors 34.5% (n = 92), followed by 31.5% (n = 84) sophomores, 23.6% (n = 63) juniors, and 8.2% (n = 22) freshman. In terms of income, 18.4% report their family’s household income as $0-$39,000 (n = 49), 16.5% (n = 44) as $40,000-$69,000, and 58.1% (n = 155) as over $70,000.

**Sample 2.** Sample 2 is a convenience sample of 190 participants with a mean age of 20.1 (SD = 1.4) years old. Of the sample, 50.0% (n = 95) are males, 40.5% (n = 94) are females with majority of participants identifying as Caucasian 54.2% (n = 103), followed by 14.2% (n = 27) Asian/Pacific Islander, 13.2% (n = 25) African American, 11.2% (n = 25) Hispanic/Latino (a), and 1.1% (n = 2) other. The majority of the sample identified as seniors 33.7% (n = 64), followed by 29.5% (n = 56) juniors, 22.1% (n = 42) sophomores, and 14.7% (n = 28) freshman. In terms of income, 19.5% report their family’s
household income as $0-$39,000 ($n = 37), 18.4% ($n = 35) as $40,000-$69,000, and 62.1% ($n = 118) as over $70,000.

**Combined sample.** For the combined sample of 457, there was mean age of 20.2 (SD = 1.4) years old. Of the sample, 43.1% ($n = 197) are males, 56.0% ($n = 256) are females, and a majority of participants are Caucasian 50.3% ($n = 230), followed by 16.8% ($n = 77) African American, 16.2% ($n = 74) Asian/Pacific Islander, 12.0% ($n = 55) Hispanic/Latino (a), and 0.9% ($n = 4) other. The majority of the sample identified as seniors 34.1% ($n = 156), followed by 27.6% ($n = 126) sophomores, 26.0% ($n = 119) juniors, and 10.8% ($n = 50) freshman. In terms of income, 17.3% report their family’s household income as $0-$39,000 ($n = 79), 17.3% ($n = 79) as $40,000-$69,000, and 59.7% ($n = 273) as over $70,000. For all sample demographic characteristics (see Table 1).

Table 1

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<tr>
<th>Demographic Characteristics of Sample 1, 2 and Combined Study Participants</th>
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<td>Range (17-27)</td>
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Procedures

Participants for Sample 1 were recruited during the Spring of 2013 through an undergraduate survey course, while participants for Sample 2 were recruited during the Fall of 2015 through the same course. Research packets contained an informed consent, a demographic form and the research instruments were distributed to students at the beginning of class. All participants were informed in writing that participation was voluntary and that they were free to withdraw or not participate without penalty. Participants were instructed to return the completed packets directly to the study investigators and/or graduate students. Students who chose to complete the survey packets were given time to complete them in class and were allowed to use the completed packets to make up one missed in-class assignment. Students were informed of this in writing and were told that they could skip any items in the packet and still earn the credit for the class. This study was approved by the University of Illinois at Urbana-Champaign Institutional Review Board.

Instruments

A Demographic Questionnaire was given to all participants in order to obtain information about their age, gender, year in school, family household income and racial or ethnic group (see Appendix B).

The Core Self-Evaluations Scale CSE (Judge, Bono, & Thoresen, 2003) is a 12-item self-administered and hand-scored instrument designed to assess a broad, higher-order trait indicated by four well-established traits found in the personality literature: self-esteem, generalized self-efficacy, emotional stability, and locus of control. It is a fundamental appraisal of one’s worthiness, effectiveness, and capability as a person (Judge et al., 2003). Self-esteem is defined as the value that one places on oneself as a person (Harter, 1990). It is operationalized by
questions like “Sometimes when I fail I feel worthless.” Generalized self-efficacy is defined as the evaluation of how well one can perform across a variety of situations. Questions such as “I complete tasks successfully” are used to operationalize the construct. Emotional stability is the propensity to feel calm and secure (Eysenck, 1990). An example of a question that represents this construct is “Sometimes I feel depressed.” Finally, locus of control includes the beliefs about the causes of events in one’s life, both internal and external causes. The construct is operationalized through questions like “I do not feel in control of my success in my career.” Items are rated on a scale from 1 (strongly disagree) to 5 (strongly agree). The score is determined by summing all of the ratings of the items. The relevant items are reverse-coded. (Judge et al. 2003) indicated that the scale is reliable with a test-retest reliability of $r = .81$. In addition, the CSE displayed a unitary factor structure, and correlated significantly with job performance and satisfaction. In this study, the Cronbach alpha coefficient for CSE was .857 (see Appendix C).

DS 14 Type D Personality Scale (Denollet, 2005) is a 14-item self-administered and hand-scored instrument designed to assess Type D personality in individuals, including individuals with disabilities and chronic health conditions. Type D personality is defined as a joint tendency toward negative affectivity (NA) and social inhibition (SI), which has been related to poor health and psychosocial outcomes. Fourteen items make up the Type D Personality Scale, with seven items making up each of the respective subscales (NA = 7 items; SI = 7 items). All items are scored using a scale ranging from 0 (False) to 4 (True). Negative affectivity is operationalized through questions like “I often feel unhappy,” and social inhibition is operationalized through questions like “I find it hard to start a conversation.” Studies have found good factorial structure with the NA and SI items loading between .62 and .82 on their
corresponding factors. The NA scale covered dysphoria, worry and irritability; the SI scale covered discomfort in social interactions, reticence, and lack of social poise. The NA and SI scales have demonstrated good internal consistency ($\alpha = .88/.86$) stable over a 3-month period (test-retest $r = .72/.82$) and not dependent on mood or health status. NA correlated positively with neuroticism ($r = .68$); SI correlated negatively with extroversion ($r = -.59$). Scale level factor analysis confirmed the construct validity of the DS14 against the NEO-FFI. In this study, the Cronbach alpha coefficients for NA and SI were .870/.852 (see Appendix D).

The Revised Developmental Work Personality scale (RWDPS; Wong, O’Sullivan, & Strauser, 2012) is a 14-item three-factor scale used to assess the tasks and events that individuals encounter during the formative years of schooling that are critical in shaping the development of one’s work personality. It is comprised of three subscales: work tasks (seven items), role-model (three items), and social skills (four items). All items are ranked on a scale ranging from 0 (Not at All Like Me) to 5 (Very Much Like Me). Work tasks is operationalized through statements like “In school, I completed my work on time,” role model is operationalized through statements like “Growing up, I had someone who inspired me,” and social skills is operationalized through statements like “I was in trouble a lot with my teachers.” Previous studies have provided evidence of construct validity, convergent validity and improved reliability for the developmental work personality (Wong, O’Sullivan, & Strauser, 2012). In this study, the Cronbach alpha coefficient for work tasks was .786, role model was .716, and social skills was .721 (see Appendix E).

The Utrecht Work Engagement Scale-Student (UWES-S; Schaufeli, Bakker, and Salanoa, 2006) is a 14-item used to measure the level of positive academic-related fulfillment and absorption. It is considered the opposite of academic burnout and has been positively
associated with mental health and high academic performance (Schaufeli & Salanove, 2007; Schaufeli et al., 2002). Respondents are asked to rate their level of academic engagement across the following three domains: vigor (five items), absorption (five items), and dedication (four items). All items are ranked on a scale ranging from 0 (Never) to 6 (Always, Every Day). Vigor is operationalized through questions like “I can continue for a very long time when I am studying,” dedication is operationalized through statements like “I find my studies to be full of meaning and purpose,” and absorption is operationalized through statements like “Time flies when I’m studying.” Academic engagement remains stable over time as indicated by the 2-year test-retest correlations ranging from .0.69 to 0.73 for the subscales. The internal consistencies ranged from 0.85 for vigor, 0.87 for dedication, and 0.83 for absorption subscales (Schaufeli et al., 2002). In this study, the Cronbach alpha coefficient for vigor was .756, dedication was .883, and absorption was .835 (see Appendix F).

Academic Performance—in this study, academic performance was operationalized by the reported amount of effort put forth toward academic achievement and the reported perceived fit with their academic environment. Students were asked to rate their current academic effort on a 0 to 10 scale, where 0 indicated no effort and 10 indicated the maximum possible effort (see Appendix B).

The Perceived Fit Scale (Cable & DeRue, 2002) is a 9-item self-administered and hand-scored instrument designed to assess an individual’s perception of their fit within their work (academic) environment. The PFS is comprised of three 3-item subscales on a 0 (Not at all) -4 (Extremely) scale with higher scores reflecting better fit. The subscales include Person-Organization (P-O), Needs-Supplies (N-S), and Person-Job (P-J). In this study, the scale was modified for use in the academic context by replacing “work” with “academic coursework.” In
addition, questions asking about organization asked students to consider organization as “the University, Fraternity, Sorority, or a Social Club.” Person-Organization fit is operationalized through questions like “My personal values match my organization’s University, Fraternity, Sorority, Social Club, etc.) value and culture. Needs-Supplies fit is operationalized through questions like “My current choice of academic course work gives me just about everything I want from an academic major.” Person-Job is operationalized through questions like “My abilities are a good fit with the requirements of my academic major.” The subscales are scored by individually summing the ratings of each three-item scale, while the total score is determined by summing the total scores from each of the three subscales (P-O Total + N-S Total + P-J Total). In this study, the Cronbach alpha coefficient for P-O was .903, N-S was .847, and P-J was .830 (see Appendix G).

Data Analysis

Prior to addressing the specific research questions, descriptive statistics will be computed in order to check for possible outliers and skewness in the distributions that would suggest necessary adjustments. The means, standard deviations, ranges, and intercorrelations among study variables will be examined. In order to examine the bivariate relationship between the independent (CSE, work personality and DS14) and dependent variables (effort and perceived fit), Pearson product-moment correlations will be computed.

Phase 1: Research Question 1

To examine Research Question 1, factor analysis will be conducted using SPSS for Windows. A principal components analysis (PCA) and confirmatory components analysis (CFA) will be completed to determine if DS14 items are unique or if there are items that are consumed under the construct of CSE. All of the items from DS14 and CSE will be combined in the
analysis. Items that load high on multiple factors will indicate that they are redundant and therefore only the CSE items will be retained. Several criteria will be used to determine the number of factors and item retention.

The following steps will serve as a guide for the factor analysis. First, a correlation analysis using the combined Sample 1 and 2 will be conducted to examine the relationship between the DS14-Negative Affect, DS14-Social Inhibition, DS14-Total, and CSE. If the correlations are less than .70, it will be determined that the subscales are related but not at a level that would indicate multicollinearity or construct redundancy. A factor analysis will be conducted to confirm the results of the correlation analysis between these variables of interest. A principal components analysis (PCA) with the combined Sample 1 and 2 (n = 457) will be conducted to identify the latent factors of the CSE and DS14 personality scales when items are combined. Prior to performing the PCA, the data will be assessed for suitability of a factor analysis. The correlation matrix among items will be inspected to identify if there are a presence of several coefficients of .4 or above (Tabachnick & Fidell, 1996). This will provide evidence that the analysis is appropriate. In addition, the Kaiser-Meyer-Oklin Measure of Sampling Adequacy (KMO) and Barlett’s Test of Sphericity will be calculated. The Berlett’s test should be significant ($p < .05$) for the factor analysis to be considered appropriate, while the KMO index should be .6 or greater to be considered appropriate for a sufficient factor analysis (Barlett, 1954; Kaiser, 1970, 1974).

To identify factors, Eigen value cut-off of one or the “K-1 rule” will serve as the guideline for the number of factors to retain (Zwick & Velicer, 1986). Because the K-1 rule tends to overestimate the number of factors to retain, the results of the scree plot will also be reviewed. Based on Cattell’s scree plot criteria (1966), the factors above the elbow, or the break in the plot,
should be used as another way to determine the number of factors to retain. Finally, consideration of theory will be utilized.

Once the number of factors is determined, a confirmatory factor analysis will be completed. The next step will be to interpret the factors. In the analysis, the missing values will be excluded pairwise and coefficients below .4 will be suppressed. A direct oblimin rotation will be applied since each of the constructs are considered to have some overlap (non-orthogonal). I will use the following criteria to determine which items to retain and which items to drop: (a) items that don’t load with a .4 or higher will be dropped; (b) items from the DS14 construct that load a .4 or higher on both the CSE factor and DS14 factor will be dropped; (c) any CSE item that loads a .4 or higher on both CSE and DS14 will be retained on the CSE factor; (d) any CSE item that loads exclusively on DS14 will be dropped; and (e) items from DS14 that load on CSE only will be dropped. Reliability estimates will be determined after analyzing the final results of the CFA. The Cronbach alpha coefficients will be calculated to determine internal consistency.

Phase 2

**Research Question 2.** A direct effects analysis will be performed in order to address Research Question 2. First, Pearson product-moment correlations will be conducted for each of the operational definitions of success (effort and perceived fit) to determine which demographic variables to enter into the subsequent analysis as controls. Second, hierarchical multiple linear regressions will be used to determine the best model of variables for predicting success among college students while controlling for the statistically significant demographic variables. For step one, the statistically significant demographic variables will be entered separately. For step two, CSE will be added to the previous step. For step three, work personality total will be added to the previous step. Finally, for step four, DS14 will be added to the previous step. At each step, the
total variance explained will be assessed along with the Beta scores to determine the greatest rate of change in the success variables brought about by each of the independent variables.

**Research Question 3.** A mediation analysis will be performed in order to address Research Question 3. The mediation analysis will evolve from the direct effects analysis. More specifically, the statistically significant direct effect pathways from Research Question 2 will be tested for mediation by engagement. MPlus software will be used to conduct the analysis. Full Information Maximum-Likelihood (FIML) estimation will be used to estimate the parameters of the statistical model and to address missing observations. FIML is the default in MPlus used to ensure unbiased parameter estimates. This estimation results in similar information and outcomes as multiple imputation procedures and is a robust way to manage missing data (Collins, Shafer, & Kam, 2001). Error terms will be assumed to be uncorrelated and to have multivariate normality. The effects of dichotomous indicators of gender, race, and income will be controlled for on each of the endogenous and exogenous variables in the structural model. Bootstrapping methods will be applied to aid in the testing of indirect effects (Bollen & Stine, 1990; Shrout & Bolger, 2002). Standardized estimates will be reported, so that estimates from different structural equations are on the same scale, simplifying the interpretation. In accordance with methods recommended by Baron and Kenny (1986) and Judd and Kenny (1981), four models will be fit in order to determine if mediation is present. The first model will examine the direct effects of personality on performance outcomes. Once these direct effects are established, a second model will examine the direct effects of personality on engagement. This model will utilize engagement (the potential mediator) as the criterion variable in the regression equation and personality as a predictor variable. The third model will examine the direct effects of engagement on performance outcomes. Here, the performance outcomes will be used as the criterion variable in
a regression equation while personality and engagement will be used as predictors. The fourth model will analyze the mediated or indirect effect of personality on performance outcomes via engagement. This model will be used to establish whether engagement mediates the relationship between personality and performance by considering the effect of personality on performance while controlling for engagement. Mediation will be indicated in the cases where the indirect effect is significant and the direct effect is zero or close to zero and not significant.
Chapter 4

Results

Descriptive Statistics

Descriptive statistics were calculated to examine the basic characteristics of the data and bivariate relations among the observed variables in the study. These statistics are represented in Table 2. The following are the mean scores, standard deviations, and range for each of the variables. The subscale of negative affect of the DS14 (DS14-NA) had a mean of 10.48 (SD = 5.59; Range = 0-27). The subscale of social inhibition of the DS14 (DS14-NA) had a mean of 11.39 (SD = 4.56; Range = 2-20). While the mean for the total score of the DS14 (DS14-T) had a mean score of 21.84 (SD = 9.91; Range = 1-49). The scale Core Self-Evaluations (CSE) had a mean of 42.07 (SD = 7.28; Range = 21-60). The subscale work task of the Revised Developmental Work Personality Scale (DWPS-1) had a mean of 27.96 (SD = 6.19; Range = 0-35). The subscale of role models of the Revised Developmental Work Personality Scale (DWPS-2) had a mean of 11.10 (SD = 3.75; Range = 0-15). The subscale of social skills of the Revised Developmental Work Personality Scale (DWPS-3) had a mean of 17.90 (SD = 2.99; Range = 2-20). While the mean for the total score of the Revised Developmental Work Personality Scale (DWPS-T) was 57.15 (SD = 9.73; Range = 14-70). The subscale of vigor of the Utrecht Work Engagement Scale-Student Version (UWES-1) had a mean of 3.06 (SD = 1.17; Range = 0-6). The subscale of dedication of the Utrecht Work Engagement Scale-Student Version (UWES-2) had a mean of 3.69 (SD = 1.17; Range = 0-6). The subscale of absorption of the Utrecht Work Engagement Scale-Student Version (UWES-3) had a mean of 2.75 (SD = 1.30; Range = 1-6). While the total score of the Utrecht Work Engagement Scale-Student Version
Table 2

**Means, Standard Deviations, Range and Intercorrelations of the Study Variables**

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<tr>
<th>Variables</th>
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<th>Range</th>
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<td>-.22**</td>
<td>.042</td>
<td>-.18**</td>
<td>-.03</td>
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<td>-.17**</td>
<td>-.01</td>
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<td>-.03</td>
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<td>.15**</td>
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<td>.30**</td>
<td>.39**</td>
<td>.06</td>
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<td>14 PF</td>
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<td>15 GPA</td>
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</tbody>
</table>

*Note.* DS14-NA: DS14-SI; DS14-Total; CSE; DWPS-1 (Work Tasks); DWPS-2 (Role Models); DWPS-3 (Social Skills); DWPS-T (Total); UWES-S-1 (Vigor); UWES-S-2 (Dedication); UWES-S-3 (Absorption); UWES-S-T (Total); GPA; Effort (Academic); PF (Perceived Fit).

* *p < 0.05. ** *p < 0.01.*
The UWES-T had a mean of 3.20 (SD = 1.01; Range = 0-6). The mean for effort was 7.42 (SD = 1.69; Range = 0-10) and the mean for PF was 24.17 (SD = 5.74; Range = 0-36). Below are the findings from the Pearson correlation coefficient, which was used to assess the relationship between the variables.

Examination of the bivariate correlations revealed significant associations between students’ effort and work engagement (r = .29), all three of the engagement indicators (Vigor-1, r = .25; Dedication-2, r = .31; Absorption-3, r = .15), work personality (r = .17), two of the three indicators of work personality (Work Tasks-1, r = .17; Role Models-2, r = .11), and CSE personality (r = .13). Perceived fit was significantly correlated with Type D personality (Negative Affect, r = -.22; Social Inhibition, r = -.28; DS-14-Total, -.28), CSE personality (r = .34), work personality (r = .24), two of the three indicators of work personality (Work Tasks-1, r = .24; Role Models-2, r = .16), work engagement (r = .39), all three of the engagement indicators (Vigor-1, r = .26; Dedication-2, r = .47; Absorption-3, r = .25), and academic effort (r = .30). Engagement was positively associated with CSE personality (r = .30), work personality (r = .20), two of the three indicators of work personality (Work Tasks-1, r = .17; Role Models-2, r = .19), and all three indicators of engagement (Vigor-1, r = .84; Dedication-2, r = .80; Absorption-3, r = .84). In contrast, engagement was negatively associated with Type D personality (r = -.20) and the two indicators of Type D (Negative Affect, r = -.18; Social Inhibition, r = -.17). Work personality was associated with all three of its indicators (Work Tasks-1, r = .89; Role Models-2, r = .71; Social Skills-3, r = .55), and CSE personality (r = .22), while work personality was negatively associated with Type D personality (r = -.28) and the two indicators of Type D (Negative Affect, r = -.22; Social Inhibition, r = -.28). Additionally, CSE personality was negatively associated Type D (r = -.60) and it’s indicators (Negative Affect,
Finally, Type D personality revealed significant positive associations with both of its indicators (Negative Affect, $r = .87$; Social Inhibition, $r = .88$). Pearson product moment correlations were also examined for the perceived fit total scale and its subscales. These results can be found in Appendix H.

**Phase 1: Research Question 1**

A correlation analysis was performed to determine the relationship among the variables DS14-Negative Affect, DS14-Social Inhibition, DS14-Total and CSE. All correlations among the variables were less than .70 indicating that they are separate but related constructs (see Table 3). To further confirm this conclusion, a principal components analysis and confirmatory factor analysis was conducted with the combined Sample 1 and Sample 2 ($n = 457$).

Table 3

*Pearson Correlations Between DS14 and CSE Variables*

<table>
<thead>
<tr>
<th>Variables</th>
<th>DS14-NA</th>
<th>DS14-SI</th>
<th>DS14-Total</th>
<th>CSE</th>
</tr>
</thead>
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<td>DS14-NA</td>
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<td>.86**</td>
<td>-64**</td>
</tr>
<tr>
<td>DS14-SI</td>
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<td>.87**</td>
<td>-36**</td>
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</tr>
<tr>
<td>DS14-Total</td>
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<tr>
<td>CSE</td>
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</tbody>
</table>

*Note.* DS14-NA: Personality D Scale–Negative Affect; DS14-SI: Personality D Scale–Social Inhibition; DS14-Total: Personality D Scale–Total score; CSE: Core Self Evaluation Scale; * $p < 0.05$. ** $p < 0.01$.

**Principal Components Analysis**

The 14 items (NA = 7 items; SI = 7 items) of the DS14 Type D Personality Scale and the 12 items of the core self-evaluation scale were subjected to a confirmatory components analysis using SPSS. Prior to performing the PCA, the data was assessed for suitability of a factor analysis. Inspection of the correlation matrix among items demonstrated the presence of several coefficients of .4 or above. The Barlett’s Test of Sphericity (Barlett, 1954) reached statistical
significance and the Kaiser-Meyer-Oklin value was .895, exceeding the recommended value of .6 (Kaiser, 1970, 1974). Therefore, factor analysis was appropriate.

Principal components analysis (PCA) revealed the presence of 6 factors based on the “eigenvalues exceeding 1 rule” or the “K-1 rule.” The six factor solution explained a total of 60.3% of the variance, with component 1 explaining 30.5%, component 2 explaining 9.4%, component 3 explaining 7.2%, component 4 explaining 4.9% and component 5 explaining 4.3% of the total variance. Because the K-1 rule tends to overestimate the number of factors to retain (Zwick & Velicer, 1986), the results of the scree plot were also reviewed. The scree plot revealed 3 distinct factors above the elbow (see Figure 1). Using Cattell’s criteria (1966), along with consideration of both DS14 and core self-evaluation theory, it was decided to investigate via a confirmatory factor analysis whether a 3 factor solution or 2 factor solution fit the data better.

![Scree Plot](image)

*Figure 1. Scree plot for the 14 item DS14 scale combined with the 12 item CSE scale.*
Confirmatory Factor Analysis

The three-factor solution explained a total of 47.1% of the variance, with Component 1 explaining 30.5%, Component 2 explaining 9.4% and Component 3 explaining 7.2%. The first factor contained 17 items with all of the factor loadings above .4. Seven of the items composing the first factor described the negative affect construct of the DS14 scale, including 2, 4, 5, 7, 9, 12, and 13. A total of seven items from the CSE scale (2, 4, 6, 7, 8, 11, and 12) and three items from the social inhibition subscale (6, 10, and 14) loaded on this factor. The second factor contained seven items all with factor loadings above .4. All seven of the items corresponded to the social inhibition construct (1, 3, 6, 8, 10, 11, and 14). The third factor contained 13 items with all factor loadings above .4 and 12 of the items were consistent with the CSE scale (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12) and one of the items was from the negative affect construct of the DS14 scale (4; see Table 4).

Following the identification of the three factors, item criteria were used to help with interpretation. There was one item from the DS14 construct that loaded a .4 or higher on both the CSE factor and DS14 subscales. This item was negative affect 4. According to criteria, this item was dropped. There were seven items from the CSE scale that loaded a .4 or higher on both CSE and DS14 subscales, including 2, 4, 6, 7, 8, 11 and 12. Consistent with the criteria, these items were retained on the CSE factor. Three of the DS14 items loaded on both NA and SI scale, yet still most were higher to their respective constructs (SI6, SI10 and SI14). This wasn’t surprising as these separate subscales added together are theoretically meant to comprise one overarching construct, DS14. So, in these cases, the items were retained on their respective construct. After consideration of the factor outcomes and item criteria, the three factors were determined to
represent negative affect, social inhibition, and CSE. However, the analysis supports dropping items 4 from negative affect subscale as it is redundant to items in the CSE measure.

The dropped items were also evaluated from a content point of view. Item 4 from negative affect loaded high on both NA and CSE. The item (4) I often feel unhappy is very close to the following representing the emotional stability aspect of CSE: (2) Sometimes I feel depressed and (4) sometimes when I fail I feel worthless and (12) There are times when things look pretty bleak and hopeless to me. CSE theory states that an aspect of the construct is defined by Emotional stability (i.e., the propensity to feel calm and secure) or the opposite of neuroticism. NA research has shown a positive correlation with neuroticism (0.68) (Denollet, 2005). While these items are not the exact same, I would argue that they are similar enough to one another that they may be capturing the same overall construct and hence redundant.

The two-factor solution explained a total of 39.9% of the variance, with Component 1 explaining 30.5% and Component 2 explaining 9.4%. Factor 1 contained 19 items with all factor loadings above .4. All items from the CSE scale (1–12) and 7 of the items from negative affect (2, 4, 5, 7, 9, 12, and 13) loaded on to this factor. The second factor contained 11 items with all factor loadings above .4. The items corresponded to the social inhibition (1, 3, 6, 8, 10, 11, and 14) and the negative affect constructs (4, 7, 9, and 13; see Table 5).

Item criteria were used to help with interpretation of the two factor solution also. Overall, the two factor solution was determined to represent CSE and DS14. However, based on criteria many of the items were dropped and hence no longer sufficiently represented the two factors. There were four items from the DS14 construct that loaded a .4 or higher on both the CSE factor and DS14 subscales. These items were negative affect 4, 7, 9 and 13. According to criteria, these items were dropped. Three items from the DS14 construct loaded a .4 or higher on the CSE
factor only. Again, according to criteria these items were dropped (2, 5, and 12). After consideration of the factor outcomes and item criteria, the two factors were determined to represent CSE and DS14. However, the analysis supports dropping all of the items from negative affect subscale (2, 4, 5, 7, 9, 12, and 13). Given that all seven of the negative affect items were dropped based on criteria, the factor no longer represents the DS14 scale but rather social inhibition alone.

In conclusion, the three factor model appeared to be the most parsimonious, theoretically consistent and explained the most variance. In this solution, once the item criteria were applied the components were the most clear cut and consistent with theory. In other words, items that were supposed to load on the CSE component did and items that were supposed to load on negative affect or social inhibition components did too. This was true with one one exception. In negative affect item 4 was dropped. However, overall each of the constructs were still theoretically consistent. In contrast, in the two factor model, once the item criteria was applied the two components did not make as much theoretical sense. In this case, the CSE construct upheld but the DS14 solution did not. The DS14 construct was comprised of the original seven items representing social inhibition and none of the items representing negative affect. For Type D personality, as mentioned above, an individual is considered to have this personality type if they are high on both negative affect and social inhibition traits combined (Denollet, 2005). So, ultimately, this component didn’t holdup theoretically, and it didn’t explain as much of the variance as the three factor solution. Therefore, a three factor model was used. In this sample, all factors demonstrated good internal consistency. The Cronbach alpha coefficient for the CSE factor was .86, the negative affect factor was .75 and social inhibition factor was .82.
Table 4

Direct Oblimin Rotation of Three Factor Solution for Core Self-Evaluations and DS14 Items Combined, Combined Sample 1 (n=457)

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Negative affect</td>
<td>Social inhibition</td>
<td>CSE</td>
</tr>
<tr>
<td>NA2. I often make a fuss about unimportant things</td>
<td>.545</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA4. I often feel unhappy</td>
<td>.709</td>
<td></td>
<td>-.503</td>
</tr>
<tr>
<td>NA5. I am often irritated</td>
<td>.598</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA7. I take a gloomy view of things</td>
<td>.670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA9. I am often in a bad mood</td>
<td>.691</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA12. I often find myself worrying about something</td>
<td>.615</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA13. I am often down in the dumps</td>
<td>.789</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSE1. I am confident I get the success I deserve in life</td>
<td></td>
<td>.680</td>
<td></td>
</tr>
<tr>
<td>CSE2. Sometimes I feel depressed</td>
<td></td>
<td>-.642</td>
<td>.433</td>
</tr>
<tr>
<td>CSE3. When I try, I generally succeed</td>
<td></td>
<td></td>
<td>.608</td>
</tr>
<tr>
<td>CSE4. Sometimes when I fail I feel worthless</td>
<td></td>
<td>-.545</td>
<td>.530</td>
</tr>
<tr>
<td>CSE5. I complete tasks successfully</td>
<td></td>
<td></td>
<td>.536</td>
</tr>
<tr>
<td>CSE6. Sometimes, I do not feel in control of my work</td>
<td></td>
<td>-.408</td>
<td>.505</td>
</tr>
<tr>
<td>CSE7. Overall, I am satisfied with myself</td>
<td></td>
<td>-.442</td>
<td>.699</td>
</tr>
<tr>
<td>CSE8. I am filled with doubts about my competence</td>
<td></td>
<td>-.506</td>
<td>.616</td>
</tr>
</tbody>
</table>

(continued)
Table 4 (continued)

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1 Negative affect&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Factor 2 Social inhibition&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Factor 3 CSE&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE9. I determine what will happen in my life</td>
<td></td>
<td></td>
<td>.622</td>
</tr>
<tr>
<td>CSE10. I do not feel in control of my success in my career</td>
<td></td>
<td></td>
<td>.691</td>
</tr>
<tr>
<td>CSE11. I am capable of coping with most of my problems</td>
<td>-.429</td>
<td></td>
<td>.556</td>
</tr>
<tr>
<td>CSE12. There are times when things look pretty bleak and hopeless to me</td>
<td>-.666</td>
<td></td>
<td>.559</td>
</tr>
<tr>
<td>SI11. I make contact easily when I meet people</td>
<td></td>
<td></td>
<td>.707</td>
</tr>
<tr>
<td>SI13. I often talk to strangers</td>
<td></td>
<td></td>
<td>.599</td>
</tr>
<tr>
<td>SI16. I often feel inhibited in social interactions</td>
<td>.524</td>
<td></td>
<td>.491</td>
</tr>
<tr>
<td>SI18. I find it hard to start a conversation</td>
<td></td>
<td></td>
<td>.797</td>
</tr>
<tr>
<td>SI10. I am a closed kind of person</td>
<td>.415</td>
<td></td>
<td>.643</td>
</tr>
<tr>
<td>SI11. I would rather keep other people at a distance</td>
<td></td>
<td></td>
<td>.669</td>
</tr>
<tr>
<td>SI14. When socializing, I don’t find the right things to talk about</td>
<td>.443</td>
<td></td>
<td>.666</td>
</tr>
</tbody>
</table>

<sup>Note</sup>. Only loadings above .4 are displayed.

<sup>a</sup>Percent of variance = 30.5%. <sup>b</sup>Percent of variance = 9.4%. <sup>c</sup>Percent of variance = 7.2%.
Table 5

*Direct Oblimin Rotation of Two Factor Solution for Core Self-Evaluations and DS14 Items Combined, Sample 1 (n=457)*

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1 CSE(^{a})</th>
<th>Factor 2 DS14(^{b})</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA2. I often make a fuss about unimportant things</td>
<td>.411</td>
<td></td>
</tr>
<tr>
<td>NA4. I often feel unhappy</td>
<td>.729</td>
<td>.414</td>
</tr>
<tr>
<td>NA5. I am often irritated</td>
<td>.410</td>
<td></td>
</tr>
<tr>
<td>NA7. I take a gloomy view of things</td>
<td>.604</td>
<td>.500</td>
</tr>
<tr>
<td>NA9. I am often in a bad mood</td>
<td>.568</td>
<td>.472</td>
</tr>
<tr>
<td>NA12. I often find myself worrying about something</td>
<td>.526</td>
<td></td>
</tr>
<tr>
<td>NA13. I am often down in the dumps</td>
<td>.705</td>
<td>.409</td>
</tr>
<tr>
<td>SI1. I make contact easily when I meet people</td>
<td></td>
<td>.605</td>
</tr>
<tr>
<td>SI3. I often talk to strangers</td>
<td></td>
<td>.478</td>
</tr>
<tr>
<td>SI6. I often feel inhibited in social interactions</td>
<td></td>
<td>.607</td>
</tr>
<tr>
<td>SI8. I find it hard to start a conversation</td>
<td></td>
<td>.791</td>
</tr>
<tr>
<td>SI10. I am a closed kind of person</td>
<td></td>
<td>.712</td>
</tr>
<tr>
<td>SI11. I would rather keep other people at a distance</td>
<td></td>
<td>.730</td>
</tr>
<tr>
<td>SI14. When socializing, I don’t find the right things to talk about</td>
<td></td>
<td>.712</td>
</tr>
</tbody>
</table>

(continued)
Table 5 (continued)

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1 CSE&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Factor 2 DS14&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE1. I am confident I get the success I deserve in life</td>
<td>-.579</td>
<td></td>
</tr>
<tr>
<td>CSE2. Sometimes I feel depressed</td>
<td>-.649</td>
<td></td>
</tr>
<tr>
<td>CSE3. When I try, I generally succeed</td>
<td>-.418</td>
<td></td>
</tr>
<tr>
<td>CSE4. Sometimes when I fail I feel worthless</td>
<td>-.661</td>
<td></td>
</tr>
<tr>
<td>CSE5. I complete tasks successfully</td>
<td>-.436</td>
<td></td>
</tr>
<tr>
<td>CSE6. Sometimes, I do not feel in control of my work</td>
<td>-.560</td>
<td></td>
</tr>
<tr>
<td>CSE7. Overall, I am satisfied with myself</td>
<td>-.701</td>
<td></td>
</tr>
<tr>
<td>CSE8. I am filled with doubts about my competence</td>
<td>-.689</td>
<td></td>
</tr>
<tr>
<td>CSE9. I determine what will happen in my life</td>
<td>-.468</td>
<td></td>
</tr>
<tr>
<td>CSE10. I do not feel in control of my success in my career</td>
<td>-.641</td>
<td></td>
</tr>
<tr>
<td>CSE11. I am capable of coping with most of my problems</td>
<td>-.607</td>
<td></td>
</tr>
<tr>
<td>CSE12. There are times when things look pretty bleak and hopeless to me</td>
<td>-.747</td>
<td></td>
</tr>
</tbody>
</table>

<sup>Note</sup>. Only loadings above .4 are displayed.
<sup>a</sup>Percent of Variance = 30.5%. <sup>b</sup>Percent of Variance = 9.4%.
Results from the factor analysis revealed dropping item 4 from the negative affect component indicating that this item is redundant. So, in this study, the item was dropped from the subscale. Overall, the results serve as evidence that the CSE and DS14 scales are indeed independent (although clearly related) constructs. The psychometrics confirms to proceed with the CSE measure as the author created it. In the case of DS14, item 4 of the NA subscale will be removed, as it appears to be redundant with aspects of CSE. However, the social inhibition subscale will be used as it was created. With this in mind, reliability estimates were determined for the measures. All factors demonstrated good internal consistency. The Cronbach alpha coefficient for the CSE factor in this sample was .86, the negative affect factor was .80 and social inhibition factor was .82.

**Phase 2**

**Research Question 2.** For the second research question, Pearson product-moment correlations were conducted for each of the operational definitions of academic success to determine which demographic variables to enter into the subsequent analyses. Results of the Pearson $R$ correlation coefficients for the first operational definition of academic success (effort) showed that gender ($r = .19, p < .01$) was significant. For the second operational definition of academic success (perceived fit), age ($r = -.24, p < .01$), gender ($r = .17, p < .05$) and year in school ($r = -.21, p < .01$) were all significant and had the highest correlations among the demographic variables.

Hierarchical multiple linear regressions were used to determine the best model of variables for predicting effort among college students with gender used as a control variable (see Table 6). For the first hierarchical multiple linear regression using a self-reported score for effort as the operational definition of academic success, the demographic variable of gender was
entered separately into step 1. The overall model was significant \((F(1, 455) = 16.23, p = .00,\) adjusted \(R^2 = .03\)), in which gender \((B = .63***, SE = .16, \beta = .19***, \rho < .00)\) statistically predicted the variance in effort. Step 1 accounted for 3% of the variance in effort. For step 2, CSE total score was added to the previous step. The overall model was significant \((F(1, 454) = 13.12, p = .00,\) adjusted \(R^2 = .05\)), in which gender \((B = .66***, SE = .15, \beta = .20***, \rho < .00)\) and CSE \((B = .03**, SE = .01, \beta = .14**, \rho < .01)\) statistically predicted the variance in effort. In this step, there was a \(\Delta R^2\) of 2% with gender and CSE accounting for a total of 5% of the variance.

For step 3, DWP total score was added to the previous steps and the overall model was significant \((F(1, 453) = 10.03, p = .00,\) adjusted \(R^2 = .06\)). In this model, gender \((B = .57***, SE = .16, \beta = .17***, \rho < .00)\), CSE \((B = .03**, SE = .01, \beta = .12**, \rho < .01)\) and DWP \((B = .02*, SE = .01, \beta = .09*, \rho < .05)\) all statistically predicted the variance in effort. In step 3, there was only a 1% \(\Delta R^2\) gender, CSE and DWP together accounted for 6% of the total variance. For step 4, the subscales negative affect (NA) and social inhibition (SI) of the DS14 scale were added to the previous steps. The overall model was significant \((F(2, 451) = 7.40, p = .00,\) adjusted \(R^2 = .07)\). In step 4, gender \((B = .60***, SE = .16, \beta = .18***, \rho < .00)\), CSE \((B = .04***, SE = .01, \beta = .18***, \rho < .00)\) and DWP \((B = .02*, SE = .01, \beta = .11*, \rho < .05)\) remained significant, while negative affect \((B = .05, SE = .03, \beta = .08, \rho < .10)\) and social inhibition were not significant \((B = .02, SE = .02, \beta = .08, \rho < .10)\). Step 4 had a 1% \(\Delta R^2\) and the highest total \(R^2\) at 7%. This step explained the highest proportion of variance in effort.
Table 6

Hierarchical Regression Analyses Predicting Academic Success (Effort)

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>( R^2 )</th>
<th>( \Delta R^2 )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Gender</td>
<td>.03***</td>
<td>.03***</td>
<td>.19***</td>
</tr>
<tr>
<td>Step 2</td>
<td>Gender</td>
<td>.05***</td>
<td>.02***</td>
<td>.20***</td>
</tr>
<tr>
<td></td>
<td>CSE</td>
<td></td>
<td></td>
<td>.14***</td>
</tr>
<tr>
<td>Step 3</td>
<td>Gender</td>
<td>.06***</td>
<td>.01*</td>
<td>.17***</td>
</tr>
<tr>
<td></td>
<td>CSE</td>
<td></td>
<td></td>
<td>.12**</td>
</tr>
<tr>
<td></td>
<td>DWP</td>
<td></td>
<td></td>
<td>.09*</td>
</tr>
<tr>
<td>Step 4</td>
<td>Gender</td>
<td>.07***</td>
<td>.01*</td>
<td>.18***</td>
</tr>
<tr>
<td></td>
<td>CSE</td>
<td></td>
<td></td>
<td>.18***</td>
</tr>
<tr>
<td></td>
<td>DWP</td>
<td></td>
<td></td>
<td>.11*</td>
</tr>
<tr>
<td></td>
<td>DS14-NA</td>
<td></td>
<td></td>
<td>.08</td>
</tr>
<tr>
<td></td>
<td>DS14-SI</td>
<td></td>
<td></td>
<td>.08</td>
</tr>
</tbody>
</table>

Note. \( N = 457 \). CSE = core self-evaluation scale; DWP = developmental work personality scale; DS14-NA = Personality D scale – Negative Affect; DS14-SI = Personality D scale – social inhibition.

* \( p < 0.05 \). ** \( p < 0.01 \). *** \( p < 0.00 \).

For the second hierarchical multiple linear regressions using a self-reported score for perceived fit as the operational definition of academic success, the demographic variables of gender, age and year in school were entered separately into step 1 (see Table 7). The overall model was significant (\( F (3, 180) = 4.49, p = .005 \), adjusted \( R^2 = .05 \)). However, the individual demographic variables age (\( B = -.69, SE = .53, \beta = -.17, p < .20 \)), gender (\( B = 1.34, SE = .83, \beta = .12, p < .10 \)), and year in school (\( B = -.25, SE = .83, \beta = .12, p < .10 \)) did not statistically predict the variance in perceived fit. Step 1 accounted for 5% of the variance in effort. For step 2, CSE total score was added to the previous step. Again, the overall model was significant (\( F (1, 179) = \).
11.35, p = .00, adjusted $R^2 = .19$, but the individual variables age ($B = -.61$, SE = .49, $\beta = -.15$, $\rho < .22$) and year in school ($B = -.33$, SE = .64, $\beta = -.06$ $\rho < .60$) did not statistically predict the variance in perceived fit. In contrast, the variables gender ($B = 1.90^*$, SE = .78, $\beta = .17^*$, $\rho < .05$) and CSE ($B = .29^{***}$, SE = .05, $\beta = .37^{***}$, $\rho < .00$) did statistically predict the variance. In this step, there was a $\Delta R^2$ of 14% with the demographic variables and CSE accounting for a total of 19% of the variance. For step 3, DWP total score was added to the previous steps and the overall model was significant ($F(1, 178) = 9.63$, $p = .00$, adjusted $R^2 = .19$. In this model, age ($B = -.65$, SE = .49, $\beta = -.16$, $\rho < .20$), gender ($B = 1.49$, SE = .82, $\beta = .13$, $\rho < .10$), year in school ($B = -.24$, SE = .64, $\beta = -.04$, $\rho < .70$) and DWP ($B = .07$, SE = .04, $\beta = .11$, $\rho < .12$) were not significant. The independent variable CSE ($B = .27^{***}$, SE = .06, $\beta = .34^{***}$, $\rho < .00$) did, however, statistically predict the variance. In step 3, there was only a 1% $\Delta R^2$ and explained a total of 20% of the variance. For step 4, the subscales negative affect (NA) and social inhibition (SI) of the DS14 scale were added to the previous steps. The overall model was significant ($F(2, 176) = 7.16$, $p = .00$, adjusted $R^2 = .19$). In step 4, age ($B = -.73$, SE = .49, $\beta = -.18$, $\rho < .15$), gender ($B = 1.30$, SE = .83, $\beta = .12$, $\rho < .12$), year in school ($B = -.15$, SE = .64, $\beta = -.03$, $\rho < .82$) and DWP ($B = .06$, SE = .04, $\beta = .10$, $\rho < .16$), negative affect ($B = .10$, SE = .12, $\beta = .08$, $\rho < .40$) and social inhibition ($B = -.11$, SE = .08, $\beta = -.12$, $\rho < .18$) were not significant, while CSE ($B = .26^{***}$, SE = .07, $\beta = .33^{***}$, $\rho < .00$) remained significant. Step 4 had a 0% $\Delta R^2$ and explained a total of 20% of the variance.
**Table 7**

*Hierarchical Regression Analyses Predicting Academic Success (Perceived Fit)*

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Age</td>
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<td>.05***</td>
<td>-.17</td>
</tr>
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<td></td>
<td>Gender</td>
<td></td>
<td></td>
<td>.12</td>
</tr>
<tr>
<td></td>
<td>Year in school</td>
<td></td>
<td></td>
<td>-.05</td>
</tr>
<tr>
<td>Step 2</td>
<td>Age</td>
<td>.19***</td>
<td>.14***</td>
<td>-.15</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td></td>
<td></td>
<td>.17*</td>
</tr>
<tr>
<td></td>
<td>Year in school</td>
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<td>-.06</td>
</tr>
<tr>
<td></td>
<td>CSE</td>
<td></td>
<td></td>
<td>.37***</td>
</tr>
<tr>
<td>Step 3</td>
<td>Age</td>
<td>.20***</td>
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<td>-.16</td>
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<td></td>
<td>Gender</td>
<td></td>
<td></td>
<td>.13</td>
</tr>
<tr>
<td></td>
<td>Year in school</td>
<td></td>
<td></td>
<td>-.04</td>
</tr>
<tr>
<td></td>
<td>CSE</td>
<td></td>
<td></td>
<td>.34***</td>
</tr>
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<td></td>
<td>DWP</td>
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<td>.11</td>
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<tr>
<td>Step 4</td>
<td>Age</td>
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<td>.00</td>
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<td></td>
<td>Gender</td>
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<td>.12</td>
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<td></td>
<td>Year in school</td>
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<td>.33***</td>
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<td></td>
<td>DWP</td>
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<td></td>
<td>.10</td>
</tr>
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<td>DS14-NA</td>
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<td>.08</td>
</tr>
<tr>
<td></td>
<td>DS14-SI</td>
<td></td>
<td></td>
<td>-.12</td>
</tr>
</tbody>
</table>

Note. $N = 190$. CSE = core self-evaluation scale, DWP = developmental work personality scale, DS14-NA = Personality D scale - Negative Affect, DS14-SI = Personality D scale – social inhibition. *$p < 0.05$. **$p < 0.01$. ***$p < 0.00$.

**Research Question 3.** Based on the results from research question 2, I used the statistically significant variables from each of the hierarchical regression analyses to test whether engagement mediated the relationship between those independent variables and the dependent variables. The previous analyses revealed that CSE and DWP were statistically significant in predicting effort, while CSE was statistically significant in predicting perceived fit. So, mediation by engagement was tested for the aforementioned relationships.
**Personality-Effort**

First, four models were fit to test mediation between the previously mentioned statistically significant direct effect variables on effort. The first model examined the direct effects of CSE and DWP on effort. The direct effects of the personality traits on effort can be found in Table 7. The second model examined the direct effects of CSE and DWP on engagement. College students with higher levels of CSE and work personalities reported higher levels of engagement, $\beta = .29** (B = .04)$, $\beta = .15** (B = .02)$. The third model examined the direct effects of engagement on effort. The model revealed a significant relationship between engagement and academic effort, $\beta = .29** (B = .49)$. For the pathways that met the criteria outlined above, indirect effects were examined with a fourth model. Bootstrapping method was utilized in order to test the indirect effect (Bollen & Stine, 1990; Shrout & Bolger, 2002). The fourth model analyzed the indirect effect of CSE and DWP personalities on academic effort via engagement. Some of the hypothesized indirect effects were observed. Specifically, CSE exerted a positive indirect effect on academic effort via engagement ($B = .02**$, $SE = .03$, $\beta = .10**$, $\rho < .001$). That is, higher levels of CSE are associated with higher levels of engagement, which subsequently leads to higher levels of effort. In addition, work personality also had a positive indirect effect on academic effort via engagement ($B = 0.01*$, $SE = .025$, $\beta = 0.07*$ $\rho < .05$). That is, higher levels of work personality are associated with higher levels of engagement, which subsequently leads to higher levels of effort. Thus, the results indicate that an individual’s engagement level is one potential mechanism through which CSE and work personalities affect academic effort.
Note: Standardized coefficient (unstandardized coefficient), ** when $p < .001$, * when $p < .01$

Controls: For Effort, Type D was significant ($\beta = .116, p < .05$), DWP was significant ($\beta = .159, p < .05$), and race, gender and income were not significant.

*Figure 2. Mediation of the relationship between CSE and effort by engagement.*

<table>
<thead>
<tr>
<th>CSE</th>
<th>Engagement</th>
<th>Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.35* (.05)</td>
<td>.06 (.02)</td>
</tr>
<tr>
<td>β</td>
<td>.156</td>
<td>.122</td>
</tr>
</tbody>
</table>

Total indirect effect: $0.10^{**} (.02)$

Note: Standardized coefficient (unstandardized coefficient), ** when $p < .001$, * when $p < .01$

Controls: For Effort, CSE was significant ($\beta = .156, p < .05$), Type D was significant ($\beta = .122, p < .05$), and race, gender and income were not significant.

*Figure 3. Mediation of the relationship between DWP and effort by engagement.*

<table>
<thead>
<tr>
<th>DWP</th>
<th>Engagement</th>
<th>Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.28* (.03)</td>
<td>.10 (.02)</td>
</tr>
<tr>
<td>β</td>
<td>.28</td>
<td>.122</td>
</tr>
</tbody>
</table>

Total indirect effect: $0.07^{*} (.01)$
Personality-Perceived Fit

Second, four models were fit to test mediation between the statistically significant direct effect variable, CSE, on perceived fit. The first model examined the direct effect of CSE on perceived fit. The direct effects of CSE on perceived fit can be found in Table 8. The second model examined the direct effect of CSE on engagement. College students with higher levels of CSE reported higher levels of engagement \((B = .04^{**}, SE = .010, \beta = .27^*, \rho = .00)\). The third model examined the direct effects of engagement on perceived fit. The model revealed a significant relationship between engagement and perceived fit \((B = 2.15, SE = .054, \beta = .40^{**}, \rho = .00)\). Indirect effects were examined with a fourth model. Bootstrapping was utilized in order to test the indirect effect \(Bollen & Stine, 1990; Shrout & Bolger, 2002\). The fourth model analyzed the indirect effect of CSE on perceived fit via engagement. CSE exerted a positive indirect effect on perceived fit via engagement \((B = .08^*, SE = .037, \beta = .10^*, \rho = .013)\). That is, higher levels of CSE are associated with higher levels of engagement, which subsequently leads to higher levels of perceived fit. This suggests that an individual’s engagement level is the mechanism through which CSE affect perceived fit.
**Note.** Standardized coefficient (unstandardized coefficient), **when \( p < .001 \), *when \( p < .01 \)

Controls: For Perceived Fit, race was significant (\( \beta = .231, p < .05 \)), gender, income, Type D, and DWP were not significant.

Figure 4. Mediation of the relationship between CSE and perceived fit by engagement.
Chapter 5

Discussion

The overall findings from this paper suggest that there are direct effects between the personality traits CSE, DWP and academic performance outcomes. In addition, engagement was found to mediate the relationship between CSE, DWP and effort as well as between CSE and perceived fit. These findings were consistent with the proposed hypotheses and provide additional evidence for the constructs of core self-evaluations, work personality, and engagement contributing to academic performance outcomes.

The Relationship Between the CSE and DS14 Constructs

The findings related to research question 1 suggest that CSE and Type D personality are related, yet independent constructs. Results from the factor analysis provided evidence that item (4) I often feel unhappy, from the personality D subscale negative affect is redundant to some of the items representing the emotional stability aspect of CSE. The item is very close to the following from the CSE scale: (2) Sometimes I feel depressed, (4) sometimes when I fail I feel worthless, and (12) There are times when things look pretty bleak and hopeless to me. The overall results confirmed the psychometric properties of the CSE scale and supported the removal of one item from DS14 scale (4) for the purpose of this study. These results are not surprising as the constructs were tested knowing that aspects of each contained similarities. More specifically, CSE theory states that an aspect of the construct is defined by Emotional stability (i.e., the propensity to feel calm and secure) or the opposite of neuroticism and research regarding the negative affect subscale of DS14 has shown a positive correlation with neuroticism (0.68; Denollet, 2005). Based on this research, the 7 NA items should theoretically be negatively associated with CSE. Thus, it makes sense that 1 of the 7 items associated with NA loaded
moderately on both CSE and NA scales. In addition to theory, Pearson product moment
 correlations demonstrated a significant negative relationship between CSE and DS14-NA, DS14-
 SI and DS14-Total serving as evidence of this outcome.

**Direct Effect of Study Variables on Academic Success**

Results from the first hierarchical regression analysis indicated an overall positive direct
effect among study variables and effort. It was found that 7% of the variance in effort was
accounted for by gender, CSE, work personality, and DS14. The individual beta scores of
gender, CSE and work personality were all significant. The largest $\Delta R^2$ (2%) was between steps
1 and 2 when CSE was added to gender. While the outcome of this analysis was significant, the
variables only accounted for 7% of the total variance in effort. So, in a practical sense, it would
appear that these relationships should be explored further before determining whether the
variables make a large enough impact on the outcome for them to be considered meaningful
predictors of academic success. Despite the small effect size, the meaning of each variable will
be considered in more detail below.

In regard to the control, gender, this accounted for 3% of the variance in effort indicating
that women are reporting higher levels of effort. The outcome is not surprising given preliminary
analyses revealing that gender was significantly correlated with effort levels ($r = .19, p < .01$) in
this study. In addition, past research has shown similar outcomes (Lange, Strauser, Alston, Chiu
found that gender accounted for 10% of the variance in effort, while Lange et al. (2015) found
that gender accounted for 1% of the variance in effort. As of recent, scholars have made claims
that there is a “boy crisis” in school achievement. According to statistics, the number of males
enrolling in higher education has deceased from 71% in 1947 to 43% in 2005. In addition, in
2005-2006 only 56% of bachelor’s degrees were given to men in comparison to 61% of females suggesting that they are falling behind (NCES, 2013). Research with a focus on higher education tends to reveal that women are more likely to outperform men and to obtain a college degree. Scholars contend that this difference is due to the fact that women tend to work harder and attend class more frequently than men (Wainer & Steinberg, 1992). Other authors have suggested that school grades require more effort and persistence for longer periods of time in comparison to achievement tests, suggesting that perhaps females put more effort and persistence into their work (Wentzel, 1991). According to DiPrete and Buchmann (2013), it has been found that girls tend to report that they enjoy school and getting good grades is important to them where boys do not report this. In addition, girls have been found to study more than boys where as boys tend to be less engaged in the detail of the material and put forth less effort. This may be related to the outdated stereotype that boys are supposed to devalue hard work and effort in school. For example, boys who strive for good grades are often referred by derogatory names by their peers. So, not only do the results from this study suggest that gender plays a role in effort levels but other literature supports meaningful reason behind this conclusion.

In accordance with hypotheses, core self-evaluations and work personality had a significant and direct effect on effort. The finding that high core self-evaluations directly affect performance outcomes is not surprising given that prior research in this area has demonstrated a relationship between success in academics, the workplace and CSE (Broucek, 2005; Erez & Judge, 2001; Grant & Wrzesniewski, 2010; Judge & Bono, 2001; Qadeer & Arshad, 2014). In addition, this outcome is theoretically consistent suggesting that individuals who have the ability to cope with the unexpected pressures of life by bringing a positive frame to situations that they
encounter in the work setting, similarly bring this positive frame as a student to their schoolwork impacting their effort levels.

Regarding work personality, the finding that higher levels of this personality type impact higher levels of effort is consistent with prior research (Lange, D., Strauser, D., Alston, R., Chiu, C. & Wong, 2015; Strauser, O’Sullivan, & Wong, 2012). Again, this outcome also makes theoretical sense as individuals who have high levels of DWP are considered to have a high ability to work on tasks, display appropriate emotional response patterns to supervisors and coworkers, and attribute a positive meaning and value to their work (Bolton, 1992; Strauser, Waldrop, & Ketz, 1999). Therefore, individuals with higher levels of work personality should be capable of working on tasks and finding meaning in their schoolwork, resulting in an increase of academic effort (e.g., course work, exams) and contributing to their success. While this outcome was consistent with prior research, in this study, DWP had a smaller impact on effort than it has in past studies only adding 1% of variance versus 5% and 19% in past research. One reason for this difference in variance may be that the added scale of CSE in the current study could be spreading out the effect of variance on success. Another reason could be that in this study a total score for DWP was utilized rather than the individual subscales. So, perhaps the total score isn’t capturing some of the variance that the subscales of DWP accounted for in previous studies. A third reason for this difference may be the characteristics of the sample. The students in this sample are known to be a high achieving, high caliber group based on the requirements one must meet to attend the university. So, it is plausible that this group of individuals is not as diverse in their level of work personality. It may be that having a developed work personality is just a part of being a student in this particular setting and population or perhaps this type of student is more capable of adapting to having a less developed work personality. Thus, their success levels may
not necessarily be dictated by this characteristic, as much as it would be in a more representative general population of students.

The finding that Type D personality didn’t significantly impact effort levels is not surprising given the preliminary analyses and that this hypothesis was exploratory. Prior to performing the analyses, Pearson product moment correlations revealed only small non-significant negative correlations between DS14-NA, DS14-SI, DS14, DS14-Total and effort (see Table 2). So, while theoretically one could surmise these constructs would be related, past research has shown the construct has an impact on work related problems (Denollet, 1997; Mols & Denollet, 2010), the relationship was not established in this study. Similar to work personality, one explanation for this could be the student population in this sample. The students in this sample are known to be a high achieving, high caliber group based on the requirements one must meet to attend the university. So, it is plausible that this sample is different than most samples that would represent this population. It can be argued that this type of student may be more resilient to the personality characteristics that the normal population may not be as resilient too. Hence, it may be that DS14 characteristics don’t impact the variance in success levels as it would in a different population. A high achiever, caliber student with higher level of Type D personality may invest all their time and effort in their work as a way to avoid the negative feelings they receive from other life circumstances. In addition, perhaps being socially inhibited works to the benefit of this type of individual. If one is socially inhibited, it may mean that they are spending more time studying/investing more time in their work rather than socializing or engaging in extracurricular activities. Thus, it is possible that a high achieving student may naturally be successful in coping with this type of personality in a way that wouldn’t create a
significant difference between their performance and that of someone without this personality type.

Results from the second hierarchical regression analysis where perceived fit was the dependent variable used for predicting academic success indicated that CSE was the only significant variable in the model. This finding supports the hypothesis that CSE has a direct effect on the variance of perceived fit. While each of the overall models in this regression analysis were significant, step 2 of the analysis, which included the demographic control variables and CSE, had the largest contribution to the variance at 19% and the largest $\Delta R^2$ (14%). Similar to above, these results are not surprising as previous literature has shown a relationship between academic and workplace success and the construct of CSE (Broucek, 2005; Erez & Judge, 2001; Grant & Wrzesniewski, 2010; Judge & Bono, 2001; Qadeer & Arshad, 2014). In addition, this outcome is theoretically consistent. P-E fit is defined as a match between an individual and characteristics of their work or academic environment (i.e., demands of job, values of organization and rewards received from workplace; Cable and DeRue, 1996). It makes theoretical sense that someone who is more likely to bring a positive frame to situations that they encounter in the work setting would also do so as a student. In particular, this type of person would be more likely to put a positive spin on their perception of the match between their personal needs and the academic environment. In addition, it would be likely that a person who tends to view himself or herself as effective would also view their abilities as matching with the demands of the academic environment. Furthermore, if someone with high levels of CSE tends to believe they have internal control over what happens in their life, then they are likely to believe they chose a university or academic environment that is consistent with their values and interest.
The finding that work personality doesn’t significantly impact perceived fit is inconsistent with prior research suggesting that someone with a more developed work personality will have better P-E congruence. In other words, according to theory, developing an effective work personality will result in positive work behavior as an adult and increase the likelihood that the person will be capable of meeting the contextual demands of the workplace leading to better P-E fit (Strauser and Waldrop, 1999). In addition, someone with an effective work personality will develop the ability to work on tasks, display appropriate emotional response patterns to supervisors and coworkers, and attribute a positive meaning and value to work, hence impacting their overall perceived fit perceptions (O’Sullivan & Strauser, 2010). Moreover, preliminary analyses indicated a significant Pearson product correlation between DWP and it’s subscales and perceived fit (see Table 2). Similar to above, one reason for this difference in variance may be that the added scale of CSE in the current study could be spreading out the effect of variance on success. Another reason could be that in this study a total score for DWP was utilized rather than the individual subscales. So, perhaps the total score isn’t capturing some of the variance that the subscales of DWP would have accounted for. Again, the sample could be impacting this outcome in a similar manner as discussed above.

Finally, the finding that DS14 doesn’t significantly impact perceived fit is surprising for a couple of reasons. First, preliminary Pearson product correlation analyses indicated a significant correlation between DS14 and it’s subscales and perceived fit perceptions (see Table 2). Second, theoretically one could presume these constructs to be related given that past research has found the construct to be related to work related problems including higher perceptions of stress, burnout, and lack of satisfaction (Denollet, 1997; Mols & Denollet, 2010). So, it is plausible, that this disposition could also negatively impact the perception of one’s perceived fit with their
academic setting as more stressful and less satisfying (i.e., not meeting their needs) and result in higher levels of burnout leading to lower academic performance. However, this relationship was not established in this study. Similar to above, the students in this sample are known to be a high achieving, high caliber group based on the requirements one must meet to attend the university. So, it is plausible that this sample is different than most samples that would represent this population. It can be argued that this type of student may be more resilient to the personality characteristics that the normal population may not be as resilient to. In other words, this type of person may not allow their negative affect or tendencies toward social inhibition to impact the way that they feel or perceive the match between their interest and their academic environment. Hence, DS14 characteristics may not impact the variance in one’s perceived fit as it would in a more representative population.

**Mediation of Personality and Academic Success Outcomes**

The results regarding research question 3 suggested that the construct of engagement mediates the relationship between CSE, work personality and effort and the relationship between CSE and perceived fit. Therefore, highlighting the particularly salient information that engagement is the mechanism by which these two personality traits and academic performance outcomes (effort and perceived fit) exist. This finding is consistent with prior research suggesting that engagement is a process variable associated with positive outcomes of academic performance (Lee, 2014; Reyes, Brackett, Rivers, White, & Salovey, 2012). From a theoretical perspective, the positive motivational state and ability to have high levels of mental resilience/energy from studying discussed in the definition of engagement is reflected in the concept of CSE. People with high CSE tend to appraise demands (e.g., work) with more positivity, have a greater ability to cope with demands in an effective manner and have more
resources available to invest in the performance of their work (Judge, Locke, & Durham, 1997). In addition, individuals with high levels of CSE are well-adjusted, positive, and possess feelings of efficacy (Judge, Erez, Bono, & Thoresen, 2003). Thus, it makes sense that people with high core self-evaluations tend to feel more capable when it comes to meeting the demands of work and those who tend to experience an overall positive assessment of their worth and effectiveness are more engaged in their studies. This in turn would perceivably increase one’s energy and mental resilience as well as their feelings of positivity while completing the work demands. In addition, they are likely to dedicate the necessary time and effort toward completing the tasks at hand as they have a sense of “control” and “confidence” in their ability to excel. Thus, the fact that engagement serves as mediator for the relationship between CSE and academic performance outcomes (effort and perceived fit) makes sense.

In regard to work personality, previous studies have found an association between DWP, engagement and academic outcomes (Lange, D., Strauser, D., Alston, R., Chiu, C. & Wong, 2015; Strauser, O’Sullivan, & Wong, 2012). The finding that DWP is positively related to work engagement suggests that individuals who report higher DWP are more likely to be engaged as students in college. Given the previous research, it is not a surprise that engagement serves as a mediator between DWP and academic performance outcomes in this study.

In summary, the finding that high core self-evaluations directly effect performance outcomes (effort and perceived fit) is consistent with limited prior research in the area (Broucek, 2005) and theoretically consistent, suggesting that individuals who have the ability to cope with the unexpected pressures of life by bringing a positive frame to situations that they encounter in the work setting, similarly bring this positive frame as a student to their schoolwork impacting their effort and perceived fit. Regarding work personality, the finding that higher levels of this
personality type impacts higher levels of effort is consistent with prior research (Lange, Strauser, Alston, Chiu & Wong, 2015; Strauser, O'Sullivan, & Wong, 2012). Again, this outcome also makes theoretical sense as individuals who have high levels of DWP are considered to have a high ability to work on tasks, display appropriate emotional response patterns to supervisors and coworkers, and attribute a positive meaning and value to their work (Bolton, 1992; Strauser, Waldrop, & Ketz, 1999). So, this type of person is also capable of working on tasks and finding meaning in their schoolwork, resulting in an increase of academic effort (e.g., course work, exams) and contributing to their success. Another important finding from this study was that engagement mediated the relationship between CSE and effort, work personality and effort and CSE and perceived fit.

**Limitations**

Conclusions about the results of this study are limited by the following considerations. First, this study was a cross-sectional study, which limits the ability to determine any causal link between the variables. More specifically, the academic success outcomes influenced by core self-evaluations, work personality, Type D personality, and engagement cannot be determined. Secondly, the data considered here is self-report, thus is subject to potential response bias. The measures on personal and environmental factors were based on self-reported data that cannot be cross validated by observation or review of objective records. Third, the generalizability of the sample should be considered, as the findings may not truly represent all college students. This may be because (a) the sample was limited geographically, (b) the sample was taken from one single course provide by the College of Applied Health Sciences (AHS), and (c) the sample was taken from a large public research intense university, hence the student population may be of a specific caliber of students as compared to other colleges.
Implications

The implications of this study are three-fold. First, identifying these personality traits early on in the post-secondary educational process may be of benefit for both the student and university. Because the study revealed that these personality traits only had a small impact on academic success outcomes, it is too early in the research process to say that these measures should be used while considering students for admission to a university; however, if the results were replicated and they demonstrated a larger impact, as they have in previous studies, then this research could potentially lead to using the personality measures down the line. In conjunction with that, consideration of these personality traits could be used in the advising process. For example, the personality measures could be used as an early intervention assessment tool helping advisors identify students who may be at risk for lower success rates. When an individual meets with their college advisor, utilizing these personality measures could aid in the process of connecting the student to the most appropriate services and resources while they are in school.

Secondly, it seems that focusing on levels of student engagement may be of utmost importance. Engagement appears to be imperative, as it has been identified as the mechanism by which the personality traits and success may exist. So, outside of identifying potential students for early intervention, increasing one’s level of engagement would serve as an actual way to “change” or better one’s academic outcomes. Personality tends to be stable, while engagement is a factor that can be manipulated. With that said, interventions could focus on increasing levels of student engagement. Research has shown that there are several strategies educators can use in the classroom that have been found to be successful in increasing student engagement levels. Universities could require their educators to implement the following research driven
strategies (a) make the course material relevant, real, and intentional—move the learning outside of the classroom and into the community; (b) incorporate several methods of technology (e.g., computer, multi-media resources, communication technology); (c) provide a challenging, positive, and open learning environment that encourages risk-taking; (d) encourage and demonstrate respectful “peer-to-peer” relationships; and (e) as the teacher learn with the students and use language and activities that focus on learning and engagement first, achievement second (Taylor & Parsons, 2011).

In regard to increasing student engagement at the individual level, perhaps college advisors could attempt to help the student increase their levels of vigor, dedication, and absorption leading to higher levels of engagement. One way to do this would be to encourage students to choose a major and coursework that is important or of interest to them. More specifically, an advisor can promote P-E fit by aiding students in an exploration process of what interests them and helping them match their interest with a major or career path that is known to meet those interest areas. Assessment measures such as the Strong Interest Inventory could be utilized in this exploration process. If they can do this, they will increase their person-environment fit, which according to research is linked to higher engagement and successful academic performance (Kristof-Brown, 2000; Nye, Su, Rounds, & Drasgow, 2012). Finally, counselling services can play a part in increasing one’s level of engagement. One of the roles of a mental health provider in a University setting is retention of students. As indicated in the results of this study, along with others, staying engaged is an important part of exceling in school and hence maintaining one’s status as a student. Research has shown that mental health concerns are related to disengagement in work (Nilsen, Skipstein, & Demerouti, 2016). For example, someone who has a diagnosis of depression may be more likely to withdrawal from
class, have difficulty focusing on coursework, possess a lack of motivation to attend class etc. resulting in disengagement in their academics. So, it would be important for counselors in a University Counseling Center setting to keep in mind that a part of their work is to increase mental health outcomes with the goal of impacting one’s level of engagement in school. If this goal is kept at the forefront, then, at an individual level, counselors could not only help students explore ways to increase their mental health such as refraining from isolation, exercising, engaging in healthy nutrition and sleep habits, helping one develop new coping strategies and providing medication referrals but also encourage students to continue to go to class and complete their coursework. This in turn may indirectly impact one’s ability to get out of bed, focus on work and maintain engagement in their academics resulting in higher achievement.

Third, although not a focus of the study, the current research project found a significant difference among gender on their effort level. This finding needs to continue to be studied; however, in the future it could be used to help tailor academic success programs with the goal of decreasing the gap between male and female academic performance outcomes. Furthermore, this information could serve as a foundation for future studies.

Conclusion and Future Directions

The overall findings from this study showed that core self-evaluations and work personality had a significant and direct effect on performance outcomes. Furthermore, engagement served as a mediator for the relationship between CSE, work personality and performance. These findings were theoretically consistent and provide additional evidence for the constructs relation to performance outcomes. More research is needed in this area to determine whether these relationships can be generalized to other college student populations, and inform future interventions. So, future research should be conducted with various courses
and colleges to get a better, more representative sample of the general college student population.
References


Testa, B. M. (2010). College career centers adapt to tough times. *Workforce management, 89*(8).


Appendix A

Consent Form

You are invited to participate in a research study that investigates what behaviors and experiences impact the academic effort in college students. The investigators in this study are David R. Strauser, Department of Kinesiology and Community Health at the University of Illinois at Urbana-Champaign, and Deirdre O’Sullivan, Department of Counselor Education, Counseling Psychology, and Rehabilitation and Human services at Penn State University.

This study will take approximately 40 minutes of your time. You will be asked to complete several questionnaires addressing the development of work personality including affectivity, social support, engagement, attachment and self-efficacy.

Your decision to participate or decline participation in this study is completely voluntary and you have the right to terminate your participation at any time without penalty. You may skip any questions you do not wish to answer.

Your participation in this research will be completely confidential and data will be averaged and reported in aggregate. Possible outlets of dissemination may be publication, presentations, research posters, or sharing within the industry or profession. In the event of publication of this research, no personally identifying information will be disclosed. To make sure that participation is confidential, please do not provide any personal identifying information on the questionnaires. The design of this study asks you to complete the survey packet only one time. No attempts will be made to identify you personally after the completion of this study. Although your participation in this research may not benefit you personally, it will provide better understandings of behaviors and experiences related to academic effort and career development. Benefits expected from this study may include increased awareness of behaviors and experiences related to career development. Benefits expected from this study may include increased awareness of your past and current academic/career attitudes, behaviors and experiences.

This study requires self-reflection, which may cause emotional distress for some participants. There are no other known risks to individuals participating in this study beyond those that exist in daily life.

If you have questions or concerns about this project, you may contact the primary investigator and person in charge David R. Strauser, or his supervisor, Dr. Wojtek Chodzko-Zajko. They can be reached at 217-244-3936 or strauser@illinois.edu or wojtek@illinois.edu.

If you have any questions about your rights as a research participant in the study, please contact the University of Illinois Institutional Review Board at 01-217-333-2670 (collect calls accepted if you identify yourself as a research participant) or via email at irb@illinois.edu.

I read and understand the above consent form, I certify that I am 18 years old or older and, voluntarily agree to participate in this study. You will be given a copy of this consent form for your records.______________________ Participant Signature_______________________ Date
Appendix B

Demographic Information Form

Please Provide the Following Information.

Gender: (please circle one) Male Female

Ethnicity: (please circle one) African American Caucasian Hispanic/Latino (a)
Native American/Alaskan Native Asian/Pacific Islander
Other:_________________________(please specify)

Major: ________________

What college does your major reside?_____________________

Year in School: (please circle one):
Freshman Sophomore Junior Senior

Current overall GPA: __________

Circle all that apply:

My mother is a college graduate
My father is a college graduate
Circle the choice that applies to you.

I attended a:
Private School
Public School

What was the approximate total high school size (i.e., how many students in your high school)?

______

What was the approximate population in your family home town/city? ______

Family Home Zip Code _____

My family’s household income is best described as: (please circle one)
$0-$19,999 $20,000-$39,999 $41,000-$69,999
$70,000-$89,999 $90,000-$110,000 Over $110,000

Do you plan on attending graduate school? (please circle one)

Yes No

Rate your overall academic effort on a scale on 0 to 10 with 10 being the highest effort possible and 0 being no effort. _____

Are you involved in any clubs or extra-curricular activities? (please circle one)

Yes No

If yes, please specify: ____________________________________________________________

Are you working while attending school? (please circle one)

Yes No

If yes, how much? (please circle one)

Part Time Full Time
Appendix C

Core Self-Evaluations Scale

The Core Self-Evaluations Scale (CSES)

Instructions: Below are several statements about you with which you may agree or disagree. Using the response scale below, indicate your agreement or disagreement with each item by placing the appropriate number on the line preceding that item.

1 2 3 4 5

Strongly Disagree Disagree Neutral Agree Strongly Agree

1. _____ I am confident I get the success I deserve in life.
2. _____ Sometimes I feel depressed. (r)
3. _____ When I try, I generally succeed.
4. _____ Sometimes when I fail I feel worthless. (r)
5. _____ I complete tasks successfully.
6. _____ Sometimes, I do not feel in control of my work. (r)
7. _____ Overall, I am satisfied with myself.
8. _____ I am filled with doubts about my competence. (r)
9. _____ I determine what will happen in my life.
10. _____ I do not feel in control of my success in my career. (r)
11. _____ I am capable of coping with most of my problems.
12. _____ There are times when things look pretty bleak and hopeless to me. (r)

Notes: r=reverse-scored.
## Appendix D

### DS14 Type D Personality Assessment

<table>
<thead>
<tr>
<th>Statement</th>
<th>False</th>
<th>Less False</th>
<th>Neutral</th>
<th>Less True</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I make contact easily when I meet people</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2. I often make a fuss about unimportant things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. I often talk to strangers</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4. I often feel unhappy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. I am often irritated</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. I often feel inhibited in social interactions</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. I take a gloomy view of things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. I find it hard to start a conversation</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. I am often in a bad mood</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. I am a closed kind of person</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. I would rather keep people at a distance</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. I often find myself worrying about something</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. I am often down in the dumps</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. When socializing, I don’t find the right things to talk about</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Appendix E

Revised Developmental Work Personality Scale

Please reflect on your childhood experiences. Answer the following questions according to how much the experience was like you. A score of 0 indicates the behavior was not like you, a score of 5 indicates the behavior was very much like you.

1. I completed school through the following grade:
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   - 11
   - 12
   - 12+

<table>
<thead>
<tr>
<th></th>
<th>Not at All Like Me</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Very Much Like Me</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>I was in trouble a lot with my teachers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>When I was in school I got in trouble a lot.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>When I was in school, I had problems getting along with classmates.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>In school I completed my work on time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>In school I tried my best even if I didn’t like what I was doing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>It was important for me to complete all my school work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>It made me feel good when I completed all my school work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>I complete all my assignments in school.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>When I needed help with my homework, one of my parents was available to help.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Growing up, I was responsible for chores at home.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Growing up, I had someone who inspired me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>There was someone in my life whom I admired.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>If I did not do my homework or chores, I got into trouble.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>I got in arguments a lot with classmates when I was in school.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F

Utrecht Work Engagement Scale- Student

The following 14 statements are about how you feel about your educational experience. Please read each statement carefully and decide if you ever feel this way about your educational experience and mark your response with an “X”.

<table>
<thead>
<tr>
<th>0 Never</th>
<th>Almost Never 1 A few times a year or less</th>
<th>Rarely 2 Once a month or less</th>
<th>Sometimes 3 A few times a month</th>
<th>Often 4 Once a week</th>
<th>Very Often 5 A few times a week</th>
<th>Always 6 Every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>When I’m studying, I feel mentally strong.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can continue for a very long time when I am studying.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I study, I feel like I am bursting with energy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When studying I feel strong and vigorous.</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I get up in the morning, I feel like going to class.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I find my studies to be full of meaning and purpose.</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>My studies inspire me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am enthusiastic about my studies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am proud of my studies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find my studies challenging.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time flies when I’m studying.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am studying, I forget everything else around me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel happy when I am studying intensively.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can get carried away by my studies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G

Perceived Fit Scale

Please circle the response that best describes your current perceptions.

1) The things that I value in my life are very similar to the things my organization (University, Fraternity, Sorority, Social Club etc…) values.
Not at all A little Moderately Quite a bit Extremely

2) My personal values match my organization’s (University, Fraternity, Sorority, Social Club etc…) value and culture.
Not at all A little Moderately Quite a bit Extremely

3) My organization’s (University, Fraternity, Sorority, Social Club etc…) values and culture provide a good fit with the things I value in life.
Not at all A little Moderately Quite a bit Extremely

4) There is a good fit between what my academic coursework offers me and what I am looking for in academic coursework at the University of Illinois.
Not at all A little Moderately Quite a bit Extremely

5) The attributes that I am looking for in an academic field of study are fulfilled very well by my present academic coursework.
Not at all A little Moderately Quite a bit Extremely

6) My current choice of academic coursework gives me just about everything I want from an academic major.
Not at all A little Moderately Quite a bit Extremely

7) The match is very good between the demands of my academic coursework and my personal skills.
Not at all A little Moderately Quite a bit Extremely

8) My abilities are a good fit with the requirements of my academic major.
Not at all A little Moderately Quite a bit Extremely

9) My personal abilities provide a good match with the demands that my academic coursework places on me.
Not at all A little Moderately Quite a bit Extremely
Appendix H

Pearson Correlations Between Perceived Fit Total and Perceived Fit Subscale Variables

Table 8

Pearson Correlations Between Perceived Fit Total and Perceived Fit Subscale Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>PF-T</th>
<th>PF-PO</th>
<th>PF-NS</th>
<th>PF-PJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF-T</td>
<td>.00</td>
<td>.70**</td>
<td>.85**</td>
<td>.81**</td>
</tr>
<tr>
<td>PF-PO</td>
<td></td>
<td>.00</td>
<td>.34**</td>
<td>.28**</td>
</tr>
<tr>
<td>PF-NS</td>
<td></td>
<td></td>
<td>.00</td>
<td>.68**</td>
</tr>
<tr>
<td>PF-PJ</td>
<td></td>
<td></td>
<td></td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. PF-T: Perceived Fit – Total; PF-PO: Perceived Fit–Person-Organization; PF-NS: Perceived Fit- Needs-Supplies; PF-PJ: Perceived Fit- Person-Job; * p < 0.05. ** p < 0.01.
Appendix I

Means and Standard Deviations of the Study Variables by Gender

Table 9

Means and Standard Deviations of the Study Variables by Gender

<table>
<thead>
<tr>
<th>Variables</th>
<th>Females</th>
<th>M</th>
<th>SD</th>
<th>Males</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 DS14-NA</td>
<td></td>
<td>10.66</td>
<td>5.52</td>
<td>10.16</td>
<td>5.66</td>
<td></td>
</tr>
<tr>
<td>2 DS14-SI</td>
<td></td>
<td>10.84</td>
<td>5.68</td>
<td>12.02</td>
<td>5.82</td>
<td></td>
</tr>
<tr>
<td>3 DS14-T</td>
<td></td>
<td>21.42</td>
<td>9.68</td>
<td>22.20</td>
<td>10.11</td>
<td></td>
</tr>
<tr>
<td>4 CSE</td>
<td></td>
<td>41.58</td>
<td>7.48</td>
<td>42.81</td>
<td>6.97</td>
<td></td>
</tr>
<tr>
<td>5 DWPS-1</td>
<td></td>
<td>27.96</td>
<td>6.19</td>
<td>26.32</td>
<td>6.55</td>
<td></td>
</tr>
<tr>
<td>6 DWPS-2</td>
<td></td>
<td>11.50</td>
<td>3.82</td>
<td>10.65</td>
<td>3.56</td>
<td></td>
</tr>
<tr>
<td>7 DWPS-3</td>
<td></td>
<td>29.34</td>
<td>5.40</td>
<td>17.07</td>
<td>3.38</td>
<td></td>
</tr>
<tr>
<td>8 DWPS-T</td>
<td></td>
<td>59.56</td>
<td>8.13</td>
<td>54.32</td>
<td>10.32</td>
<td></td>
</tr>
<tr>
<td>9 UWES-S-1</td>
<td></td>
<td>3.05</td>
<td>1.24</td>
<td>3.09</td>
<td>1.09</td>
<td></td>
</tr>
<tr>
<td>10 UWES-S-2</td>
<td></td>
<td>3.85</td>
<td>1.17</td>
<td>3.51</td>
<td>1.14</td>
<td></td>
</tr>
<tr>
<td>11 UWES-S-3</td>
<td></td>
<td>2.71</td>
<td>1.36</td>
<td>2.80</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>12 UWES-S-T</td>
<td></td>
<td>3.24</td>
<td>1.02</td>
<td>3.16</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>13 Effort</td>
<td></td>
<td>7.70</td>
<td>1.61</td>
<td>7.06</td>
<td>1.74</td>
<td></td>
</tr>
<tr>
<td>14 PF</td>
<td></td>
<td>23.38</td>
<td>5.71</td>
<td>25.07</td>
<td>5.62</td>
<td></td>
</tr>
</tbody>
</table>

Note. DS14-NA: DS14-SI; DS14-Total; CSE; DWPS-1 (Work Tasks); DWPS-2 (Role Models); DWPS-3 (Social Skills); DWPS-T (Total); UWES-S-1 (Vigor); UWES-S-2 (Dedication); UWES-S-3 (Absorption); UWES-S-T (Total); GPA; Effort (Academic); PF (Perceived Fit).