

The Impact of Non-cognitive Factors on First-Year College GPA for University-eligible
Students from Low-performing High Schools

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Dedication

To my beautiful wife
Dr. Jamia Stokes

My amazing children
Kendalyn and Evan Stokes

My loving parents and family
Mae Wade
Doug and Beverly Stokes
DJ, Traci, Anne, and Sydney Stokes
George and Colette Berry
Dorian, Daran, Devyn, and Lil Daran Taylor
My TN, NJ, NC, and TX family

My UT and UofM Admissions family

“I have fought a good fight, I have finished my course, I have kept the faith”
-2 Timothy 4:7
To God be the Glory

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Abstract

There is considerable evidence suggesting that low-income, first-generation students from low-performing high schools are not retained and do not graduate at the same rate as their counterparts. However, a good number of them do. It has been suggested that an explanation for this phenomenon may rest in differences in non-cognitive variables (NCVs) among similarly prepared students (Sedlacek, 1987, 1989, 1996, 2004; Sedlacek & Brooks, 1976; Tracey & Sedlacek, 1984). Thus, the purpose of this study was to examine the impact of non-cognitive factors on first-year college GPA for university-eligible students from low-performing high schools.

The present study was guided by the following research questions:

1. What is the effect of non-cognitive variables (positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of a strong support person, leadership experience, community involvement, and knowledge acquired in a field) on first-year GPA for college-eligible students from low-performing high schools?
2. Are there differences in the effect of non-cognitive variables on first-year GPA due to gender, race, family income, or parent's level of education?

Sedlacek's Noncognitive Questionnaire (NCQ) served as the instrument for this study. Results indicate that collectively, the set of eight non-cognitive variables had a significant impact on first-year GPA. On an individual level, five of the eight NCVs were found to be statistically significant: positive self-concept, realistic self-appraisal, demonstrated community involvement, preference for long-rang goals, and availability of a strong support system. Additionally, as a set of variables: race, gender, income, and parent's level of education were all found to have a

significant relationship with first-year GPA. Yet, of the four demographic variables, only parent's level of education was significant on an individual level.

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Chapter 1

Background and Context

In an increasingly competitive global economy, America's economic strength depends upon the education and proficiency of its workforce, for the most valuable skill a citizen can contribute is their knowledge (Obama, 2009a).

Educational opportunity and achievement have long been hallmarks of our nation—and keys to the success of our democracy and economy (Gayl, 2007). According to policymakers, business leaders, and analysts, the United States' economic future depends directly on its ability to raise its academic standing, as well as increase its innovation, productivity, and economic vitality (Gayl, 2007; Lund, Manyika, Nyquist, Mendonca, & Ramaswamy, 2013). A quality education is a key ingredient for realizing that future.

An American college education is a great prize, not only for the individual as a gateway to the American dream (freedom of opportunity for prosperity and upward social mobility for one's family, achieved through hard work), but for the health of the nation, (Kahlenberg, 2004). The author of the Declaration of Independence, Thomas Jefferson, believed that democracy would not work unless poor but worthy students, as well as those financially able, had access to a quality education. This declaration is just as meaningful today as it was in the 19th century, as a college education continues to be of increasing importance for all social groups in the United States (Tierney, Sallee, & Venegas, 2007). Today, six out of every ten jobs require some postsecondary education and training (Carnevale & Desrochers, 2003). Even more, as President Obama (2009b) stated, "A good education is no longer just a pathway to opportunity – it is a prerequisite." Thus, his goal is to have the largest percentage of college graduates in the world by 2020.

Not only will an increase in college graduates move the nation forward economically and intellectually, but it will greatly benefit individuals as well. Hamlet presents the theme of, death as the great equalizer, (Shakespeare, trans. 1992, 5.1), and the father of American education; Horace Mann (1848) modified that notion to proclaim that education is the great equalizer; the greater one's education, the more opportunity for social advancement. The report, *The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings* (2002), reveals that over an adult's working life, high school graduates can expect, on average, to earn \$1.2 million; those with a bachelor's degree, \$2.1 million; and people with a master's degree, \$2.5 million. Persons with doctoral degrees earn an average of \$3.4 million during their working life, while those with professional degrees do best at \$4.4 million. On average, someone with a college degree earns roughly a million dollars more over a lifetime than one with only a high school diploma or less. Research has shown that there are not only economic advantages for individuals who obtain college degrees in comparison to those with only high school diplomas, but also increased well-being in terms of health and civic engagement (Day & Newburger 2002; Dee, 2004).

Moreover, an increase in degree attainment has a significant impact at the institutional level as well. Graduating students is one of the primary outcomes of a college/university. Higher retention and graduation rates are points of pride and impact an institution's rankings, marketing and funding. Several state higher education models are performance-based, i.e., the state ties funding to such performance measures as retention and graduation rates. These states include: Ohio, Pennsylvania, Indiana, Tennessee, Michigan, Illinois, Louisiana, Minnesota, South Dakota, New Mexico, and Washington (Miao, 2012; NCSL website, 2013), and recently, the federal government joined in the effort to tie financial aid funding to performance outcomes.

In an August 22, 2013, speech at the University of Buffalo, President Obama announced a plan to improve college outcomes by revamping the current college rating system to tie federal financial aid to performance (Birdwell, 2013). Currently, most institutions receive federal aid based on enrollment, but the president's plan would tie that to college performance, based on a number of factors, including how many students from disadvantaged backgrounds are served, average tuition, scholarships and loan debt, employment outcomes, and graduation rates (Birdwell, 2013; The White House, 2015).

Because of these benefits and pressures, institutions are investing in efforts known to enhance retention and graduation of students, and they are proving to be successful. Between 1980 and 2011, the attainment rate of at least a high school diploma or equivalent increased for White people (from 89 to 94%), Black people (from 77 to 88%), Hispanics (from 58 to 71%) and Asians/Pacific Islanders (from 90 in 2001 to 95%) (Snyder & Dillow, 2012). Even more noteworthy, college enrollment in degree-granting institutions increased 11 percent between 1990 and 2000, and 37 percent—from 15.3 million to 21.0 million—between 2000 and 2010. During that same decade, the percentage of 18- to 24-year-olds enrolled in college rose from 35 percent to 41 percent (Snyder & Dillow, 2012). Although there have clearly been significant advances in high school graduation rates and college enrollment, the same is not true of college graduation rates.

While gaining entry into college is still a formidable accomplishment for many, in the end, persisting to degree is what really matters (Swail, 2004). Unfulfilled academic goals often result in unfulfilled career realities and lower pay, less security, fewer opportunities, and dreams deferred or even abandoned (Swail, 2004). According to a 2012 National Center for Educational Statistics (NCES) report (Snyder & Dillon, 2012), only 58 percent of all undergraduates who

began their studies at a given four-year institution in Fall 2004 with the goal of receiving a bachelor's degree completed that degree within six years at that same institution. According to ACT data (2013), the average five- year graduation rate of 54.4 percent has declined since 1991, reaching a low of 50.9 percent in 2001, and experiencing a meager increase to 51.9 percent in 2012. College retention rates have followed a similar trend, slithering from 74.9 percent in 1991 to their lowest rate in two decades, 72.0 percent in 2012.

Completion rates for first-time, full-time students who sought a bachelor's degree in Fall 2004 also varied by race. Asian/Pacific Islander students had the highest 6-year graduation rate (69%), followed by White students (62%), Hispanic students (50%), and Black and American Indian/Alaska Native students (39% each) (Snyder & Dillow, 2012). Despite public investment in equalizing educational opportunities for traditionally underserved students, similar disparities exist based on income as well (Hyman, 2004).

Students from families earning \$100,000 or more graduate at a rate of 80 percent compared to students from families earning \$25,000-\$44,999 at 62.7 percent, and less than \$25,000 at 52.7 percent (Snyder & Dillow, 2012). In general, degree completion of students from low-income backgrounds lags behind their more affluent peers (Hyman, 2004).

What is equally interesting to note is that students with a mediocre high school preparation are more likely to drop out of college than those living in a low socioeconomic household or being first in their family to attend college. A number of scholars agree that academic under-preparedness is arguably the most influential factor in college student attrition within the first two years (Hermanowicz, 2003; Loo & Rolison, 1986; Lotkowski, Robbins & Noeth, 2004). Indeed, Adelman (2006) has argued that the academic intensity of a student's high school curriculum is a key indicator of bachelor's degree completion.

Conley, a University of Oregon professor of Education Policy and Leadership, has argued that high schools merely prepare students to be college-eligible when they should be preparing them to be college-ready (Conley, 2003, 2007). ACT reports more than a quarter of 2012 graduates fell short of college readiness benchmarks that ACT sets for the four key subjects (English, Reading, Math, and Science), and 60 percent of students tested missed the mark in at least two of the four subjects. Students who enter college underprepared due to a mediocre high school preparation are less likely to graduate (Conley, 2003, 2007).

In the face of an innovative workforce and global competition, the need to retain more students will only intensify. Low retention rates waste human talent and resources, jeopardize our nation's economic future, and threaten the economic viability of our postsecondary institutions and our country's democratic traditions (Lotkowski, Robbins, & Noeth, 2004).

Previously reported data warn that economically disadvantaged, first generation, and multicultural students (ACT, 2013; Snyder & Dillow, 2012), all of whom are more likely to be underprepared for college, and most of whom come from low-performing schools, yield the highest college attrition rates of any cohorts. Students who are among these categories are typically considered at-risk by college officials. This loss of human potential is startling to all stakeholders, and thus it is crucial that steps be taken to understand and reduce attrition (Tracey & Sedlacek, 1984) for all groups and in particular those who are at-risk.

Statement of the Problem

The national acknowledgment of a retention issue on college campuses is not a new phenomenon. The study of student attrition in the United States began in the late 1800s with Durkheim (1897). More formal research was established in the 1920s, and it expanded in the 1970s with Spady (1970, 1971) and Tinto (1975). Since then, it has become richer and more

voluminous and continues to produce evidence of the growing importance of retention in higher education for both human value reasons and for the continued existence of schools (Tracey & Sedlacek, 1984). Research on persistence and retention strongly suggests that academic preparation, commitments, and involvement matter (Adelman, 1999; Astin, 1993; Pascarella & Terenzini, 1991; Pascarella, Pierson, Terenzini & Wolniak, 2004; Tinto, 1993).

Tinto (1993), a groundbreaking contributor to retention literature, suggested roughly 70 percent of all leavers depart in their first-year of college, and it is perceived to be critical for institutions to implement interventions that promote a strong first-year GPA. One of the most common methods of assessing student retention is through academic achievement, measured by grade point average (McGrath & Braunstein, 1997; Tross, Harper, Osher, & Kneidinger, 2000). Ishitani and DesJardins (2002) found that the higher a student's first-year GPA, the less likely that student was to drop out of college.

The first-year GPA, a benchmark of retention, is impacted by many factors, both academic and non-academic. In the existing research, retention is typically associated with traditional measures of college readiness, such as high school grade point average (HSGPA), courses completed, rigor of the high school curriculum, and college admission test scores (e.g., the ACT and SAT Assessments) (ACT, 1997; Adelman, 1999; Kern, Fagley, & Miller, 1998; Robbins, Davenport, Anderson, Kliever, Ingram, & Smith, 2003; Tinto, 1997). Additionally, academic preparation is considered to have a greater impact on first-year GPA than commitments and involvement. According to Astin (2005), high school grade point average accounts for approximately 20 percent of the variance in college outcomes such as first-year GPA. Standardized admissions test scores capture an additional 17 percent (Wolfe & Johnson, 1995) of the college first-year grade point average. Part of the remaining variance can be

explained by non-academic factors such as social involvement, commitment to the institution, and college major, just to name a few (ACT Policy Report, 2004; Bean, 1990; Bean, 1990; Braxton, 2000; Kennedy, Sheckley, & Kehrhahn, 2000; Mangold, Bean, & Adams, 2003; O'Brien & Shedd, 2001; Robbins et al., 2003; Robbins et al., 2004; Tinto, 1997; Turner & Bowen, 1999). While these non-academic factors are typically assessed after admission, and while they aid in identifying the variance in retention, far more investigation is needed to explain the remaining variance in college outcome factors, including pre-enrollment characteristics, which may impact the remaining variance (Sedlacek, 2004; Tracey & Sedlacek, 1982).

In addition to academic preparation, demographic factors impact first-year GPA. Findings from the (NCES) study, based on nationally representative longitudinal surveys of U.S. college students, have shown that students' high school academic preparation and measures of socioeconomic status such as family income and parents' education, are highly predictive of retention and other college outcomes (Adelman, 2006; Astin & Oseguera, 2005; Berkner, He, and Cataldi, 2002; Choy, 2002; Gold and Albert, 2006). Furthermore, the quality of one's academic preparation for college is likewise connected, as lower income, first-generation, and students of color more often attend low-performing high schools (The National Clearinghouse Research Center website, 2014). These schools tend to be located in urban or rural areas, surrounded by communities of poverty and violence (Lippman, Burns, & McArther; 1996). They generally enroll a larger percentage of the student body that are multicultural, economically disadvantaged, English language learners, and/or the first in their family to attend college (Lippman, Burns, & McArther; 1996). These schools frequently staff less qualified teachers than more affluent schools, have higher dropout rates, and offer fewer Advance Placement (AP), International Baccalaureate (IB), and Dual Enrollment (DE) courses, thus making the curricula

they offer less challenging than higher performing public and private high schools (Lippman, Burns, & McArther; 1996).

The academic rigor of students' high school curriculum has been found to be strongly associated with their postsecondary GPA, the amount of remedial coursework needed, and rates of retention and attainment (Warburton, Bugarin, Nunez, & Carroll, 2001). Several studies confirm that students who take a less challenging high school curriculum are more likely to be first-generation college students and/or are from low-income families, and have a lower college retention and attainment rate than their peers (Horn & Nunez, 2000; Nunez & Cuccaro-Alamin, 1998; Warburton, Bugarin, Nunez, & Carroll, 2001).

Despite the extensive evidence suggesting that low-income, first-generation, and students from low-performing high schools are not retained and do not graduate at the same rate as their counterparts, a good number of them do. More than half of low-income students, 52.7%-62.7%, graduate (Snyder & Dillow, 2012). That being the case, the question of why some students who meet the very same at-risk criteria are retained and graduate while others do not remains unanswered.

It has been suggested that the answer to the question of why some students who meet the at-risk criteria are retained and graduate while others do not, may rest in differences in non-cognitive variables (NCVs) among similarly prepared students (Sedlacek, 1987, 1989, 1996). NCVs are defined as variables relating to adjustment, motivation, and student perception (Sedlacek, 1977, 1987, 1989, 1991; Tracey & Sedlacek 1984, 1985, 1987, 1988, 1989; White & Sedlacek, 1986). Tracey and Sedlacek (1982) were among the first to test this notion. Their results suggested that NCVs added significant variance to the prediction of grades for White and Black students. Other studies have provided additional evidence that non-cognitive measures

predict the success of nontraditional students (anyone who is not in the 18-to-25-year old, White American student demographic) as accurately, if not better, than traditional measures (standardized tests and previous grades). The effect of Non-cognitive Variables has been tested on a number of populations such as multicultural, economically disadvantage, and first-generation college students (Sedlacek, 1977, 1987, 1989, 1991; Tracey & Sedlacek 1984, 1985, 1987, 1988, 1989; White & Sedlacek, 1986). As explained in chapter two of this study, low-performing high schools are often comprised of these populations of students afore mentioned. Therefore, it is logical to examine the impact of NCVs on students who graduate from low-performing schools, as they could be a key to explaining why some students are successfully retained and others do not.

Purpose of the Study

The purpose of this study was to examine the impact of non-cognitive factors on first-year college GPA for university-eligible students from low-performing high schools.

Research Questions

This study was guided by the following research questions:

1. What is the effect of non-cognitive variables (positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of a strong support system, successful leadership experience, demonstrated community involvement , and knowledge acquired in a field) on first-year GPA for college-eligible students from low-performing high schools?
2. What are the differences in the effect of non-cognitive variables on first-year GPA for college-eligible students from low-performing high schools due to race, gender, income, or parent's level of education?

Theoretical Framework

The theoretical framework that guided this study was Sedlacek and Brooks' (1976) and Tracey and Sedlacek's (1984) model of non-cognitive variables that they contended affected academic success. Sedlacek and Brooks (1976) initially proposed seven variables, and then Tracey and Sedlacek (1984) added an eighth. All variables were found to be related to academic success (Sedlacek, 1987, 1989, 1991, 1996, 2011; Tracey & Sedlacek, 1984): positive self-concept, realistic self-appraisal, successfully handling the system, preference for long-term goals, availability of a strong support person, leadership experience, community involvement, and knowledge acquired in a field. The research supporting the impact of non-cognitive variables on academic success is detailed in Chapter Two of this study.

Sedlacek and Brooks' (1976) and Tracy and Sedlacek's (1984) models are most germane to this study. First, their set of non-cognitive variables is both comprehensive and inclusive. Moreover, they have been well studied and implemented in admissions practices at several universities (DePaul University, The University of Maryland, Oregon State University, etc.) across the nation. Second, numerous studies (Allen, 1999; Ousley, 2008; Sedlacek, 1977, 1987, 1989, 1991; Tracey & Sedlacek, 1984, 1985, 1987, 1988, 1989; White & Sedlacek, 1986) provide evidence confirming the validity of these non-cognitive variables in predicting the success (college grades) of non-traditional students and doing it better than traditional measures (high school GPA and standardized test). Finally, an instrument, the Non-cognitive Questionnaire (NCQ); (Tracey & Sedlacek, 1984, 1989), developed from their theoretical models, exists to assess the psychosocial aspects of Sedlacek and Brooks' (1976) and Tracy and Sedlacek's (1984) collection of variables.

For these reasons Sedlacek and Brooks' (1976) and Tracy and Sedlacek's (1984) non-cognitive variables was selected as the framework for this study. Their model not only influenced the conceptualization of the study, but it also guided the development of the research questions. Lastly, because Sedlacek's Non-cognitive Questionnaire is a well-tested instrument it directed the manner in which the data were collected and analyzed for this study.

Significance of the Study

This study was significant in that it contributed to the body of literature on success of non-traditional college students. Much of the current literature on at-risk students focuses on first-generation status, low-income, and/or students of color. While these characteristics alone have been proven to have a significant effect on one's college success potential (Cabrera, Nora, & Castañeda, 1992; Nora, 1987), it is the high school academic preparation that has a greater influence (Lotkowski, Robbins, Noeth, 2004). Yet, in spite of mediocre high school preparation, some non-traditional, at-risk students defy the odds and succeed. The current literature fails to adequately explore this phenomenon and offers little explanation that could be useful to practice. Therefore, this study distinguishes itself by contributing to the limited body of literature about the success of non-traditional students by focusing on low-performing high school graduates and not simply their parental level of education, income, or their race.

A sizeable portion of the literature addresses cognitive factors as predictors of academic success: retention, persistence, attrition, and degree attainment (Ackerman, Kanfer, & Calderwood, 2013; Belfield & Crosta, 2012, DeBerard, Spielmans, & Julka, 2004; Noble & Sawyer, 2002; Ting & Sedlacek, 2000). This study does not simply examine year-to-year retention of at-risk students, but tests the correlation between first-year GPA and non-cognitive variables. A strong first-year GPA is highly predictive of degree attainment, not to mention

retention and persistence. The cognitive factors are generally limited to past achievements such as high school GPA, class rank, types of courses taken, and SAT/ACT scores. These factors are also the traditionally accepted measures that have the greatest weight when making institutional admissions decisions.

If the results of this study prove that non-cognitive variables significantly impact the first-year GPA of these students, then it could not only add to current research but also influence policy and practice. Some colleges and universities already use non-cognitive variables in their admissions file review, and pending results of this study others could be encouraged to consider employing NCVs in their admissions' criteria.

Definitions

For the purposes of this study, the following definitions were used. The work from Adelman (1999) and Conley (2003, 2007) informed the foundation of the definitions.

College Success: ultimately recognized as degree attainment, but for the purpose of this study is operationally defined as earning a first-year GPA of 2.75 or higher.

Retention: there are many definitions, but for the purpose of this study it is defined as enrollment of a student from the fall semester of their first year of college to the fall semester of their second year.

Persistence: like retention there exist many definitions, but for the purpose of this study it is defined as a student who is retained and making adequate yearly progress toward the degree.

First-Year College GPA: the grade point average a student earns in the first year (1st summer, fall, and spring) of college.

Low-income Students: students who are eligible for the Federal Pell Grant (a federal aid program that provides need-based grants to low-income undergraduate and certain post-

baccalaureate students to promote access to postsecondary education); used interchangeably with economically disadvantage students.

Economically Disadvantaged Students: students who are eligible for the Federal Pell Grant (a federal aid program that provides need-based grants to low-income undergraduate and certain post-baccalaureate students to promote access to postsecondary education); used interchangeably with low-income students.

Low-performing High Schools: high schools identified on the No Child Left Behind (NCLB) Priority and/or High Priority list or schools whose Math and English proficiency scores are below their state's average score.

Non-Cognitive Variables: factors relating to a student's adjustment, motivation, and perception, rather than the traditional verbal and quantitative (often called cognitive) areas typically measured by standardized tests.

First-Generation College Student: a student who comes from a home in which no parents or guardians has earned a Bachelor's degree.

Organization of the Study

This study is organized into five chapters. The first chapter establishes the need for the study, identifies the purpose, research questions, theoretical framework, significance of the study, and definitions relevant to the study. The second chapter provides a critical review of existing research and literature related to students who graduate from low-performing high schools and their impact on college readiness and success. Additionally, Chapter Two explores the research and literature related to non-cognitive variables and their relationship to academic success. The chapter also examines Sedlacek's model and the instrument used to test it. Chapter Three details the methods and procedures used in the conduct of the study. The results of the

study are reported in Chapter Four, while the final chapter summarizes the study's results and discusses their implications, and offers recommendations for future research and policy.

Chapter 2

Review of Literature

The purpose of this chapter is to provide a review of the relevant research and literature related to the study. The chapter is divided into three sections. First is an exploration of the characteristics of low-performing high schools, including the type of students enrolled and the challenges they face in matriculating to college. The second section contains a review of non-cognitive variables and what we know about their impact on first-year college GPA. The third section provides a review of Sedlacek and his non-cognitive variable framework, as well as a discussion of the development and use of his Non-cognitive Questionnaire (NCQ).

Low-performing High Schools

The purpose of this study was to examine the impact of non-cognitive factors on first-year college GPA for university-eligible students from low-performing high schools. To better understand the premise of the study, one must first consider what we know about low-performing high schools and the characteristics of the students enrolled in such schools. For use in this study, a low-performing school refers to a high school, typically located in an economically disadvantaged community, with low test scores, few students matriculating to institutions of higher education, the tendency to have a high population of free/reduced lunch eligible students, a high population of racial minority students, and/or those for whom English is not their primary language (Murphy, 2008).

States customarily categorize schools as "low-performing" or "failing" by virtue of persistently subpar scores on standardized tests, sometimes along with low graduation and high dropout rates (Seder, 2000; WVLT staff, 2014). Since such schools are disproportionately located in economically depressed areas, it is not surprising that they often have limited

resources, insufficient facilities and supplies, and are able to employ fewer well-qualified teachers than other schools. Many low-performing schools face overcrowding, large numbers of student-discipline problems, and are frequently plagued by low morale of students, faculty and staff. They may also lack organized learning environments and fail to have high expectations for students (US Department of Education, 1998; Quality Counts 1999, 2004).

UCLA's Los Angeles Basin Initiative (LABI) Program website identifies a low-performing high school as both educationally and socially disadvantaged. Such schools are commonly comprised of low-income and first-generation students, tend to offer few college preparatory courses, and are situated in a community with low college-going rates. Products of these low-performing high schools are considered to be educationally disadvantaged compared to their peers graduating from higher quality schools. Furthermore, low-performing high schools are responsible for a disproportionate number of students who graduate unprepared for what lies ahead (Pinkus, 2009).

Chronically low-performing elementary and middle schools are part of the problem, since their students emerge from 8th grade without the foundation needed to succeed in high school and beyond (Pinkus, 2009). In these schools many students drop out, while others meet basic state proficiency standards and graduate but fail to demonstrate the advanced knowledge and skills needed for success in college and careers (Pinkus, 2009).

Altogether, we know that low-performing high schools are largely comprised of students with similar socio-economic and cultural characteristics that often constitute impediments to their learning. The challenges associated with those characteristics, coupled with an array of other factors such as a less rigorous curriculum, high principal and teacher turnover, excessive discipline problems that disrupt learning, and low student expectations, result in a subpar

educational experience for graduates of these high schools (Black, Lincove, Cullinane, & Veron, 2014; Branch, Hanushek, & Rivkin, 2013; Boyd, Lankford, Loeb, Ronfeldt, & Wyckoff, 2010; Ronfeldt, Loeb, & Wyckoff, 2012). Even more disheartening is how widespread low-performing schools are in America.

Scope of Low-performing High Schools

Data from the US Department of Education reveal that of the nearly 99,000 public elementary and secondary schools in the United States, approximately 5,000 are classified as chronically underperforming schools. Half of these schools are located in big cities, a third are in rural areas, and the rest are in suburban and medium-sized towns (Pinkus, 2009). Moreover, of the nation's 5,000 underperforming K-12 schools, an estimated 2,000 of them are failing high schools. Sometimes called "dropout factories," these schools are responsible for a disproportionate number of students who reach adulthood unequipped for college or careers (Pinkus, 2009). Realistically, however, the problem is neither new nor confined to failing high schools. Fifteen percent of the nation's 99,000 K-12 public schools, almost 15,000 schools, were identified for improvement status according to the 2006-2007 No Child Left Behind (NCLB) Adequate Yearly Progress (AYP) list (US Department of Education, 2010). Moreover, 10,781 Title 1 schools (schools that receive Federal funding because of high enrollments of low-income students) accounted for 83 percent of all schools identified as needing improvement, a consequence stage resulting in corrective action or restructuring (US Department of Education, 2010). Even more alarming, 46 percent of the Title 1 schools that were identified for improvement status in the 2004-2005 academic year were in the advanced stages of identification status-corrective action and restructuring in the 2006-2007 academic year (US Department of Education, 2010). The percentage of Title 1 schools exiting from improvement

status declined from 23 percent in 2004-2005 to 17 percent in 2005-2006 to 12 percent in 2006-2007 (US Department of Education, 2010), and there is little evidence to suggest a substantial improvement since 2007.

The problem of failing schools has a geographical dimension as well. Title 1 schools are more likely to be comprised of high-poverty, high-minority students, to be large (serve large numbers of students) most often are located in urban areas (US Department of Education, 2010). More appalling, 37 percent of high-poverty schools were identified for improvement (the stage prior to reconstitution of the school), compared with 4 percent of low-poverty schools (US Department of Education, 2010). In the same manner, 38 percent of schools with a high concentration of racial minority students have been identified for improvement, compared with 5 percent of low-minority schools (US Department of Education, 2010). Twenty-five percent of Title 1 schools located in urban central cities were identified for improvement, compared to just 12 percent in suburban and large towns, and only 9 percent in rural and small towns. In 2006-2007, 13 percent of the Title 1 districts (1,728) that were identified for improvement enrolled 40 percent of the nation's students, which amounts to roughly 18 million students (US Department of Education, 2010).

Low-performing schools abound in all states in the nation. The five states with the highest percent of schools identified for improvement status are: Hawaii (61%), Alaska (46%), Idaho (45%), New Mexico (43%), and Massachusetts (35%). The District of Columbia (53%) and Puerto Rico (53%) also topped the list even though they are not US states. The top five school districts with the highest percent of schools identified for improvement are: Chicago, IL (77%), Palm Beach, FL (75%), Hillsborough County, FL (72%), Boston, MA (71%), and Fresno, CA (68%). Low-performing high schools literally span the nation from coast-to-coast.

Characteristics of Students Enrolled in Low-performing High Schools

We know low-performing high schools are often filled with ethnic/racial minority students, low-income students, and first-generation students. We also know that these non-academic student characteristics impact college retention and first-year college GPA. The following subsections examine each of the three relationships with college performance.

Relationship of Race and Low-performing High Schools

Low-performing high schools are overwhelmingly the province of racial minority students (Balfanz & Legters, 2004). African Americans and Latinos are far more likely to attend high-poverty, low-performing schools than Asian Americans and Caucasian Americans (National Center for Education Statistics, 2007).

In an effort to identify the scale and scope of low-performing schools across America, Balfanz & Legters (2004) analyzed 10,296-11,129 high schools (regular and vocational with enrollments of 300 or more) from 1993-2002. They sought to determine the promoting power of the school by comparing the number of freshmen at a high school to the number of seniors four years later, or the number of tenth graders to seniors three years later in schools with a 10-12 grade span. Among their results was that nearly 50 percent of the nation's African American students and nearly 40 percent of Latino students, but only 11 percent of Caucasian students, attended high schools in which there were 60 percent or fewer seniors than freshman in the same cohort. Thus, graduation is not the norm in these chronically low-performing high schools (Balfanz & Legters, 2004).

Using the 2002 entering class, Balfanz & Legters (2004) found that of the 11,129 high schools studied, 930 of them (8%) had a promoting power (ability to promote students to the next grade of high school) of 50 percent or less. Moreover, a high school with a high minority

student enrollment was five times more likely to have weak promoting power than a majority Caucasian school (Balfanz & Legters, 2004). More than half of African American students in Illinois, Ohio, Michigan, New York, and Pennsylvania attended high schools in which the majority of students did not graduate on time, if at all. African American and Latino students in these states were up to 10 times more likely to attend a low-performing high school with very weak promoting power, high numbers of dropouts, and lower graduation rates than schools with majority Caucasian students (Balfanz & Legters, 2004).

High schools with a high minority student enrollment not only do a poor job of promoting and graduating students, but also deprive high-achieving racial minority students of valuable assets by exposing them to less rigorous curricula, fewer academic resources, and teachers who expect less of them academically than they expect of similarly situated Caucasian students (Azzam, 2008; Laura, 2011). Because of this, African Americans and Latino students are more likely to graduate from schools academically ill-prepared to enter post-secondary education (Martinez & Klopott, 2005).

Moreover, research suggests that the most qualified teachers tend to avoid taking jobs at high schools with high minority student enrollments (DeAngelis & Presley, 2007; Willett & Singer, 1991). These disparities begin when teachers take their first jobs, and in urban areas, they are worsened by teachers' subsequent decisions to transfer and quit (Clotfelter, Ladd, Vigdor, & Wheeler, 2006). Such decisions increase disparities in low-performing schools, since the effectiveness of a teacher increases over the first few years of their careers (Clotfelter, Ladd, Vigdor, & Wheeler, 2006).

Boyd, Lankford, Loeb, and Wyckof (2005) examined New York City elementary school teachers' decisions to stay in the same school, transfer to another school in the district, transfer to

another district, or leave teaching in New York State during the first five years of their careers. They studied transfers and quits by New York City teachers who started teaching in 1995-1996 through 2001-2002. They discovered that 27 percent of first-year teachers in New York City's lower-performing schools did not return the following year, compared to 15 percent in the quartile of schools having the relatively highest student achievement (Boyd, Lankford, Loeb, & Wyckof, 2005). Demographic analysis of their results revealed that transfers and quits by New York City teachers were more common among those who taught low-performing and nonwhite students, had higher education credentials, were male, and lived outside New York City prior to teaching (Boyd, Lankford, Loeb, & Wyckof, 2005).

Integrating data from the Georgia Department of Education, Georgia Department of Labor, and the Georgia Professional Standards Commission, Scafidi, Sjoquist, and Stinebrickner (2003, 2007) studied elementary teacher retention and mobility in Georgia. They examined 7 years of records between the 1994–1995 and the 2000–2001 academic years. Their sample contained 11,070 elementary teachers who began teaching between 1994–1995 and 1999–2000 in Georgia and were under the age of 27 when they began their teaching career. Scafidi, Sjoquist, and Stinebrickner (2003, 2007) found that Georgia elementary teachers often moved from schools with higher proportions of minority students and from low-performing schools to those with lower minority enrollments and higher achievement. More specifically, research revealed that a one standard deviation increase in the proportion of Black students in a school increased the probability that a teacher would exit a particular school in a particular year by more than 20 percent (Scafidi, Stinebrickner, & Sjoquist, 2003). Thus, schools in urban areas serving economically disadvantaged and minority students appear particularly vulnerable to teacher attrition. Likewise, Hanushek, Kain, and Rivkin (2004) conducted a similar study using Texas

state data to investigate 378,790 teachers between 1993 and 1996. They sought to determine the factors that affected the probability that teachers would switch schools or exit the public schools entirely. Their analysis focused on changes in salary and student demographic characteristics for those moving within and between districts. Their results indicated that teacher mobility was much more strongly related to characteristics of the students, particularly race and achievement, than to salary. Hanushek, Kain, and Rivkin (2004) results suggests that a school with 10 percent more Black students would require about 10 percent higher salaries in order to neutralize the increased probability of leaving the school. Moreover, their results inform that just one standard deviation decrease in a school's average achievement scores equate to 10–15 percent higher salaries in order to hold teacher exit rates constant (Hanushek, Kain, and Rivkin, 2004). A conclusion of their study was that many large urban schools, often, display a combination of achievement deficits and large concentrations of minority students, therefore implying that the teacher salary required to offset the turnover effects of student characteristics can be quite significant Hanushek, Kain, and Rivkin (2004).

One of the major problems with less qualified teachers comprising much of the faculty at low-performing schools is that often they provide a mediocre academic experience resulting in subpar student preparation and performance, as evidenced by their standardized test scores.

(Boyd, Lankford, Loeb, & Wyckof, 2005; Scafidi, Sjoquist, & Stinebrickner, 2007)

Furthermore, the College Board released a 2015 report stating the average AP examination score for African American students in 2015 was 2.05 (5 to 1 AP scoring scale). This score is equivalent to a grade of D in a college-level course. In comparison, White students scored an average of 2.98 on all AP tests, roughly equivalent to a letter grade of C (The Racial Gap in Advanced Placement Test Scores, 2015).

A report by the Montgomery County Public Schools, Rockville, Maryland (2014) stated that in 2006, Maryland led the nation as the state with the highest percentage of graduates who earned one or more AP exam scores of 3 or higher. Information from 2014 Advanced Placement Exam Participation and Performance for Students in Montgomery County Public Schools and public school students in the State of Maryland and the nation revealed that only 28.9 percent of Black exam testers and 41.8 percent of Hispanic testers scored a 3 or higher, while 67.9 and 63.5 percent of Asians and Whites respectively score a 3 or higher.

Additional standardized test disparities at low-performing schools are associated with the ACT. For the ACT-tested graduating class of 2014, Blacks averaged 17, Hispanics 18 and Whites 23, out of a maximum score of 36 (McNeish, Randunzel, & Sanchez, 2015). These data are highly suggestive that, for all the aforementioned reasons racial minority students who graduate from low-performing high schools are often at a disadvantage academically when entering college.

Furthermore, the academic shortfall for students who attend low-performing schools has long-term implications for their future. According to *The Digest of Educational Statistics*, in 2012, 30 percent of Whites age 25 and older held a bachelor's degree, compared to 17 percent of Blacks and 12 percent of Hispanics in the same age group (Snyder & Dillon, 2013).

Relationship of Socio-Economic Status and Low-performing High Schools

Race and socio-economic status (SES) are intimately intertwined. Research has shown that race, in terms of stratification, often determine socio-economic status (House & Williams, 2003). Since the 1960s, social science researchers have acknowledged that socioeconomic status (SES) directly influences student achievement (Coleman, Campbell, Hobson, McPartland, Mood, Weinfield & York, 1966; Murnane, 2007; Ottinger, 1991; Thayer, 2000). African American,

American Indian/Alaska Native, Hispanic, Pacific Islander, and Native Hawaiian families are more likely to live in poverty than Caucasian and Asian families. (Costello, Keeler, & Angold, 2001; National Center for Education Statistics, 2007). While not all low-SES students are ethnic minorities, low-SES students face similar challenges since students living in or near poverty tend to be concentrated in low-performing schools (Murnane, 2007). Furthermore, poverty appears to be the key correlate of high schools with weak promoting power (Balfanz & Legters, 2004). In addition to high dropout rates and low graduation rates, these schools offer students a less rigorous curriculum (few Advance Placement, dual enrollment, or honors classes) (Balfanz & Legters, 2004). According to the Federal Academic Competitiveness Grant data, only about four percent of low-income high school students across the US complete a rigorous course of study, (US Department of Education, 2006-2007). Thus, family income appears to negatively influence a students' likelihood of entering and completing college, even when controlling for academic ability (Thayer, 2000). That point was further illustrated in the Akerheilm, Berger, Hooker, and Wise (1998) study.

In 1988, the National Educational Longitudinal Survey (NELS), a survey of more than 24,000 public and private school eighth graders across America, was administered to a cohort of eighth graders. Survey topics included: school, work, and home experiences; educational resources and support; the role in education of their parents and peers; neighborhood characteristics; educational and occupational aspirations; self-reports on smoking, alcohol and drug use; and extracurricular activities. Students were also tested in four subjects (mathematics, reading, science, and social studies) in order to enrich the survey data collected. The students were re-surveyed bi-annually three more times, concluding in August of 1994. In all, 13,120 students completed all four parts of the NELS survey, and made up the sample for the

Akerheilm, Berger, Hooker, and Wise (1998) study. They investigated how early indicators in the NELS data were related to college attendance six years later. They examined attendance at all types of post-secondary enrollments, including 4-year public, 4-year private, less than 4-year public, and less than 4-year private institutions.

Akerheilm, Berger, Hooker, and Wise (1998) noted several key results related to post-secondary enrollment (PSE) and family income. Only 44 percent of the lowest family income group attended some form of PSE, 69 percent of the middle income group attended PSE, and 86 percent of the highest income group attended PSE. When standardized test scores were considered, they found that 75 percent of low-income students who placed in the top scoring group attended PSE, compared to 86 percent of those in the middle income, and 95 percent of those in the highest income group. Additionally, they discovered that for those already in PSE, low-income students were less likely to attend 4-year schools than higher-income students. The same result was true even among low-income students with high standardized test scores. Sixty-five percent of students in the lowest income group who also placed in the highest test score group attended PSE at a 4-year college. For middle and high-income students in the top test score group, attendance in PSE was 69 and 82 percent, respectively. Akerheilm, Berger, Hooker, and Wise (1998) concluded that low-income students were disproportionately found in public institutions, 31 percent, relative to higher-income students (39 percent), even within the group of high test score students.

In addition to enrollment, Ottinger (1991) analyzed national data from a longitudinal study of the US Department of Education's 1980 High School and Beyond Survey (HS&B). She found that high ability high school seniors from low-SES backgrounds were less likely to attain a

bachelor's degree than high ability seniors from high income backgrounds, 85 percent versus 78 percent (Ottinger, 1991).

Relationship of Parents' Level of Education and Low-performing High Schools

Racial minority students, economically disadvantaged students, and potential first-generation college students share a number of characteristics when it comes to their high school preparation. First-generation college students are more likely to be from lower socioeconomic and underrepresented ethnic backgrounds (Bui, 2002). Furthermore, students whose parents do not hold a college degree are disproportionately more likely to be students of color, low-income, from single parent homes, and non-native speakers of English (Choy, 2001). These students tend to be concentrated in low-performing schools and those staffed by less qualified teachers (Murnane, 2007). Because of these schools' consistent underperformance, students often receive lower level academic preparation as determined by standardized measures like American College Test (ACT) scores, high school rank, and grade point average (Choy, 2001).

Similar to underrepresented minority students and low-income students, many first-generation students enrolled at low-performing high schools are unprepared for post-secondary education and discouraged from taking challenging courses (Martinez & Klopott, 2003). As a result, first-generation college students are more likely to enter post-secondary education with less academic preparation as compared to their non-first-generation peers (Thayer, 2000). In effect, a young person's likelihood of attending a four-year college increases with the level of their parents' education (Choy, 2001; Ishitani, 2006). This is true even for the most highly qualified first-generation seniors (Choy, 2001).

Altogether, students who attend low-performing high schools are often from ethnically diverse, low-income backgrounds and receive a mediocre academic preparation. Therefore, they

are disproportionately underrepresented in terms of enrollment in college (Haveman & Smeeding, 2006). Furthermore, several studies indicate high school academic achievement, as measured by students' high school GPA, successfully predicts academic achievement in college (Daugherty & Lane, 1999; DeBerard, Spielman, & Julka, 2004; Noble & Sawyer, 2002). This information furthers the notion that the likelihood of succeeding in college is enhanced significantly for students who graduate from a rigorous high school program (Choy, 2002).

The Relationship of High School Preparation and College Success

There is no single definitive factor that influences college GPA; however, Adelman (1999) conducted a longitudinal examination of several thousand high school transcripts of 10th graders in 1980 until roughly age 30 in 1993, and his grand finding was that high school preparation proves to have the highest correlation with college grades than many other elements. This conclusion seems to remain true even decades later. Adelman's (1999) research indicated high school curriculum accounted for 41 percent of the academic capital students brought to higher education; test scores, 30 percent; and class rank/academic GPA, 29 percent (Adelman, 1999). In all, a strong high school preparation tends to result in higher college grades, and those with a higher first-year college GPAs are more likely to be retained and to graduate at higher rates. Indeed college retention has been found to be associated with traditional measures of college readiness, such as high school grade point average (HSGPA), courses completed, rigor of the high school curriculum, and college admissions tests (e.g., the ACT Assessment) (ACT, 1997; Adelman, 1999; Kern, Fagley, & Miller, 1998; Robbins, Davenport, Anderson, Kliever, Ingram, & Smith, 2003; Tinto, 1997).

Betts and Morell (1999) sought to determine the factors underlying variations in student performance at a major public university as measured by GPA. They considered four sets of

explanatory factors: the degree program in which students were enrolled, the student's family background (sex, family income, and race), the resources of the high school that the student attended prior to enrolling (measured by variables such as the traits of teachers and the teacher-pupil ratio), and the demographic environment of the high school, and income in the community in which the student attended high school.

Betts and Morell (1999) obtained data from the Student Information System on more than 5,000 undergraduates who enrolled at the University of California at San Diego between Fall 1991 and Fall 1993. Additional information was collected from the Central Processing data files of the Educational Testing Service (ETS). Mutually, these sources provided a comprehensive assessment of each student's GPA by quarter, field of study, and background information, including the last high school attended and the student's Math and Verbal Scholastic Aptitude Test (SAT) scores. Supplementary information was collected from the California Department of Education and the 1990 Census of Population.

Betts and Morell's study (1999) found that personal background, including sex, ethnicity, and family income were significantly linked to university GPA. Furthermore, the socioeconomic environment of the high school mattered, in that schools with a higher percentage of low-income students tended to enroll fewer students in college. Moreover, while they did not use high school GPA or SAT scores as predictors of university GPA, they did determine that personal background and the socioeconomic environment of the high school were strong predictors of the university GPA. They concluded that even after controlling for high school grades and test scores, racial minority, first-generation college students, and students from schools located in economically impoverished areas were likely to receive lower grades in college.

Greene and Forster (2003) explored the issue of college readiness. Using the U.S. Department of Education Common Core of Data, they calculated the percentage of students in the public high school class of 2001 who possessed the minimum qualifications for applying to four-year colleges. To be considered “college ready,” students must pass three crucial hurdles: they must graduate from high school, they must have taken certain courses in high school that colleges require, and they must demonstrate basic literacy skills. The researchers generated statistics about high school graduation and college readiness by racial/ethnic group as well as by region and state. In all, they included 1,299,000 students in their sample of 18-year-olds who met the criteria above as being college ready.

According to their results, only 70% of all students enrolled in public high schools nationwide graduated in 2001, and only 32% of all students left high school qualified to attend four-year colleges. Among the 1,299,000 18-year-olds who met the criteria as being college-ready in 2001, Greene and Forster (2003) determined the actual number of persons entering college for the first time that year was about 1,341,000. Therefore, about 42,000 students who were not adequately prepared for college entered college. In examining their results by race/ethnicity, Greene and Forster (2003) found that 51% of all Black students, 52% of all Hispanic students, and 54% of Native American students had graduated from high school. Of those graduates who were college-ready, however, only 20% were Black, 16% were Hispanic, and 14% were Native American. In contrast, the graduation rate for White students was 72% and for Asian students 79%. The college readiness rate for White students was 37% and for Asian students 38%.

Due to their lower college readiness rates, Black and Hispanic students are seriously underrepresented in the pool of minimally qualified college applicants (Greene & Forster, 2003).

Only 9% of all college-ready graduates were Black and another 9% Hispanic, compared to a total population of 18-year olds that were 14% Black and 17% Hispanic (Greene & Forster, 2003).

In 2004, Kannapel, Clements, Taylor, and Hibpshman (2005) examined K-12 schools in Kentucky and sought to answer two primary questions: 1) What common characteristics that may positively affect student learning do high-performing, high-poverty schools share? and 2) What characteristics appear to differentiate high-performing, high-poverty schools from lower-performing, high-poverty schools? Ultimately, the sample used consisted of only elementary schools; however, the results were still relatable to high school preparation.

Kannapel, Clements, Taylor, and Hibpshman (2005) collected data using teams trained to collect data using Kentucky's low-performing schools audits. This process allowed the researchers to compare their findings to existing evidence on the state's low-performing schools. Each team spent one week in one of the fifteen study schools, observing every class at least once, as well as reviewing data from test scores, school improvement plans, lesson plans, student work samples, and other documentation. The teams collected data using the Kentucky Standards and Indicators for School Improvement (SISI). This standardized state assessment framework focused on nine areas: curriculum, assessment, instruction, school culture, family and community support, professional development, leadership, organizational structures, and planning. Altogether, the teams gathered data on 88 indicators, which were then analyzed and rated on a scale of 1 to 4 (a 1 or 2 was interpreted as weak, a 3 was considered fully functioning at the standard, and a 4 referred to exemplary implementation). Additionally, the researchers conducted interviews with team members from the Kentucky Department of Education and held follow-up interviews with administrators at participating schools. Their goal was to discover the

shared characteristics among high-poverty schools that seem to contribute to high student performance.

Kannapel, Clements, Taylor, and Hibpshman (2005) analyzed the SISI data to determine the characteristics common across high-performing, high-poverty schools. They found that high-performing, high-poverty schools exhibited a number of common traits. One in particular is the school culture standards, which includes: a safe environment, high expectations, collaborative decision-making structures and a non-authoritarian principal, strong faculty morale and work ethic, coordinated staffing strategies, good family communication, caring about students, celebrating achievement, emphasizing equity, and supporting diversity. Furthermore, high-performing, high-poverty schools also shared student, family, and community support, as well as instruction that focuses on reducing barriers to learning, learning support beyond the classroom, and student record systems that provide timely and accurate information. In terms of what differentiated high-performing, high-poverty schools from lower-performing, high-poverty schools, the researchers identified and uncovered statistically significant differences between the high- and low-performing schools on 22 of the 88 standards, as identified in Table 1.

Kannapel, Clements, Taylor, and Hibpshman's (2005) findings provide evidence to support the notion that school environment is a key difference maker between high-performing, high-poverty schools and low-performing, high-poverty schools. They identified eight significant characteristics: school-wide ethic of high expectations for faculty, staff, and students; caring, respectful relationships; strong academic and instructional focus; systems for assessing individual students on a regular basis; collaborative decision-making led by non-authoritarian principals; strong work ethic and high faculty morale; recruitment, hiring, and assignment strategy for teachers. These data were relevant to the current study because just as high-poverty

Table 1: SISI Indicators on Which Study Schools Scored Higher than Comparison Schools (by statistically significant margins)

Standard	Indicator
Curriculum	1.1. a Curriculum is aligned with Academic Expectations, Core Content for Assessment, Transformations, and Program of Studies. 1.1. b District facilitates discussions among schools on curriculum standards preschool through 12th grade. 1.1. f Systematic process for monitoring, evaluating, reviewing curriculum. 1.1. g Curriculum provides access to common academic core for all students.
Assessment	2.1.a Classroom assessments are frequent, rigorous, aligned with Core Content. 2.1.e Multiple assessments provide feedback on student learning.
Instruction	3.1.b Instructional strategies aligned with learning goals and assessment. 3.1.c Instructional strategies aligned to needs of diverse students and different learning styles.
School Culture	4.1.b Leadership creates experiences to foster belief that all can learn at high levels. 4.1.c Teachers hold high expectations for all students, as evident in their practice. 4.1.d Staff are involved in decision-making. 4.1.e Teachers accept their professional role in student success and failure. 4.1.f Staff are assigned to maximize student access to instructional strengths. 4.1.g Teachers communicate student progress to families regularly. 4.1.h Staff care about students, inspire best efforts. 4.1.k School/district committed to equity, appreciate diversity.
Student, Family, Community Support	5.1.d Students provided with opportunities to receive additional assistance beyond initial classroom instruction.
Professional Growth, Development, Evaluation	6.1.e Professional development is ongoing and job-embedded. 6.1.f Professional development planning is connected to analysis of student achievement data. 6.2.e School/district improvement plan identifies leadership needs, strategies to address them.
Organizational Structure and Resources	8.1.a School is organized to maximize resources to support high student/staff performance. 8.1.d Staff makes efficient use of instructional time to maximize student learning

schools vary in their success, graduates from high-poverty schools vary in their college readiness, thus impacting their likely success if they enter college.

Ishitani (2006) studied the timing of certain events, such as dropping out and graduating, as well as the probabilities of these events occurring given diverse student characteristics and attributes using structural equation modeling, a method widely used in previous studies of student departure (Bean, 1983; Braxton, Duster, & Pascarella, 1988; Cabrera, Nora, & Castaneda, 1993; Nora, Attinasi, & Matonak, 1990; Pascarella & Chapman, 1983; Pascarella & Terenzini, 1983). Additionally, event history modeling was used to analyze the attrition behavior of first-generation students. This technique allowed the researcher to compare transfer and dropout behavior in a longitudinal framework.

The NELS:88 and NELS:1988-2000 Postsecondary Education Transcript Study (hereafter, PETS:2000) served as the national data sets used to develop a sample for Ishitani's (2006) study. NELS:88 was a longitudinal data set that followed diverse educational characteristics of eighth-graders over 12 years, beginning in 1988. The PETS:2000 includes transcript information on participants in the NELS:88. From the original sample of participants in 1988, 4,427 students who initially enrolled in public and private four-year institutions between 1991 and 1994, were selected to inspect their attrition and degree completion behavior.

Ishitani (2006) analyzed 12 different pre-college student demographic characteristics in the sample population. The variables were: cohort, gender, race, parent's education, family income, educational expectation, and parents' highest level of education, high school class rank, high school academic intensity (rigor of one's curriculum), institutional type, institutional selectivity, and first-year financial aid. Ishitani found a number of variables to be significantly associated with departure from college, including family income, lower educational expectations,

lower high school class rank quintile, lower high school academic intensity, enrollment in a public institution, and lack of selectivity in admission. Students from families whose incomes ranged between \$20,000 and \$34,999 were 72% more likely to leave than students with family incomes of \$50,000 or higher. Students in the lowest quintile in high school academic intensity or high school class rank were about 1.7 or 1.9 times more likely to depart than were their counterparts in the first quintile of each category. It should also be noted that enrollment in a private institution proved statistically significant and was associated with a higher retention rate. Students attending private schools were 34% less likely to drop out than students enrolled in public institutions (Ishitani, 2006). In regard to the current study and review of high school preparation literature, Ishitani's results provide strong evidence that precollege academic attributes (high school class rank and high school academic intensity) directly relate to college retention and completion potential.

Among the 12 independent variables in Ishitani's (2006) study, the high school academic intensity variable most related to the current study. High school academic intensity was used to examine the effects of some precollege academic attributes. High school academic intensity was estimated by the highest observed level of curriculum across each major component, including math, reading, and science. He divided the variable into five quintiles, with the first being the highest and the fifth quintile representing the lowest academic intensity. He found that the likelihood of departure from college among students from the lowest academic intensity quintile increased each year until the third year, when it then began to decrease. Despite this progressive increase, students from the lowest high school academic intensity were 4.3 times more likely to drop out in the third year than students from the highest quintile. The odds of departure declined to 3.2 times as likely in the fourth year. Students from the fourth quintile in academic intensity

presented the highest risk of dropping out in the fourth year. They were 1.9 times more likely to leave in their fourth year than were students from the highest quintile in academic intensity. Students from the third quintile were most at risk for departure during the second year. However, their probability of departure was actually higher than students from the fourth quintile. Those students were 1.4 times more likely to leave college than students from the highest quintile (Ishitani, 2006). Altogether, Ishitani's (2006) results reinforce the notion that the more rigorous one's high school academic preparation, the more likely students are to remain and succeed in college.

One of the most significant influences on the quality of a school is the classroom teacher. Ronfeldt, Loeb, & Wyckoff's (2012) study draws on extensive administrative data from the New York City Department of Education and the New York State Education Department. They analyzed approximately 1.1 million observations of 4th and 5th grade students across all New York City elementary schools over ten academic years (2001-2010). Roughly 70 percent of the population identified as Black or Hispanic. English was not the primary language spoken at home for nearly one-third of the students. Seventy-one percent of the population were eligible for free or reduced lunch.

Ronfeldt, Loeb, & Wyckoff (2012) sought to examine the relationship of teacher turnover and school test scores. They linked student test scores in Math to teacher characteristics such as turnover. On average, 73 percent of teachers each year had stayed in the same school from the prior year while approximately two percent of 4th and 5th grade teachers had transferred schools within NYC. Eighteen percent were first-year teachers, yet the average teacher possessed eight years of experience. Each 4th and 5th grade within each NYC school had, on average, five teachers, with a range from one to as many as 20 teachers.

Their analysis suggested that students of teachers in the same grade level team in the same school scored worse in years where teacher turnover rates are higher, as compared to years with less teacher turnover. Student math scores were 6.1 to 7.9 percent of a standard deviation lower in years when there was 100 percent turnover by the grade level team, as compared to years where there was no turnover at all. Even in years for when there is just one standard deviation this would correspond with a 2 percent decrease of a standard deviation in Math achievement. More specifically, Ronfeldt, Loeb, & Wyckoff's (2012) results indicated that within the same school and within the same academic year, students in grade levels that experienced 100 percent turnover produced lower test scores in Math by 5.6 to 9.4 percent of a standard deviation. The results of the study suggest that teacher turnover is harmful to student achievement, and if teacher attrition rates can be reduced then it could increase the standard deviation by about 3 percent.

Another integral component that impacts the quality of a high school is the effectiveness of a school's leadership. Similar to the measures that teachers provide value added achievement for a classroom, Branch, Hanushek, and Rivkin's (2013) study provided evidence to support the claim that principals contribute to the growth of all students' achievement. They used the Texas Education Agency (TEA) database along with merged data from the Public Education Information Management System (PEIMS). They observed 7,420 individual principles over 5 years. Branch, Hanushek, and Rivkin's (2013) analysis revealed that principals effect 0.21 standard deviations of school test scores (Math specifically). The reverse effect was true for high-poverty schools with a loss of 0.15 standard deviations. They also reached several conclusions from the data; first leadership was often cited as an impediment to improving high-poverty and low-performing schools. Furthermore, they found the schools with high proportion

of low-income students are more likely to have first-year principals, roughly 40 percent higher in schools from the bottom quartile. Branch, Hanushek, and Rivkin (2013) concluded that an effective principal can be as beneficial as seven additional months to school.

One of the more recent studies to investigate the relationship of high school quality and college success was conducted by Black, Lincove, Cullinane, and Veron (2014) for the Center for Economic Studies & Ifo Institute. Their study explored the influence of high schools and high school characteristics on early college achievement using administrative data from the University of Texas at Austin (UTA). More specifically their research examined the college grades of students admitted to a UTA through the "Top 10 percent program," in which the top percent of students at every Texas high school was guaranteed admission to all Texas public colleges, with the exception of the UTA, where the percentage is 7-8 percent depending on the term of entry. The authors combined administrative student-level data from UTA with publicly-available public school data from the Texas Education Agency (TEA). The UTA data included merged student files from the Offices of Admissions, Financial Aid, and Registrar. Admissions files provided information on a student's high school, SAT scores, and high school class rank, along with demographics including gender, race, family income bracket, and parent education. Financial aid records provide information on sources of financial support and unmet financial need for all students who completed the Free Application for Federal Student Aid (FAFSA) form. Registrar files included all courses completed at UTA or transferred from other institutions, including letter grades and credit hours. The full sample dataset included approximately 49,575 students, however some high schools had incomplete data in the TEA database; therefore, the sample was reduced to 27,392 students who entered UTA between 2002 and 2009. All students were first-time freshmen and under age 21 at the time of first enrollment. Additionally, students in the

sample were 56 percent White, 19 percent Hispanic, 17 percent Asian, and 5 percent Black. Fifty-five percent had a mother who graduated from college, and 20 percent had mothers who never attended college. Fifty percent had incomes of \$80,000 or above, while 20 percent reported family incomes below \$40,000 (2014).

The results of Black, Lincove, Cullinane, and Veron's (2014) regression study were quite extensive. As it specifically relates to the current study, they concluded that higher-performing UTA students had attended high schools with an overall higher average socio-economic status (SES), better average college preparation (AP exam scores and SAT scores), more experienced teachers, lower district student enrollment, and less budget pressure from high-needs students. Moreover, their results revealed that high school quality explained about 20 percent of the variation in college grades, and that variation was consistent through the junior year of college. Their results are highly supportive of the thesis that high school quality matters and is a key predictor of grades in college.

High school characteristics are quite prophetic in relation to a student's collegiate academic outcomes. However, in spite of the negative impact of attending a low-performing high school and its impact on attending and succeeding in college, some students who attend low-performing high schools, even though they may only be marginally prepared to succeed in college, do succeed and indeed, graduate. Existing literature addresses the impact on college success based on student characteristics such as: race (Fuentes & Sedlacek, 1994; Nasim et al, 2005; Tracey & Sedlacek, 1984), gender (Ancis & Sedlacek, 1997), and parents' level of education (Ting, 2003). However, current research fails to fully explain the phenomenon of academic success and inadequate and mediocre high school preparation. Some scholars have suggested that there may be factors other than student demographic characteristics and school

academic preparedness that affect the propensity to succeed in college (Sedlacek 1977, 1987, 1989, 1991; Sternberg, 1985; Tracey & Sedlacek 1984, 1985). In particular, Sedlacek (2004) has suggested that non-cognitive factors, that have not usually been considered, might explain why students with traditional at-risk characteristics transcend in college and in turn, could add a valuable dimension to a college success prediction.

Non-Cognitive Factors and Their Relation to College Success

Content knowledge and academic skills are among the leading contributors to one's academic success in college. Additionally, students must also develop behaviors, skills, attitudes, and strategies that are essential to effective academic performance in their courses, and these may not be reflected in their standardized test scores and grade point averages (GPA) (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, and Beechum, 2012). Several researchers have described these factors as non-cognitive skills (Sedlacek 1977, 1987, 1989, 1991; Sternberg, 1985; Tracey and Sedlacek 1984, 1985).

Over the years efforts have been made to better understand how certain non-cognitive factors affect student achievement, measured in terms of grades, retention, and graduation (Astin, 1993; Pascarella & Terenzini, 1991; Tinto, 1993). In fact, since the dawn of the 20th century scholars have speculated on the possible effects of non-cognitive factors on academic achievement (Ward, 1958). As early as 1916, Terman suggested that factors other than intelligence, such as effort and application, determine to a great extent the achievement of gifted children, both in and out of school (Bolton, 1978; Ward, 1958). Tyler (1931) reviewed previous studies of academic prediction. He discovered that other investigators using intellectual factors concluded there may also be other types of factors to be considered that would better predict academic success (Ward, 1958). Some of the studies he reviewed recommended using the

measure of time spent studying, while others suggested measuring personality traits, records of behavior, or interests and abilities (Ward, 1958).

Ward (1958) made an early attempt to develop an inventory of non-cognitive predictors of academic success. From previous literature, she concluded that the majority of promising studies on non-cognitive factors associated with academic achievement could be classified into one or more of these four categories: motivation; personality variables; home, family, and school background; and work-study habits.

Michael (1965) applied measurement and evaluation prediction to the college admissions process. While he placed significant emphasis on cognitive measures, he notably mentioned that it is the writer's contention, or bias, that future gains will result largely, though not exclusively, from intensive study of the constructs in such non-cognitive areas as those associated with the dynamics of personality development and of the socialization process as they are reflected by adaptive behavior to the requirements of families of college environments. (Michael, 1965, p. 56)

In recent decades the non-cognitive literature has increased, with continued focus on predicting college success yet expanding to include more emphasis on non-traditional (anyone who is not of the 18-25 year old, Caucasian American student demographic) students. Tracey and Sedlacek (1984) were among the first to explore non-cognitive factors' impact on college success using a non-traditional population. At the University of Maryland, College Park, they surveyed 1,644 entering freshmen in 1979 and 1980. They used separate step-wise regressions on each sample to examine the predictive relationship between scores on the Non-cognitive Questionnaire (NCQ), an instrument Tracey and Sedlacek created, SAT scores and first-year GPA. The NCQ tested the seven non-cognitive factors (positive self-concept, realistic self-

appraisal, understanding of and ability to deal with racism, preference for long-range goals over short-term or immediate needs, availability of a strong support person, successful leadership experience, and demonstrated community involvement) identified by Sedlacek.

Altogether, their results suggested that NCQ scores added significant variance to the prediction of grades for Whites and Blacks. While their overall results showed a relationship with grade prediction, results also revealed a difference in significance in variables based on race. For whites, the non-cognitive factors of self-confidence, preference for long-range goals over short-term or immediate needs, and realistic self-appraisal were most strongly related to grade point average. For blacks, positive self-concept and realistic self-appraisal were the significant variables.

Additional research using non-cognitive variables related to academic success has focused on student involvement (Astin, 1993), academic and social integration (Milem & Berger, 1997; Tinto, 1993), and study skills (Nisbet, Ruble, & Shurr, 1982). One such study by Ting (2000) sought to discover the factors related to academic performance and retention of Asian American freshmen at a predominantly White university in the southeast United States. Ninety-six students completed the Non-Cognitive Questionnaire designed by Tracey and Sedlacek (1984). Ting (2000) used step-wise multiple regressions to analyze the 23-item survey. The study revealed both cognitive and non-cognitive variables accounted for the academic success of these Asian American students in the first-year of college. Not only did SAT mathematics scores impact student performance, but three non-cognitive variables were also found to be significant predictors of GPA: realistic self-appraisal, successfully handling the system, successful leadership experience, and demonstrated community service.

Notwithstanding the various scholars who have identified and studied non-cognitive variables, (Adebayo, 2008; Ancis & Sedlacek, 1997; Fuertes & Sedlacek, 1994; Fuertes & Sedlacek, 1995; Lanham et al., 2011; Nasim et al, 2005; Noonan et al., 2005; Sedlacek, 2003, 2004; Sedlacek & Adams-Gaston, 1992; Ting, 2000, 2003, 2009; Tracey & Sedlacek, 1984) the current study concentrated on the work of Sedlacek (1977, 1987, 1989, 1991; Tracey & Sedlacek 1984, 1985, 1987, 1988, 1989) because of its specific emphasis on non-traditional students.

Conceptual Framework and Non-cognitive Variables

The foundation of most non-cognitive research related to student retention stems from the work of William Sedlacek. For nearly five decades, he has studied the impact of non-cognitive variables on college success related to both students in general and most particularly, students of color and other non-traditional students, the focus of the current study. Sedlacek was concerned about the low enrollment and poor retention of minority students. He began his professional career amidst the apex of integration on college campuses. Early on he recognized that the “Big Test,” specifically the SAT (Scholastic Aptitude Test, later renamed the Scholastic Assessment Test), was becoming the focal point in college admissions, and he worried that it could lead to hindrances for non-traditional students (Lemann, 2004; Sedlacek, 2004, 2005). Sedlacek (2005) acknowledges that the SAT was useful because of the variation in quality among preparatory schools. However, he recalls even The College Board (creators of the SAT) stated in 1926 that the SAT was limited in what it measured and should not be relied upon as the only tool to judge (college) applicants (Angoff, 1971; Brigham, 1926).

Sedlacek’s exploration of what additional admissions measures might be considered was enhanced by the human intelligence work of Sternberg (1985, 1997), who shared Sedlacek’s displeasure for standardized tests and who, as a child, had developed test anxiety which caused

him to underperform on a fifth grade IQ test. This inspired Sternberg's development of the Sternberg Test of Mental Ability (STOMA) in high school. This was his first instrument designed to test intelligence and catalyzed his career as a renowned psychologist (Sternberg, n.d.) He also began his professional career around the same time as Sedlacek. Throughout the 1970s, Sternberg became a pioneer in the field of cognitive psychology, and his research focused on the analytical processes involved in taking intelligence tests (Sternberg, 1985, 1986). This led to his innovative Triarchic Theory Intelligence, which proposed that there were three basic ways by which a person exhibited intelligence: componential, experiential, and contextual (Sternberg, 1985, 1986). He suggested componential intelligence was associated with traditional experiences in our society and was most likely exhibited through traditional measures of standardized tests and prior grades (Sternberg, 1985, 1986). Contrarily, experiential intelligence is the ability to interpret information in a changing context, and contextual intelligence is the ability to understand and "work" the system to your advantage (Sternberg, 1985, 1986). Experiential and contextual intelligence are typically not measured by standardized tests or grades but are demonstrated through experiences and by other means of expression. It was the experiential and the contextual intelligence domains that suggested to Sedlacek that a possible relationship might exist between non-traditional intelligence and experiences and non-traditional students. Furthermore, for decades, and still to this day, college admissions rely heavily on standardized test scores and high school grades, which disadvantages non-traditional students because their experiential and contextual intelligence domains have not been evaluated and considered in admissions decisions. Therefore, this could be a possible explanation for students who might be successful in spite of the challenges of background and preparation.

Astin (1975) shared Sedlacek's concern for minority students' low enrollment and low retention on college campuses. Sedlacek learned from Astin's (1971, 1975, 1977) research that Black students who were able to demonstrate knowledge gained in non-traditional ways through credit-by-examination (CLEP test) were more likely to remain in college than Blacks who did not take the credit-by-examination. Additionally, Astin's collective research (1971, 1975, and 1977) suggested that adjustment and involvement impacted college success and that minority students experienced those differently from White students.

Altogether, the research of the 1970's (Astin 1971, 1975, 1977; Sternberg, 1985, 1986) influenced Sedlacek to postulate that non-cognitive factors might have a greater impact on college success for non-traditional students than formerly recognized. Sedlacek and Brooks (1976) identified seven non-cognitive variables that, in combination with cognitive factors, they perceived were related to college success, particularly for non-traditional students. In 1984, Tracey and Sedlacek added an eighth variable to that list, in part because of additional review of Sternberg's experiential and contextual domains. The eight variables include: positive self-concept, realistic self-appraisal, successful handling of the system (formerly, "racism"), preference for long-term goals over short-term or immediate needs, availability of a strong support person, successful leadership experience, and demonstrated community service. The following is a brief description of each variable.

Positive Self-Concept. Without question the way students feel about themselves affects their adjustment and success in college (Sedlacek, 2003, 2004, 2005). Successful students possess confidence, strong "self" feeling, strength of character, determination, and independence (Sedlacek, 2001). Embracing a positive self-concept means that students can speak, write, and think positively about themselves (Schauer, & Schauer, 2007). They expect to graduate, expect

to do well in the academic setting, and are not afraid to face new challenges. These students enter college feeling confident that they can make it through school, overcome incredible obstacles or setbacks and still survive and thrive on campus (Schauer, & Schauer, 2007; Sedlacek, 2001).

Realistic Self-Appraisal. Realistic self-appraisal is the ability to assess one's strengths and weaknesses and allows for self-development (Sedlacek, 2001). A student who can accept praise and rewards for academic excellence as well as constructive criticism and the consequences that follow poor performance is making a realistic self-appraisal (Schauer, & Schauer, 2007). Such students see the need for self-development and have in mind the goal to broaden themselves individually during their academic career. These students practice assessing personal strengths and weaknesses, seek help for perceived deficits, and want to know how they are doing in class before grades come out in order to correct any problems (Schauer, & Schauer, 2007).

Another aspect of realistic self-appraisal is adaptability (Shivpuri, Schmitt, Oswald, & Kim, 2006). Students equipped with sufficient coping mechanisms successfully deal with change, unfamiliar situations, and the multiple demands of college, especially during the crucial first year (Schauer, & Schauer, 2007).

Understands and deals with discrimination. One of Sedlacek's original variables was labeled understands and dealing with racism, but in later years, he revised it to refer to successfully handling or negotiating the system (Sedlacek, 2003, 2004). It was later revised and adopted for this study as understands and deals with discrimination. This phrase is more inclusive for non-traditional students such as women, students with disabilities, and others with diverse sexual orientations may not have experienced racism. Successful students have

experienced and coped with discrimination (Sedlacek, 2003, 2004). These students are committed to fighting to improve the existing system, are not submissive to existing wrongs, nor hateful of society, are able to handle a discriminatory system, and assert that the institution has an affirmative responsibility to combat such negative behaviors and policies (Sedlacek, 2001).

Preference for Long-Range Goals. Students who can set goals, can look beyond immediate issues or problems, can exhibit patience, and evidence of academic and non-academic planning are demonstrating a preference for long-term goals (Sedlacek, 1993). Learning to set goals is a “must” for successful students, and top students know how to state specific, concrete goals which are oriented to the future (Schauer, & Schauer, 2007). Understanding the relationship between present education and future goals, being willing to defer gratification, and being ready to work hard for the grades are representative of students who hold to the variable of preferring long-term over short-term goals (Schauer, & Schauer, 2007).

Perseverance relates to the preference for long-term goals and indicates a commitment to one's goals despite obstacles (Shivpuri, Schmitt, Oswald, & Kim, 2006). Perseverance includes motivation to finish projects and meet deadlines.

Availability of Strong Support System. Students who have done well in school tend to have a person of strong influence who provides advice, particularly in times of crisis (Sedlacek, 2004). This is a recurring theme in retention literature and leads to the notion that successful students need a mentor (Schauer, Schauer & Raab, 2006). Non-traditional students who have even one strong support person behind them are far more likely to make a quick and appropriate adjustment to college (Sedlacek, 2003, 2004, 2005). This individual may be in the educational system, but for non-traditional students it is often a relative or a community worker (Sedlacek, 2004).

Successful Leadership Experience. Students who are most successful in higher education have shown an ability to organize and influence others (Sedlacek, 2005). These students show evidence of positively influencing others in both academic and non-academic areas. Sedlacek (2005) noted that non-traditional students often display non-traditional evidence of leadership. They may have shown their leadership in less typical ways, such as working in their communities, religious organizations, or even taking on family or work responsibilities (Sedlacek, 2005). It is also important to consider the culture and gender-relevant activities of the applicants rather than treating them as if they come from a homogenous environment (Sedlacek, 2001).

The students who have had successful experiences in leadership roles are more likely to excel in college (Schauer & Schauer, 2007). Along with leadership opportunities comes organizational ability, influencing and directing others, and mediation training. These students take initiative, are often more assertive, and are frequently more comfortable taking action when called upon to do so (Schauer & Schauer, 2007; Sedlacek, 1993, 2005).

Demonstrated Community Involvement. Another one of Sedlacek's original variables was labeled demonstrated community service; however, it has also been revised as service was not the most accurate word to describe Sedlacek's true meaning for the variable, which is that being a part of a community with which students can identify and receive support from is vital for navigating a college campus (Sedlacek, 2005). Students who are involved in their community through association with a cultural group based on race and/or gender are more successful in college than students who are less involved or not at all (Sedlacek, 2001). Living in a residence hall, participating in class, and forming study groups are also positive forms of community involvement (Sedlacek, 1993).

Knowledge Acquired in a Field. The ability of someone to learn from experiences outside the classroom correlates with academic success (Sedlacek, 2005). Non-traditional students are more apt to learn and develop using methods that are less traditional and maybe outside the education system (Sedlacek, 2005). Their methods may be cultural or gender-related, and the field itself may be non-traditional (Sedlacek, 2001). The field or areas in which they learn may have not been a formal school setting, as they may develop innovative methods of acquiring information (Sedlacek, 1993). Assessing what students learn outside of the traditional educational context should be an important part of an evaluation program for any student (Sedlacek, 2001).

Studies that Used the Non-cognitive Questionnaire

Tracey & Sedlacek (1984) conducted the primary study in which Sedlacek and Brook's (1976) non-cognitive variables were first tested at the University of Maryland, College Park. They surveyed two successive groups of incoming freshmen during orientation. The sample consisted of 1,529 students (1,339 White and 190 Black) in the first cohort and 444 students (355 White and 89 Black) in the following year's cohort. Results revealed some identical and some distinctly different, significant variables for White and Black students. For White students, the significant non-cognitive dimensions of community involvement, leadership, and preference for long-range goals were connected to first-semester grades. For Black students, the significant non-cognitive variables that predicted first-semester grades were positive self-concept and realistic self-appraisal. For both races positive self-concept and realistic self-appraisal were predictive of grade-point average. Only one of the non-cognitive variables (realistic self-appraisal) was predictive of enrollment for White students, while four of the variables were predictive for Black students (realistic self-appraisal, positive self-confidence, support, and

community involvement) and significantly related to continued enrollment. Tracey & Sedlacek (1984) concluded that for White students the NCQ significantly added to the prediction of grades, and for Black students it significantly predicted both grades and enrollment status.

Sedlacek and Adams-Gaston (1992) sought to compare SAT and non-cognitive variables as predictors of academic success for student athletes. One hundred and five incoming freshman athletes in a NCAA Division I athletics program completed the NCQ during freshman orientation. The racial composition of the sample was 80 percent White, 15 percent Black, and 4 percent Hispanic. The internal consistency for the NCQ ranged between .73 and .90 for the eight variables. Sedlacek and Adams-Gaston (1992) performed a step-wise multiple regression analysis on the variables in the NCQ and the SAT. Tracey and Sedlacek recommend this procedure when a less-established measure like the NCQ is used with a well-established measure such as the SAT. Sedlacek and Adams-Gaston's (1992) results indicated that a strong support person, community involvement, and positive self-concept were significant predictors of first-semester grades. SAT alone was a poor predictor of first-semester grades for student athletes. If one sees student athletes as a non-traditional population, this study suggested first-semester GPA cannot be accurately predicted by traditional cognitive means alone, i.e., SAT (1992).

A similar conclusion can be made for Asian American students. Fuertes and Sedlacek (1994) sought to predict the grades and retention rate of Asian American students using the NCQ. Random samples of Asian American freshmen at a large, predominantly White, northeastern university between 1979 and 1988 completed the NCQ at orientation at the beginning of each semester. In total, the study sample included 431 students, 58 percent male and 42 percent female. The NCQ scales and SAT-Verbal and Math scores were the independent variables, with college cumulative GPA as the dependent variable. Cumulative GPA and

retention status were checked at semesters one, three, five, and seven. A step-wise multiple regression analysis was used to predict GPA and multiple discriminant analysis was used to predict retention over seven semesters.

Fuertes and Sedlacek (1994) found the SAT-Math to be the best predictor of GPA for this population of students; however, self-concept, realistic self-appraisal and community service (renamed as community involvement in the current study) were also found to be significant predictors of GPA in students' first-, third-, and fifth-semester cumulative GPAs. Non-traditional knowledge (the variable that is currently known in the NCQ as knowledge acquired in a field) was found to be a significant predictor, but only for students' third- and fifth-semester cumulative GPAs. Regarding retention status, Sedlacek and Fuertes (1994) found that all of the variables were significant in the fifth semester; however, in the seventh semester, handling racism (later revised to successfully handling the system) was significantly related to retention, but the variables of leadership, self-concept, and the SAT-Verbal were not significantly related to retention.

Fuertes and Sedlacek (1994) concluded that both cognitive and non-cognitive variables were important predictors of first-, third-, and fifth-semester cumulative GPAs for Asian American students. The strength of this study was that the researchers gathered data over a 10-year period and used a rigorous statistical analysis. Overall, this study further supports the NCQ as a valuable predictor of student success and persistence for non-traditional students.

The following year Fuertes and Sedlacek (1995) conducted a similar study following the same procedure with a non-traditional population of Hispanic students. Results of this study suggested that the NCQ was an effective predictor of both the GPA and retention for Hispanic

students. Additionally, results indicated that the ability of the students to identify and deal with racism was predictive of grades for the first three semesters in college for Hispanic students.

Two years later, Ancis and Sedlacek (1997), conducted a longitudinal study in which they administered the NCQ to a random sample of 1,930 female students during their freshman orientation. The eight variables on the NCQ and SAT Math and Verbal were the independent variables for this study, while cumulative GPA was the dependent variable. Each student's GPA was checked at the end of the first, third, fifth, and seventh semesters. A stepwise multiple regressions analysis was performed. The NCQ variables were entered first, followed by the SAT Math and Verbal. Ancis and Sedlacek (1997) found community service (renamed as community involvement in the current study), realistic self-appraisal, and non-traditional knowledge to be significant predictors of cumulative GPA in all semesters reviewed. Additionally, leadership experience predicted cumulative GPA in the fifth semester only, and availability of a strong support person predicted cumulative GPA in the seventh semester only.

As in previous studies performed with the NCQ, both cognitive and non-cognitive predictors were found to be accurate predictors of academic success for non-traditional students. Moreover, for this population, both the SAT Verbal and Math scores went beyond predicting only first-year academic success but also predicted academic success for all semesters reviewed. The strengths of this study were the large sample size and that it followed the same group of students throughout their college career. However, it is necessary to note that for all the variables in all the semesters, the SAT Verbal and Math scores each accounted for more variance than each of the NCQ variables. Yet, it also showed that a combination of cognitive and non-cognitive variables together have predictive validity.

In a smaller study, Ting (2000) used the NCQ and the SAT to predict the first-year college GPA of Asian American freshmen attending a predominately White university. The sample consisted of 96 first-year Asian American students at a Southeastern public land grant research university. Ting (2000) examined factors that were related to academic performance and retention of this non-traditional group on the campus. Results of this study revealed that the SAT Math score along with three non-cognitive variables significantly predicted the first-year GPA of this group of students. The significant predictive non-cognitive variables for Asian American students were realistic self-appraisal, successful leadership experience, and demonstrated community service (renamed as community involvement in the current study) (Ting, 2000).

First-generation college students were another non-traditional group tested by Ting (2003) using the NCQ. Ting (2003) conducted a longitudinal study utilizing the NCQ in an attempt to predict the academic success and retention of first-generation college students at a large public research university in the Southeastern United States. During new student orientation, 215 first-generation students, 74% White and 26% students of color, completed the NCQ. The NCQ variables, SAT Math score, and the admissions index (a cognitive score calculated by the university) were the independent variables for the study, with first- and third-semester cumulative GPAs serving as the dependent variables. A step-wise multiple regression analysis was performed to predict both first- and third-semester cumulative GPAs for all first-generation students in the study. The same analysis was then performed for all first-generation White students, and then for all first-generation students of color.

Findings suggested that coping with racism (later revised to successfully handling the system) was a significant predictor for first-semester GPA for all subjects. For White students the significant predictors of first-semester GPA were leadership experience and admissions

index. For students of color, leadership experience, admissions index, and SAT Math were found as significant predictors. To predict third-semester GPA for both White and students of color, community service was a significant variable. Moreover, the admissions index was found as significant for White students, while the SAT Math was significant for students of color.

Ting (2003) also performed a discriminant analysis on retention for this population of students, and it was found that the overall NCQ score was a significant predictor of retention for students of color in their third, fifth, sixth, and eighth semesters. The SAT Math was not a significant predictor of retention for first-generation students of color. Additionally, the SAT Math nor the overall NCQ score were significant predictors of retention for first-generation White students.

Adebayo (2008) examined the predictability of cognitive and non-cognitive measures on the academic success of students who were admitted to a conditional admission program at a university. To be regularly admitted to this particular university, students had to have completed 16 units of college preparatory curriculum, have the required scores on a standardized test, and have a designated combined index score (based on high school percentile rank, class size, and the national percentile rank of the ACT score). The conditional admission program was designed for students who did not meet these criteria yet exhibited strong credentials in other areas such as high school GPA or standardized test score. In the 2006 academic year, 2,601 students were admitted to the participating university; of those, 147 were admitted through the Conditional Admissions program. The racial breakdown of the total freshmen class was 78 percent White, 11 percent African American, and the race of the other 11 percent was not identified. For the conditionally admitted group, 143 of the 147 students completed the NCQ in the fall of their freshman year. Adebayo (2008) attempted to determine if cognitive or non-

cognitive variables were better predictors of success for the conditionally admitted students. The cognitive variables include cumulative first-semester GPA, high school class rank, ACT index score, and high school GPA. The non-cognitive variables were the eight non-cognitive dimensions on the NCQ. Adebayo (2008) performed a stepwise multiple regressions analysis to reveal that high school GPA and two of the non-cognitive variables [Self-Appraisal and Understanding and Coping with Racism (later revised to successfully handling the system)], were found to be significant predictors of academic success. These two non-cognitive variables, along with high school GPA, accounted for 21 percent of the variance in the prediction of first-semester grades in college, whereas high school GPA alone accounted for 14 percent of the variance for this population.

Although this review of the literature using the NCQ to predict college success does not span all the studies performed in this research area, it is, a representation of its use on a diverse range of non-traditional student populations, including Black students (Tracey & Sedlacek, 1984), student athletes (Sedlacek & Adams-Gaston, 1992), Asian Americans (Fuentes & Sedlacek, 1994), first-generation college students (Ting, 2003), and conditionally admitted students (Adebayo. 2008). This was important as the various populations yielded different significant results for college GPA, retention, and/or graduation.

Development of the Non-cognitive Questionnaire

Sedlacek has conducted an extensive amount of research regarding non-cognitive variables and their impact on academic success for what he terms non-traditional students, individuals whose cultural background and experiences are quite different than those in the dominant group, (Ancis & Sedlacek, 1997; Fuentes & Sedlacek, 1994; Fuentes & Sedlacek, 1994, 1995, Sedlacek & Adams-Gaston, 1992; Sedlacek and Brooks, 1976; Tracey & Sedlacek, 1984).

In order to test the relationship between the non-cognitive variables he posed and college success for non-traditional students, Sedlacek created a 29-item survey instrument known as the Non-cognitive Questionnaire (NCQ). The NCQ's design consists of six demographic questions that are not part of the scoring of the instrument; eighteen Likert-type statements that are rated on a 1 to 5 scale (agree, strongly agree, neutral, disagree, strongly disagree); two multiple choice questions that pertain to educational expectations; and three open-ended items that relate to goals, accomplishments, and leadership positions held.

Tracey and Sedlacek (1984) conducted an introductory study to examine the construct validity and predictive validity of the seven non-cognitive variables (Sedlacek and Brooks, 1976) and academic success. These variables included positive-self-concept, realistic self-appraisal, understanding of and the ability to deal with racism (later revised to successfully handling the system), preference for long-term goals, availability of a strong support person, successful leadership experience, and demonstrated community service (later revised to community involvement). Tracey and Sedlacek (1984) administered the NCQ to 1,973 freshmen over two consecutive entering classes. There were 1,529 students (1,339 White and 190 Black) in the first cohort and 444 students (355 White and 89 Black) in the second cohort. SAT scores were available for all subjects in both cohorts. The researchers used factor analysis to determine the construct validity of the NCQ and results supported six variables (leadership experience, understanding of and the ability to deal with racism, realistic self-appraisal, preference for long-term goals, positive self-concept, and availability of a strong support person).

The predictive validity was examined using multiple regression analyses for first-semester, third semester, and enrollment status for White and for Black students (a total of eight multiple regressions). The results revealed that when the NCQ items were added to SAT scores

there was a significant increase in the prediction of first-semester GPA, third-semester GPA, and enrollment status for White and for Black students. Moreover, the NCQ was found to be more predictive of first-semester grades for White students than for Black students in both cohorts, as can be seen in Table 2.

Table 2: Summary of Multiple Regressions on Cumulative Grade Point Average

Criterion	Sample	N	NCQ Alone Equation	SAT Alone Equation	NCQ & SAT Equation
One	White 1979	1,339	0.39*	0.40*	0.51*
Semester	Black 1979	190	0.29*	0.33*	0.37
GPA	White 1980	355	0.48*	0.41*	0.59
	Black 1980	89	0.38*	0.40*	0.51*

This was an exploratory study from which a multitude of research has sprouted (Adebayo, 2008; Ancis & Sedlacek, 1997; Fuertes & Sedlacek, 1994, 1995; Sedlacek & Adams-Gaston, 1992; Ting, 2000, 2003). Since that time, the instrument has evolved and currently is comprised of eight non-cognitive variables, as opposed to the original seven that were initially identified by Sedlacek and Brooks (1976). The NCQ has been widely used and broadened to include the prediction of academic performance on a multitude of non-traditional college student populations. A more comprehensive description of the NCQ's design including validity and reliability statistics will be discussed in Chapter Three.

Altogether, the studies presented in this literature review provided strong support that non-cognitive variables, when combined with cognitive variables, are stronger predictors of college GPA, retention, and graduation for non-traditional students than for traditional students. Furthermore, they call into question the use of cognitive variables, especially standardized test score, as single predictors for college success for non-traditional students. These studies continue to support the notion that non-cognitive variables enhance the predictive power of traditional cognitive variables (high school GPA and standardized test), and provide an additional source of variance in the academic success of non-traditional students.

Still, what is missing from the existing research is a specific focus on students who graduate from low-performing high schools and enroll in four year colleges with a mediocre high school preparation. Non-cognitive variables have proven to be significant indicators of academic success for a variety of non-traditional populations. For that reason, it was sensible to investigate the impact of non-cognitive variables on students with poor high school preparation, which is the focus of this study.

Chapter 3

Methodology

The purpose of this chapter is to describe the methods and procedures utilized in the conduct of this study. The purpose of this study was to examine the impact of non-cognitive factors on the first-year college GPA for university-eligible students from low-performing high schools. It was guided by the following research questions:

1. What is the effect of non-cognitive variables (positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of strong support person, leadership experience, community involvement, and knowledge acquired in a field) on first-year GPA for college-eligible students from low-performing high schools?
2. What are the differences in the effect of non-cognitive variables on first-year GPA for college-eligible students from low-performing high schools due to race, gender, income, or parent's level of education?

The chapter details the methods and procedures used in the conduct of the study. This includes the research design, site and population, instrumentation, data analysis, and the delimitations and limitations of the study.

Research Design

The goal of this study was to investigate the effect of non-cognitive variables on first-year college GPA for students from low-performing high schools. Therefore, a correlational research design was used to determine if the independent variables of high school GPA, ACT or SAT score, and the eight dimensions of non-cognitive variables from the Non-Cognitive Questionnaire (NCQ) contributed to any variance in first-year college GPA, the dependent

variable. Because these variables could not be manipulated by the investigator, this study was considered non-experimental research (Lomax, 2001).

Site and Population

The site selected for the study was a large, public university in the southeast. The institution chosen is classified as a Research University (Very High Research Activity) according to the Carnegie Foundation for the Advancement of Teaching's list of all U.S. colleges and universities (Mayfield, 2006). The institution offers over 170 academic programs, and posted an undergraduate enrollment of just over 20,500 students for the academic year 2014-2015. In-state students make up roughly 87 percent of the undergraduate enrollment, and 27 percent of the students receive a Federal Pell Grant. The ethnic breakdown of the undergraduate enrollment is as follows: 80 percent White/Caucasian American, 8 percent Black/African American, 4 percent Asian/Asian American, 3 percent Hispanic/Latin American, 3 percent Multicultural, and less than 1 percent Native American & Alaskan/Pacific Islander. The remaining 2 percent of students did not report a race. Men comprise 49 percent of the undergraduate population, while women make up 51 percent of the undergraduate population. The average high school grade point average for the 2015 entering freshman class was 3.76, and the average ACT score was 27 (SAT equivalent was 1210-1240).

This site was selected because the state in which the university is located contains 196 low-performing high schools, and the university enrolls a relatively large number of graduates from these schools; a total of 4,448 for academic year 2014-2015. The average GPA among students who graduated from the low-performing high schools and enrolled as first-time freshmen for the 2015 entering class was 3.90, and the mean ACT score was 24 (SAT equivalent was 1090-1120). The gender breakdown for this group was 47% male and 53% female.

Participants in the study were drawn from the 196 low-performing high schools in the state based on a key performance indicator: the school has below average scores on the state's End of Course (EOC) exam for English III and/or Algebra II. The population for the study consisted of all students from these low-performing schools that enrolled at the institution as freshman at the time the study was initiated.

Variables

This study included three cognitive variables, eight non-cognitive variables, and four categorical variables. Two of the cognitive variables (high school GPA and standardized test scores) and all eight non-cognitive variables, drawn from the work of Sedlacek and Brooks (1976) and Tracey and Sedlacek (1984), served as independent variables for the study. First-year cumulative college GPA (end of fall and spring semester) represented the dependent variable for the study.

The three cognitive measures in this study included final high school grade point average, standardized test scores from the ACT or SAT, and end of first-year cumulative college grade point average (CCGPA) (the dependent variable). The eight non-cognitive variables (positive self-concept, realistic self-appraisal, understands and deals with discrimination (formerly, "racism"), preference for long-term goals, availability of strong support person, leadership experience, community involvement, and knowledge acquired in a field (Sedlacek & Brooks, 1976; Tracey & Sedlacek, 1984) served as the independent variables for this study. Race, gender, family income, and parent's level of education were the four categorical variables for this study.

Instrumentation

The study was grounded in the work of William Sedlacek (1976; 1984; 2004). Since the 1970s he expressed skepticism about the ability of standardized tests to accurately predict success for non-traditional college students. This belief was the catalyst for his extensive research about non-cognitive variables and their value for predicting college success. Sedlacek and Brooks (1976) and Tracey and Sedlacek (1984) identified eight non-cognitive variables. In order to test the predictive value of these variables, Sedlacek, designed an instrument known as the Non-Cognitive Questionnaire (NCQ), which has shown construct and congruent validity, as well as high test-retest reliability (Sedlacek & Ting, 1997; White & Sedlacek, 1986). Given its strength in predicting success, the NCQ has been used by researchers for more than thirty years to measure non-cognitive variables on a variety of college student populations (Sedlacek, 2004). Indeed, over the decades of research, the NCQ has become one of the most common instruments used to measure the relationship of non-cognitive variables with college success. For that reason the NCQ was selected as the instrument to be used in this study.

Reliability

The NCQ consists of 29-items combining both Likert-type and open ended questions designed to invoke answers to questions regarding the eight non-cognitive variables Sedlacek identified as relevant from the existing research (Sedlacek, 2004). Tracey and Sedlacek, (1984) used factor analysis to authenticate the reliability of the NCQ. The test-retest reliability of the NCQ was found to range from .70 to .94, with a median of .85 for the NCQ items with differing samples. The inter-rater reliability was found to range from .73 to 1.00 for the open-ended items (Tracey & Sedlacek, 1984). The coefficient alpha ranged from .54 to .73 on a modified version of the questionnaire (Lockett & Spear, 1980).

Validity

Gall, Borg, & Gall (1996) defined the validity of an instrument as the accuracy with which it actually measures what it is intended to measure. Tracey and Sedlacek (1984) tested both construct and predictive validity of the NCQ. Examination of construct validity used principle components factor analysis and separate factor analysis to determine if the NCQ items were measuring the proposed non-cognitive variables. The results of the factor analysis showed that items on the NCQ were congruent with the non-cognitive variables being measured (Tracey & Sedlacek, 1984).

Tracey and Sedlacek (1984) conducted a second analysis to establish the NCQ as a valid predictor of academic success for college students. The two measures of academic success for this study were college GPA and continued college enrollment. The cumulative college GPA of the participants was examined during the first and third semesters of study. Using Stepwise multiple regression, they determined the predictive validity of the NCQ. The NCQ was found to be a valid predictor of college GPA when used in conjunction with SAT scores (Tracey & Sedlacek, 1984). Moreover, the validity of the NCQ has also been confirmed in several other studies (Ting, 2001; Ting & Robinson, 1988; Tracey & Sedlacek, 1987).

In an effort to improve measurement of the NCQ, it was revised and extended as Alternate Form A and Alternate Form B. Tracey and Sedlacek (1989) tested both forms and established test-retest reliability, with estimates averaging in the .80s, and congruent validity median scores of $r = .79$. Thus, modified versions of the NCQ, like the one used in this study, maintain the reliability and validity of the original NCQ.

Altogether, the NCQ is an established and dependable instrument to test the effect of non-cognitive variables, particularly on non-traditional college students (Ancis & Sedlacek,

1997; Fuertes & Sedlacek, 1994; Nasim, Roberts, Harrell, & Young, 2005, Sedlacek, 1984; Sedlacek & Adams-Gaston, 1992; Ting, 2003), and for this reason it was used as the instrument for this study.

The original Non-Cognitive Questionnaire or NCQ (Tracey & Sedlacek, 1984) appears in Appendix A. Sedlacek gave permission for the researcher to use a modified version for this study (see Appendix B). For the purpose of this study, the original NCQ was modified to allow for the collection of necessary demographic and cognitive (HSGPA and ACT/SAT score) information about the participants, as well as rephrasing of some questions to be more inclusive of today's diverse student body. For consistency and clarity the modified version of the NCQ will henceforth be referred to in this study as NCQ*.

The original NCQ had 29 items, while the modified version of the instrument has 33 total questions (see Appendix C). The first ten questions of the NCQ* seek demographic and cognitive information such as high school information (high school name, GPA, and ACT/SAT score), cumulative college first-year GPA, gender, age, parent's level of education, family income, and race. Four of the original questions (social security number, father's occupation, mother's occupation, and how much education do you plan to get during your lifetime) were removed to protect the identity of the participants.

The remaining 23 items of the NCQ* consist of a combination of 2 nominal item, 3 open-ended items, and 18 Likert-type scale questions. Of these 18 items, two were slightly changed to reflect contemporary language and to be more inclusive for the population of students in the present study; some rewording was adopted from Scarfone's 2013 study. On the original NCQ, item 16 (NCQ*#20) read, "There is no use in doing things for people; you only find that you get it in the neck in the long run." This item has been updated to, "There is no use in doing things for

people; you only find that you get taken advantage of in the long run.” This item contributes to the Community Involvement scale, and the meaning of the changed item remained consistent with the meaning of the original statement (Scarfone, 2013). Item 22 (NCQ*#26) was also altered from the original language of, “I expect I will encounter racism at this school” to “I expect I will encounter discrimination at the college in which I enrolled.” This item contributes to the Ability to Successfully Handle the System scale, and the revised terminology remains true to the questions original intent (Scarfone, 2013). The word “discrimination” implies unequal treatment, as does “racism,” however the term racism is specific to race, and the purpose of this study did not intend to specifically address a population based on race. Sedlacek (2011) articulated that the term racism could imply several connotations in the context of the scale, Ability to Successfully Handle the System, and it relates to all types of “isms” (i.e., sexism, ageism, classism, etc.). Despite these minor changes, neither the reliability nor the validity have been effected on the modified NCQ* (Scarfone, 2013; Tracey & Sedlacek, 1989).

Scoring of the Non-cognitive Measures

Items on the Non-cognitive Questionnaire (NCQ) were designed to assess eight non-cognitive dimensions associated with student academic success. The eight variables include: positive self-concept, realistic self-appraisal, successful handling of the system (formerly, "racism"), preference for long-term goals over short-term or immediate needs, availability of a strong support person, successful leadership experience, and demonstrated community service (Sedlacek & Brooks, 1976; Tracey & Sedlacek, 1984). Each of the NCQ items was a question which asked participants about attitudes and perceptions prior to attending college. The NCQ questions pertained to educational expectations, present goals, educational aspirations, past accomplishments, and involvement in community and leadership activities. A chart showing how

each question on the NCQ correlates to each non-cognitive variable, and how each response was scored appears in Appendix D.

The final step to complete the scoring for each question on the NCQ* was to find the mean score for each non-cognitive dimension. As needed, one may round to the nearest whole number.

Procedures

The researcher began by obtaining Institutional Review Board (IRB) approval for the conduct of the study. IRB was sought from the researcher's affiliated institution. The IRB approval letter appears in Appendix E.

Recruitment

To obtain participants, the researcher identified the 196 Tennessee high schools that fell below the state average on either the Algebra II or English III End of Course exam (a standardized state test administered to all high school students). The list of high schools (not included in this study due to concern for anonymity) was submitted to the university's Office of the University Registrar and Office of Strategic Enrollment Reporting and Analysis (SERA), and they were asked to supply a list of university email addresses for students who enrolled from each school (agreement to supply the emails appears in Appendix F). After an initial email and two reminder emails were sent, the list of addresses was destroyed to protect the identity of participants.

A solicitation email containing a cover letter, an informed consent, and a link to the survey was sent to the population from the low-performing high schools identified (see Appendix G). A follow-up email, nearly identical to the initial email, was sent to all participants one week after the initial email (see Appendix H). The follow up email reminded participants

about the study and encouraged them to complete the survey. The entire population of students received the follow up e-mails, as there was no way to determine who had actually completed the survey and maintain anonymity.

Cover Letter and Informed Consent

The cover letter briefly introduced participants to the purpose of the study, provided an explanation of why they were contacted, and the nature of the data to be collected. In addition, it also provided contact information for the researcher, and explained the necessary disclosures outlined by the IRB in order for the participants to make an informed decision about participation before officially beginning the survey (see Appendix I).

The informed consent presented the study's purpose, procedures, confidentiality statement, potential risks and benefits, how the data would be handled, as well as the gift card drawing information. In addition, it reaffirmed that participation in the study was voluntary and questions were not meant to deceive participants, nor was there an attempt made to conceal the purpose of the study. Further, the informed consent explained that responses to the survey would remain confidential and that their answers would be aggregated for reporting purposes. In addition, it explained that feature which records IP addresses would be disabled to maintain confidentiality, and all data collected in this study would be secured on the researcher's personal computer and be deleted after completion of this dissertation. Finally, the informed consent clarified that no personal information which might identify participants would be retained from this survey (See Appendix I).

After reading through the informed consent, participants who choose to participate in the study clicked the link at the bottom of the informed consent, which directed them to the first page of the survey, and concluded with a Thank You page (Appendix J). As noted in the

informed consent, clicking the link to begin the survey would constitute their consent to participate.

The additional study information on the survey explained that the gift card incentive was not directly linked to the survey and would not be traced back to the participants' responses. The participants were only asked to enter their email in order to enter them in the drawing for the gift cards.

The link to the survey directed the participants to a third-party data collection company called Qualtrics. Survey responses were initially stored on Qualtrics' secure server, where all data were encrypted and made available only to the researcher. Once all of the survey responses had been collected, the data were imported to the researcher's external hard drive for analysis and deleted from the online server. The downloaded data were stored in a file on the researcher's lap top computer which was password protected. All data will be destroyed from the researcher's computer within three years after the successful defense of the dissertation.

Drawing Information, Entry Form, and Thank You Page.

At the conclusion of the survey, participants were given the option of entering a drawing for a gift card. A page with the details for the drawing was presented to them and appeared as Appendix J. It also provided an approximate time frame for when the drawing was held. After entering their email address they could exit the survey. Invited participants who elected not to participate in the survey were also able to enter the drawing without completing the survey (see Appendix K).

Data Collection and Analysis

Data was collected using the NCQ*. The NCQ was used to measure the relationship non-cognitive variables have on academic performance of students, and is typically administered at the beginning of a school year or prior to initial enrollment. The participants' responses are then compared to college grade point averages at a later date. However, that was not the case in this study. Participants were administered the NCQ after having been in college one or more semesters.

In the case of this study, the retrospective pre-test model (Drennan & Hyde, 2008; Howard & Daily, 1979; Pratt, McGuigan & Katzev, 2000) was employed. The retrospective pre-test model allowed participants to answer questions based on their pre-collegiate experiences. Participants were asked to respond to the questions or statements on the NCQ according to what their feelings or expectations of how things were going to be at the time they entered college. The retrospective pre-test model has been used in multiple pre-test/post-test studies (Drennan & Hyde, 2008; Howard & Daily, 1979; Pratt, McGuigan & Katzev, 2000). According to Scarfone (2013), the logic of self-reported, pre-test/post-test studies was based on the assumption that when participants respond to a pre-test, their understanding of the concept being measured did not change between the pre-test and the post-test. Yet, oftentimes following an intervention, the participants' understanding of the concept itself may have changed so that responses on a post-test are no longer based on the original understanding of the concept being measured or perhaps a response-shift bias may have occurred. To prevent response-shift bias, many studies have used retrospective pre-testing where both the pre-test and the post-test were given at the same time, after the intervention. The current study does not use a pre-test, post-test design; however, other studies support the use of retrospective pre-testing as a reliable indicator of individuals' post-

reports of earlier self-assessment (Drennan & Hyde, 2008; Howard & Daily, 1979; Pratt, McGuigan & Katzev, 2000).

Data Analysis

Once responses to the online survey have been received, the researcher exported responses from Qualtrics to an Excel spreadsheet for coding analysis. The researcher coded responses for questions 11-32 on the NCQ* according to the scoring key located in appendix D. After each response was assigned a numerical value according to the scoring key, the researcher calculated a sum score for each of the non-cognitive variables, thus producing 8 separate numerical scores for each participant.

Next, the data was imported into the Statistical Package for Social Sciences (SPSS) 24. Any data that was associated with a high school that does not meet the characteristics of a low-performing high school as defined by this study was removed before being uploaded into SPSS. The researcher first examine data integrity using descriptive statistics. The descriptive analysis was useful in understanding the measures of central tendency and variability of the sample, as well as provide a means of checking the data for potential errors or exclusions. After the data had been determined to be acceptable for further analyses, the coefficient alpha was computed to ensure an appropriate level of internal consistency within the instrument. An alpha level of $p < 0.05$ is considered statistically significant for all analyses in this study.

In order to analyze the data for this question, responses for questions #5 (gender), #7 (race), #8 (parent education), and #9 (household income) were coded according to the scoring key in table 3.

Table 3: Scoring Key for SPSS Entry for Variables of Gender, Race, Parent Education, and Household Income.

Gender	Race	Parents' Education	Household Income
1=Male	1=Am. Indian	1=Less HS	1= $\leq$ \$28,000
2=Female	2=Asian	1=HS/GED	2=\$29,000-\$42,000
3=Transgender M	3=Black	1=Trade/Voc	3=\$43,000-\$56,000
3=Transgender F	4=Hispanic	1=Associates	4=\$57,000-\$70,000
3=Other	5=White	2=Bachelors	5= $\geq$ \$71,000
4=No Response	6=Other	2=Advanced	6=Don't Know
	7=No Response	3=Don't Know	7=No Response
		4=No Response	

The final step was to answer research question #1, which asked, “What is the effect of non-cognitive variables on first-year GPA for college-eligible students from low-performing high schools?” Research question #2 asked, “What are the differences in the effect of non-cognitive variables on first-year GPA for college-eligible students from low-performing high schools due to race, gender, income, or parent’s level of education? Multiple linear regressions analysis was the statistical procedure used to determine the correlation between the criterion variable of cumulative first-year college GPA as the dependent variable, and the mean survey score for each of the eight non-cognitive predictor variables as the independent variables. More specifically, a simultaneous multiple regression analysis (block enter procedure) was performed to answer both research questions, since it allowed for assessing the correlation between multiple independent variables (non-cognitive factors) and a single dependent variable (first-year GPA) to predict student success.

Limitations of the Study

The study was limited to college students who graduated from low-performing high schools in one state and enrolled at a public research university in that state in the southeastern part of the US. Given the sample of just one institution, caution should be exercised in any attempt to generalize the results to populations of students from low-performing high schools in other states or to other post-secondary institutions in the same state. However, it was relevant to note that the demographic diversity and gender distribution of the population used in the study was similar to that of a number of public research universities that have mid-to-large enrollments of students from low-performing high schools.

Additionally, the diverse socioeconomic backgrounds of the students were not taken into account in the analysis, nor were the specific courses they completed in high school. Thus, the results are limited in their generalizability, even with respect to the population studied. Moreover, each subject had unique academic attributes and high school experiences, of which the study could not take account, and which may have contributed to the success or lack of success of students from low-performing high schools.

Finally, all academic information collected on the surveys was self-reported as opposed to officially produced by the institution. While this information was believed to have been reported accurately and honestly, complete confidence cannot be assured thus producing a limitation for the study.

Chapter 4

Results

The results of the research study are presented in this chapter. The purpose of this study was to examine the impact of non-cognitive factors on the first-year college GPA of university-eligible students from low-performing high schools. The following research questions guided the study:

1. What is the effect of non-cognitive variables (positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of strong support system, successful leadership experience, demonstrated community involvement, and knowledge acquired in a field) on first-year GPA for college-eligible students from low-performing high schools?
2. What are the differences in the effect of non-cognitive variables on first-year GPA for college-eligible students from low-performing high schools due to race, gender, income, or parent's level of education?

The chapter is organized into three sections. First, demographic information about the participants of the study is provided. Next, the ways in which the data were prepared for analysis are discussed. Finally, the results of the statistical analyses in relation to the two research questions are presented.

The Survey Participants

The institution's Office of Strategic Enrollment Reporting and Analysis provided the researcher with 3,484 (N) university email addresses of currently enrolled first-year students who graduated from one of the 196 designated low-performing high schools in the state on the list provided by the researcher. A survey was sent to all of these students. Six hundred and four

(n=604) successfully completed and submitted the survey. Thus, the final sample (n) entered into the regression model was of these 604 participants, constituting a 17.30% response rate. This response rate is higher than the average 10.00-15.00% for web surveys (Fryrear, 2015).

The following tables (1-4) provide demographic characteristics of the sample surveyed and constitute the nominal variables used to answer research question #2.

In terms of gender, there were almost twice the number of females as males in the sample, (see Table 4). In regards to racial background, the majority of the participants were White/Caucasian (65.56%), followed by Black/African American (14.61%). Other racial groups were modestly represented, as seen in Table 5.

Table 4: Gender Demographics

Options	%	Count
Male	33.33%	203
Female	65.84%	396
Transgender Male	0.00%	0
Transgender Female	0.00%	0
Other	0.49%	3
No Response	0.32%	2
Total	100%	604

Table 5: Racial Demographics

Options	%	Count
American Indian/Alaskan Native	0.49%	3
Asian/Asian American (Middle East and Pacific Islander)	6.23%	38
Black/African American	14.61%	89
Hispanic/Latin American	4.59%	28
White/Caucasian (not of Hispanic origin)	72.24%	435
Other	0.98%	6
No Response	0.82%	5
Total	100%	604

In terms of the highest educational level attained by their parents, the majority had a high school diploma, 34.8%, while 23.5% had bachelor's degrees, and 14.36 % had other advanced degrees, (see Table 6). Thus, there was almost an even split between first-generation college students and non-first-generation college students.

In terms of parental income, 39.89% earned between \$29,000 and 70,000 a year, 32.67% of the student's parents earned more than \$71,000 a year, and the remaining 16.25 % earned less than \$28,000 a year, as seen in Table 7.

Table 6: Highest Parent Education Level

Options	%	Parent 1 & Parent 2 Combined
Less than high school diploma	6.76%	81
High school diploma/GED	34.08%	408
Trade School/Vocational Training	8.10%	97
Earned Associates Degree	11.02%	132
Earned Bachelor's Degree	23.55%	282
Earned Advanced Degree (Masters, Doctoral, Professional)	14.36%	172
Don't Know	2.08%	25
No Response	0.00%	0
Total		1,197 (604 + 593)

Table 7: Household Income

Options	%	Count
Less than \$28,000 per year	16.10%	97
\$29,000-\$42,000 per year	18.37%	111
\$43,000-\$56,000 per year	12.10%	73
\$57,000-\$70,000 per year	9.60%	58
More than \$71,000 per year	32.80%	198
Don't Know	7.30%	44
No Response	3.81%	23
Total	100%	604

Data Preparation and Interpretation

Only 604 surveys (of 647 received) had complete information, therefore 43 surveys were excluded from the scoring process. The 604 completed surveys were scored according to the instrument's revised scoring key (see Appendix D). As indicated earlier, the original scoring key (see Appendix A) was adapted by the researcher, to align the questions with the revised Non-cognitive Questionnaire, indicated in this study as NCQ*. In total, each participant had 12 different numerical scores entered into the regression model.

Additional recoding was necessary for preparation entry into the Statistical Package for the Social Sciences (SPSS). The gender variable was recoded into male and female, and Transgender male, Transgender female, other, and no response were combined into one category. The reported numbers of the racial category were small for some groups, therefore Asian American, American Indian, Hispanic, and other were grouped together for recoding during the SPSS preparation process. In the same manner, parent's highest education level was also recoded into two groups, those with a bachelor's degree and those without a bachelor's degree. Moreover, because three of the variables (gender, race, and parent's highest education level) were nominal, dummy variables had to be created to be entered into the regression model. Variable recoding is presented in Appendix M.

Missing Data

The analyses in the study were limited by some missing data. Only one variable included missing data: first-year GPA (0.82% of the cases). The five cases missing the FY GPA were removed from the regression model because no dependent variable was present. The number of missing cases was few; therefore, the potential impact on the regression model was minimal, if any at all.

Descriptive Statistics

This study consisted of twelve independent variables. Four of the variables were demographic: gender, race, parent's level education, and household income. As previously noted, dummy variables were created for the four demographic variables. The binary variable *GenderDummy* represents the presence of being a female. The *MinorityDummy* variable characterizes the presence of having self-identified as non-White/Caucasian. The binary variable of *NoBachDummy* denotes the absence of a parent or guardian with a bachelor's degree. Finally, the variable *IncomeDummy* was created to indicate participants from lowest-income households, represented by those with incomes of less than \$28,000.

The remaining eight independent variables for this study were non-cognitive factors: positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of strong support system, successful leadership experience, demonstrated community involvement, and knowledge acquired in a field. First-year GPA was the dependent variable for this study.

As seen in Table 8, the dependent variable, first-year GPA, had a mean of 3.33, which was indicative of the academic quality of participants. The means of the dummy variables described the population of the study as predominantly female, (0.66), few students of color

(0.28), and half had parents without a bachelor's degree (0.50). A significant portion of the population (0.34) resided in low-income households.

Also presented in Table 8, four other independent variables (positive self-concept, realistic self-appraisal, understands and deals with discrimination, and long-range goals) had high mean scores, but in the context of the maximum range (each range is presented in Table 8) were nearly six to twelve points away from the highest score for each variable. The remaining independent variables (availability of a strong support system, successful leadership experience, demonstrated community involvement, and knowledge acquired in a field) had means that were three to five points within range of the maximum score for each variable. Essentially, understanding this information cautions readers not to assume high means are always positive, as some of them are only mid-level considering the broad range of scores for that variable.

Table 8: Descriptive Statistics of the Sample

Variable	Mean	Std. Deviation	Range	N
First-Year GPA	3.33	.66484	0-4.00	604
Gender Dummy	.66	.476	0-1	604
MinorityDummy	.28	.449	0-1	604
NoBachDummy	.50	.500	0-1	604
IncomeDummy	.34	.037	0-1	604
Positive Self-Concept	14.74	3.956	0-26	604
Realistic Self-Appraisal	9.36	3.002	0-19	604
Understands Deals w/ Discrimination	15.79	4.829	0-24	604
Long-Range Goals	8.44	2.398	0-14	604
Availability Strong Support System	12.29	3.753	0-15	604
Successful Leadership Experience	7.65	2.861	0-13	604
Demonstrated Community involvement	5.13	1.566	0-8	604
Knowledge Acquired in a Field	3.91	1.047	0-8	604

Assumptions

There are a number of assumptions one must consider when running a multiple linear regression analysis. In consonance, checking for multicollinearity was necessary (Chen, 2012). Multicollinearity may occur when two or more independent variables are highly correlated, possessing a strong linear relationship with each other. If multicollinearity is present, then it could impact the predictive results of variables on an independent level. The correlations chart in Appendix N indicates that all independent variables were significantly correlated with one another. There is no definitive, agreed-upon Pearson Correlation (Cohen, Cohen, West, & Aiken, 2013) value to determine multicollinearity, but 0.7-0.9 tends to be a common benchmark (Grande, 2015). For this study, there were a few variables whose Pearson Correlation scored above 0.7. The variables found to have a strong relationship were: positive self-concept and realistic self-appraisal, understands deals with discrimination and availability strong support system, availability of strong support system, and demonstrated community involvement. To further the multicollinearity test, the researcher re-entered the independent variables into a regression model, this time entering positive self-concept as the dependent variable and the others as independent variables. This analysis, (see Table 9), produced a report of Tolerance and Variance Inflation Factor (VIF) for each variable (Hutcheson & Sofroniou, 1999). Similar to the Pearson Correlation, there is no universal, agreed-upon cut-off value to determine multicollinearity using a VIF value. For the purpose of this study, greater than 0.1 was used as the Tolerance threshold, with the corresponding VIF value of 10. None of the collinear correlation values violated the thresholds, and therefore no multicollinearity issues were found to exist for this study. Thus, predictive values of individual independent variables can be considered as valid results.

Table 9: Coefficients of Tolerance and Variance Inflation Factor

Model	Collinearity Statistics	
	Tolerance	VIF
GenderDummy	.927	1.079
MinorityDummy	.845	1.184
NoBachDummy	.901	1.110
IncomeDummy	.991	1.009
Positive Self-Concept	.279	3.583
Realistic Self-Appraisal	.387	2.585
Understands Deals w/ Discrimination	.310	3.226
Long-Range Goals	.401	2.493
Availability Strong Support System	.293	3.417
Successful Leadership Experience	.503	1.989
Demonstrated Community involvement	.419	2.386
Knowledge Acquired in a Field	.816	1.225

Another assumption that must be checked in using a linear regression model is the normality of the data. Data are considered to be normal when the distribution of the mean scores reflects a bell curve. Moreover, if the data are normal then multiple samples of mean scores from the population should also produce similar bell curves. To check for this, the researcher conducted a number of tests in SPSS beginning with the Data View, then selecting Analyze, Descriptive Statistics, then Explore, and only entering the dependent variable in the statistical procedure. The output (Appendix Q) revealed that there was skewness (-2.011, SE=0.099) and kurtosis (6.109, SE=0.199); thus there maybe issues with a non-normal distribution.

Additionally, the SPSS Tests of Normality produced by the same statistical procedure included the Shapiro-Wilk test (Shapiro & Wilk, 1965; Razali & Wah, 2011) and a visual inspection of the histogram and normal Q-Q Plots. The Shapiro-Wilk results (SW=0.825, df=604, $p < 0.05$) were found to be of little concern, as values of SW lie between zero and one. Small values lead to the rejection of normality, whereas values of one indicate normality of data (Razali & Wah, 2011). Moreover, observation of the histogram (Appendix R) and Q-Q Plots (Appendix S) revealed some non-normal distribution.

Tests of Normality confirmed that some outliers existed in the distribution. Before employing remediation, tests to determine the degree of leverage and influence of the outliers needed to be considered. The scatter plot (see Appendix T) exposed a few cases whose standardized residual exceeded 3.0 or less than -3.3. To check statistically if any of the outlying cases had leverage, the Mahalanobis Distance was examined. The Mahalanobis Distance is the measure of distance between a data point and the rest of the distribution (Mahalanobis, 1936; McLachlan, 2004). The independent variables were reentered into a regression model, creating a new output variable in SPSS Data View. The new variable was entered into a Chi-Square distribution in SPSS, beginning with the Data View then selecting Transform and Compute Variable, using 0.001 as the threshold. Two cases returned as outliers. Next, outlier values were checked for their measure of influence using Cook's Distance (Aguinis, Gottfredson, & Joo, 2013; Mendenhall & Sincich, 1996). The values of the outliers were not larger than one (Cook's Distance = 0.002); therefore, they did not indicate any undue influence on the results.

Results

The current study was guided by two research questions. Linear multiple regression was the statistical method used to analyze the data for both questions. The statistical results related to

each research question are presented below. An alpha level of $p < 0.05$ was considered statistically significant for all analyses in this study.

One regression model with two block entries was analyzed using SPSS. Block entry one consisted of the four nominal dummy variables (GenderDummy, MinorityDummy, NoBachDummy, and IncomeDummy). Block entry two included the eight non-cognitive variables (positive self-concept, realistic self-appraisal, demonstrated community involvement understands and deals with discrimination, preference for long-term goals, availability of strong support system, successful leadership experience, demonstrated community involvement, and knowledge acquired in a field). Both overall block regression models were significant, $F(4,599) = 5.34$, $p < 0.05$, $R\text{-Square} = 0.034$ and $F(8,591) = 5.86$, $p < 0.05$, $R\text{-Square} = 0.106$. Taken as a set of independent non-cognitive variables, model one explains roughly 3.4% of the variance in predicting first-year GPA (FY GPA), and model two accounts for an additional 10.6% of the variance in FY GPA prediction. Moreover, the P-Value for F statistic (< 0.05) for both models confirms the significance of R-Squares in the regression models. This means as a set of variables, gender, race, parent's level of education, and household income are strong predictors of FY GPA. In the same manner, the collective non-cognitive variables (positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of strong support system, successful leadership experience, demonstrated community involvement, and knowledge acquired in a field) are strong predictors of FY GPA.

Research Question 1

Research question one asked, what is the effect of non-cognitive variables (positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of strong support system, successful leadership experience, demonstrated

community involvement, and knowledge acquired in a field) on first-year GPA for college-eligible students from low-performing high schools?

This question was answered by performing multiple linear regressions at the $p < 0.05$ significance level. The dependent variable was first-year GPA and the independent variables were composite scores for: positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of strong support system, successful leadership experience, demonstrated community involvement, and knowledge acquired in a field. As noted in the previous section, these variables as a set (block entry model #2) were significant predictors of FY GPA; $F(8,591) = 5.86$, $p < 0.05$, $R\text{-Square} = 0.106$.

As separate individual variables, the regression model (model #2) indicated a statistically significant relationship among five of the independent variables (positive self-concept, realistic self-appraisal, long-range goals, availability of strong support system, and demonstrated community involvement), (see Table 10). This result suggests that for each incremental change in the standard deviation of the independent variable, FY GPA will also increase or decrease by the standardized coefficient (*Beta-value*).

Table 10: Coefficients of Regression Model

Model 2	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.074	.133		23.045	.000
GenderDummy	.064	.056	.046	1.140	.255
MinorityDummy	-.077	.063	-.052	-1.230	.219
NoBachDummy	-.158	.054	-.119	-2.913	.004**
IncomeDummy	-.137	.078	-.076	-1.749	.081*
#1 Positive Self-Concept	-.053	.012	-.317	-4.312	.000***
#5 Realistic Self-Appraisal	.031	.014	.138	2.215	.027**
Understands Deals w/ Discrimination	.004	.010	.027	.391	.696
#2 Long-Range Goals	.063	.017	.226	3.677	.000***
#4 Availability Strong Support System	-.026	.013	-.147	-2.039	.042**
Successful Leadership Experience	.009	.013	.040	.730	.466
#3 Demonstrated Community involvement	.084	.026	.198	3.302	.001***
Knowledge Acquired in a Field	.006	.027	.009	.218	.827
<i>Variables ranked in order of significance #1-#5</i>			Notes: *** = p<0.01 ** = p<0.05 * = p<0.10		

Significant Variables

Positive self-concept produced the largest *Beta*-value, and was found to have a negative relationship with FY GPA. For every one point change in positive self-concept the FY GPA decreases by -0.317 points. For example, if a student lacks self-confidence, for whatever reason, then one might predict their FY GPA will decrease as well.

Contrarily, realistic self-appraisal was positively related with FY GPA. As the ability to assess one's own strengths and weaknesses increases, their FY GPA was expected to increase by 0.138 points.

Long-range goals had one of the larger effects on FY GPA compared to other independent variables. The model suggested that accurately setting strong, clear, obtainable goals predicts FY GPA to increase by roughly 0.226 points.

In contrast, First-Year College GPA is likely to decrease by 0.147 points if a student fails to establish a strong support system. This variable has a negative relationship with FY GPA.

Demonstrated community involvement yielded the largest explanation of variance for FY GPA. As one's demonstrated community involvement increases, so too will FY GPA by 0.96 points.

Though not found to be significant predictors of the variance in FY GPA, understands and deals with discrimination, successful leadership experience, and knowledge acquired in a field, as a group, contribute to the explanation of the variance, albeit in a lesser manner.

Research Question 2

Research question two asked, what are the differences in the effect of non-cognitive variables on first-year GPA for college-eligible students from low-performing high schools due to race, gender, income, or parent's level of education?

This question was answered by performing linear multiple regressions at the $p < 0.05$ significance level. The dependent variable was first-year GPA. The four demographic independent variables —race, gender, parent’s level of education, and household income—were nominal variables; therefore, dummy variables were created for SPSS entry into the model.

Table 10 shows that one of the independent demographic variables produced statistically significant results: the absence of a parent with a bachelor’s degree. The absence of a parent with a bachelor’s degree explained about 15.80% of the unique variance in FY GPA. If a participant’s parent(s) or guardian(s) did not have a degree, then the participant’s FY GPA decreased by 0.158 points. Conversely, one’s gender, race, and household income were not found to be significant in this particular model. However, as previously stated, when considered as a set, the independent variables contribute significantly towards the variance in predicting FY GPA.

Summary

This chapter presented the results of a block-entry multiple linear regressions design to answer two research questions regarding the prediction of first-year GPA (FY GPA). Results of the model to answer question one determined that when entered as a block of eight non-cognitive variables, they significantly added to the variance in prediction of a person’s FY GPA. Moreover, five of the eight NCVs (positive self-concept, realistic self-appraisal, long-range goals, availability of strong support system, demonstrated community involvement) produced a unique significant relationship with FY GPA.

Research question two was answered using a block-entry that included four demographic NCVs (gender, race, family income, and parent’s level of education). Results revealed that as a set of variables this group is statistically significant as it relates to FY GPA. Only one variable,

parent's level of education, contributes a unique explanation of variance in predicting one's FY GPA. Extended discussion of these results and their implication for future research and practice is considered in the final chapter.

Chapter 5

Discussion, Implications, and Recommendations

There are several factors that impact a college student's first-year GPA (FY GPA). Academic factors such as high school grade point average (HSGPA), courses completed, rigor of the high school curriculum, and college admission test scores (e.g., the ACT and SAT assessments) are among the most influential as it relates to the FY GPA (ACT, 1997; Adelman, 1999; Kern, Fagley, & Miller, 1998; Robbins, Davenport, Anderson, Kliewer, Ingram, & Smith, 2003; Tinto, 1997). Unfortunately, students who graduate from low-performing high schools, often populated by low-income, first-generation, and racial minority students, enter college at a disadvantage due to their mediocre high school preparation.

Despite the extensive evidence suggesting that low-income, first-generation, and students from low-performing high schools are not retained and do not graduate at the same rate as their counterparts, a little more than half of them do (Snyder & Dillow, 2012). That being the case, the question of why some students who meet the very same at-risk criteria are retained and graduate while others do not remains unanswered. Sedlacek (1987, 1989, 1996), suggested that the answer to this question may rest in non-cognitive variables (NCVs). Thus the purpose of this study was to examine the impact of non-cognitive factors on first-year college GPA for university-eligible students from low-performing high schools. Two questions guided this study:

1. What is the effect of non-cognitive variables (positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of a strong support person, leadership experience, community involvement, and knowledge acquired in a field) on first-year GPA for college-eligible students from low-performing high schools?

2. What are the differences in the effect of non-cognitive variables on first-year GPA for college-eligible students from low-performing high schools due to race, gender, income, or parent's level of education?

To answer these questions a revised non-cognitive questionnaire (NCQ*) was sent to 3,484 students who graduated from low-performing high schools in one state and attended the state land grant institution were identified by the researcher to realize the purpose of this study. Six hundred and four completed surveys were returned. Linear multiple regressions analysis was used to analyze the data.

The remainder of this chapter is organized into four sections. The next section summarizes the results of the study, followed by a discussion of the results in relation to the literature. Finally, implications of the results as well as recommendations for further research are presented.

Summary of Results

Research question one sought to determine the effect of non-cognitive variables (NCVs) (positive self-concept, realistic self-appraisal, understands and deals with discrimination, preference for long-term goals, availability of a strong support person, leadership experience, community involvement, and knowledge acquired in a field) on first-year GPA (FY GPA) for college-eligible students from low-performing high schools. The effect of NCVs on FY GPA are presented in two forms, as a set of variables and as individual variables. Collectively, the set of eight NCVs had a significant impact on FY GPA. Individually, five of the eight NCVs were found to be statistically significant. This means they are individually significantly related to FY GPA apart from the statistically significant collective set of variables. Positive self-concept and the availability of a strong support system had a significant, yet negative relationship with FY

GPA. Low NCQ* scores in either of these two variables were related to a decrease in student FY GPA. In contrast, a realistic self-appraisal, preference for long-range goals, and demonstrated community involvement had a significant positive relationship with FY GPA. Therefore, strong scores in these three variables were associated with increased student FY GPAs. The three remaining variables (understands and deals with discrimination, successful leadership experience, and knowledge acquired in a field) were not significantly related with FY GPA, although they did contribute to the collective ability of the non-cognitive variables to predict FY GPA.

Research question two sought to determine if there were differences in the effect of NCVs on first-year GPA for college-eligible students from low-performing high schools due to race, gender, income, or parent's level of education. Similar to question one's results, as a set of variables; race, gender, income, and parent's level of education were collectively found to be significantly related with FY GPA. However, of the four, only parent's level of education was significantly related to FY GPA. It was negatively related with FY GPA, meaning that the absence of a parent with at least a bachelor's degree resulted in a decrease in student FY GPA.

Discussion of Results

The results of the study are limited to the selected population at a single institution, however it is reasonable to conclude that NCVs, together and separately, are good predictors, some stronger than others, of academic success for students enrolling from low-performing high schools. The results, in relation to the population of the study, add to the knowledge base about students from low-performing schools. Much is written about how this population is at-risk, but very little scholarship exists regarding success predictors for such students.

This study looked exclusively at students graduating from low-performing high schools and found six individual variables to have a statistically significant relationship with FY GPA. Positive self-concept, availability of strong support system, and parent's level of education had a negative relationship with FY GPA. Realistic self-appraisal, preference for long-range goals, and demonstrated community involvement had a positive relationship with FY GPA. Previous studies also found these variables to be significantly related to college GPA, but for different populations of students and at different points in their college careers (Ancis & Sedlacek, 1997; Fuertes & Sedlacek, 1994; Sedlacek, 2003, 2004, 2005; Sedlacek & Adams-Gaston, 1992; Tracey & Sedlacek, 1984; Ting, 2000). Finding these particular variables to be significant was not a surprise as existing literature provided statistical support for their relationship with GPA. However, what was unknown was if these or any other variables were related to FY GPA for students graduating from low-performing high schools. Thus, results of the current study add to the existing scholarship regarding the college success for non-traditional students.

An interesting, yet logical discovery was that parent's level of education was a significant variable, and the absence of a parent with a bachelor's degree had a negative relationship with FY GPA. Several scholars confirm the disadvantages of being a first-generation college student and the negative impact this has on college success (Bui, 2002; Choy, 2001; Martinez & Klopott, 2003; Thayer, 2000). At the same time, it was fascinating, and unexpected, that neither gender, race, nor family income alone had a significant relationship with FY GPA, be it positive or negative. Considering the ample research linking gender, race, and family income to college success and lack of such success for racial minorities and low-income students, a significant relationship with FY GPA was expected (Balfanz & Legters, 2004; Coleman, Campbell, Hobson, McPartland, Murnane, 2007; Martinez & Klopott, 2005; Ottinger, 1991; Thayer, 2000).

It is noteworthy to acknowledge that the IncomeDummy variable, created to represent participants at the lowest income level, produced a p-value of 0.081. While this was not significant at the $p < 0.05$ level of significance used in this study, it would be considered significant at the $p < 0.10$ level which is also acceptable in some social science research studies. Moreover, 44 participants responded Don't Know and 23 participants did not respond. One may speculate that if a substantial portion of the 67 were less than \$28,000 then IncomeDummy may have been found to be significantly related to first-year GPA. Again, this is only speculative and could warrant additional study.

Despite failing to produce an individually significant relationship with FY GPA in this study, these three variables did provide value collectively, toward the impact on FY GPA. However, the finding warrants additional research to explore why or why not a significant relationship exists between these variables and FY GPA, particularly when previous research suggests there is a link.

Also surprising were the variables that were not found to be significant: successful leadership, understands and deals with discrimination, and knowledge acquired in a field. Successful leadership was found to be a significant variable in the Ancis and Sedlacek (1997) and Ting (2000) studies. One might speculate the difference in results in this study stems from differences in the populations studied. Ancis and Sedlacek (1997) studied female students during their first-year orientation, while Ting (2000) studied Asian American students attending a predominantly White institution. Interestingly, neither gender nor race was significant in the current study, which could be a reason why successful leadership was not significantly related to FY GPA. For students who graduated from low-performing high schools, it seems that service

rather than leadership is more impactful to the prediction of FY GPA. Further research could explore this phenomenon with a variety of populations to compare results with current literature.

Initially, there was an expectation that understands and deals with discrimination would be a significant variable. This expectation stems from the original study of Tracey and Sedlacek (1984), where it was a significant finding. One thought regarding the difference in results might be due to the make-up of the samples studied. Tracey and Sedlacek's (1984) results were only significant for the Black students in their sample, which was comprised of 13% Black and 19% other racial minorities (no specific breakdown provided, but noted most identified as Asian American). The current study had a total sample of 604 students. Eighty-nine (15%) identified as Black/African American, 38 (6%) identified as Asian American, 28 (5%) identified as Hispanic, and 3 (0.5%) identified as American Indian/Alaskan Native. Given the more racially diverse sample for the current study, there was an expectation that the understands and deals with discrimination variable would result in a significant relationship with FY GPA. However, further comparison between Tracey and Sedlacek's (1984) study and the current study suggests that perhaps it is the gap in time periods among the studies that led to differences in results. In the thirty years between studies, the national and institutional culture regarding discrimination may have changed. Future research might determine which finding proves applicable and /or whether the possibility that the change in culture is a supportable reason for the difference in results.

The variables "understands and deals with discrimination" and "knowledge acquired in the field" were found to be significant in Sedlacek and Fuertes' (1994) study, but were not in this study. However, they were only found significant in their study for students in their fifth through seventh semesters, and this study dealt solely with first-year students. The finding by Sedlacek

and Fuertes (1994) seems to make sense as one might expect upper-class students to have had more diverse experiences as they moved through college and thus have been more impacted by these variables than a first-year student. Perhaps these variables have a significant individual contribution to graduation or long-term GPA rather than FY GPA.

Gender, race, and family income were not individually significantly related to FY GPA in the current study. The non-significant relationship between gender and FY GPA was surprising, as the study sample proportionally favored females (66%), a possible limitation of the study, and females tend to outperform males in college (US Department of Education, 2017). Previous research does acknowledge significant differences related to gender and success; however success has often been measured by other standards than GPA, such as income gap post-graduation, achievement in a specific academic discipline, or career placement (Blau, Hill, Snell, Atwater, Halbert, Zuckerman, 2016; Oliver, 2017). The current study focused solely on the FY GPA and while the results were not statistically significant, the study did confirm a positive relationship between being female and FY GPA.

Data from the US Department of Education (2017) confirm that students who identify as members of a racial minority group do not graduate at the same rate as those who do not identify as racial minorities, with the exception of Asian American students. Results of this study mirror that performance gap, as identification as a racial minority was negatively related to FY GPA. In spite of race being a risk characteristic and contributing to the set of demographic non-cognitive variables, it is interesting that race alone was not a significant factor in predicting FY GPA. There are a few assumptions that may provide some explanation for this finding. First, as previously mentioned the sample included only 27% who identified as racial minorities. Perhaps a more diverse sample might produce different results. Thus, suggesting the need for future

research regarding race and non-cognitive variables. In addition, the current study was grounded in the notion that some students graduate from college despite multiple at-risk characteristics, race being one of those factors. For students graduating from low-performing high schools, simply identifying as a racial minority does not necessarily mean the student is at-risk of not succeeding in college.

Existing literature suggests a link between family income and college success (Azzam, 2008; Balfanz & Legters, 2004; Laura, 2011; Martinez & Klopott, 2005). One of the most surprising results of the current study was that family income was not significantly related to FY GPA. Over the years, a host of research has confirmed a link between socio-economic status and academic achievement in college (Coleman, Campbell, Hobson, McPartland, Mood, Weinfield & York, 1966; Murnane, 2007; Ottinger, 1991; Thayer, 2000). In fact, contrary to the existing literature's suggestion that socio-economic status is usually negatively related to achievement, results of this study revealed a positive relationship with FY GPA. One possible explanation could be the result of changes over time in federal and state aid. In recent years, President Barack Obama increased the amount of the Pell Grants, and there has been a trend among states and institutions to increase grants and scholarships for low-income students. Goldrick-Rab, Kelchen, Harris, and Benson (2016) suggested increasing the amount of grant aid increases the likelihood of bachelor's degree attainment. If the lowest two income ranges for this sample were combined, it would comprise the largest income categories in this study. The lowest two income ranges also fall into the general range for Pell Grant eligibility. Moreover, the institution in which the current study was conducted awards generous amounts of financial aid to students with family incomes that are typically Pell Grant-eligible. Therefore, it could be for this sample the students with the lowest incomes received more financial aid than other students, causing less

stress and dependence on family financial resources. Given this, these students were more likely to succeed than other students outside of this income eligible category. Other speculative causes of this phenomenon may exist, and thus further research might prove valuable in helping to explain this finding.

Implications for Practice

In his book *Beyond the Big Test: Noncognitive Assessment in Higher Education*, Sedlacek (2004) argued that higher education institutions needed to consider using non-cognitive assessments in their admissions review of applicants. Results of the current study reinforce Sedlacek's argument, in that collectively, all of the variables, and certain variables individually and together, significantly contribute to the prediction of FY GPA for non-traditional students, in this study, that means graduates from low-performing high schools.

As discussed in Chapter One, retention and graduation are major national issues for students enrolling from low-performing high schools. Colleges and universities that have challenges enrolling and/or graduating non-traditional students—particularly those from low-performing high schools, who tend to be first-generation, low-income, and racial minorities—should consider implementing a non-cognitive instrument that assesses students' scores related to these eight NCVs, especially the five significant variables. Adding this step to the admissions review could prove useful in selecting students who are more likely to succeed. Sedlacek (1987) has advocated for the use of NCVs in admissions for years. In fact a few colleges have already implemented their use (the University of Maryland, DePaul University, Oregon State University, etc.) but it is still not wide-scale.

Considering specific NCVs along with cognitive variables (HS GPA and standardized test scores) could greatly improve the prediction of FY GPA for these applicants. While the

notion of using a combination of assessment measures to select which students to admit, particularly from low-performing high schools, raises ethical questions, the results do suggest one could do this with the likely outcome of increasing retention.

Additionally, this study's results would be useful across several campus entities including advising centers, student affairs units, and student success units. Sedlacek (2005) suggested that teachers, advisors, or counselors who use the NCVs to assess students' adjustment, motivation, and perceptions could expect to obtain better student outcomes in terms of grades, retention, and satisfaction. By utilizing the five positive significant variables, faculty and staff who work with students from low-performing high schools could focus their efforts on nurturing the motivational aspects of self-concept and the confidence that coincides with student self-appraisal. Moreover, they could promote the intrinsic benefit of service and goal setting, which both have a positive influence on FY GPA. By doing this they would provide a strong support system for the student, which is also associated with FY GPA.

Recommendations for Future Research

The present study sought to determine if non-cognitive variables contribute to the prediction of the first-year GPA (FY GPA) for students from low-performing high schools. Results of the study helped to fill a gap in understanding the effects of non-cognitive variables (NCVs) on this specific population of students. It is one of few or perhaps even the first study to focus strictly on students from low-performing high schools. However, its uniqueness is also its limitation since it studied only one population of students.

As mentioned in the discussion section, additional research should be conducted to explore the demographic variables (gender, race, and family income) that were significant in past studies but were not found to be significant in the present study. Due to limitations of the current

study, it is conceivable that these three variable could in fact be significantly related to FY GPA for this population of students, but additional research is needed to contest or confirm that notion.

To enrich the potential for generalizability of the current study's results, additional research that replicates this study using other historically underrepresented, at-risk populations (for example; Hispanic, Native American, economically disadvantaged communities, etc.) would be a significant contribution to the literature. Future research might also consider drilling down on demographic characteristics or expanding on them to consider a few modern identities such as transgender, multi-racial, and/or citizenship status.

Furthermore, replicating this study at more sites and at various institutional types would also prove advantageous. Comparing the results at diverse institutional types using the same population would greatly contribute to the limited existing literature.

Finally, a qualitative study of the impact of non-cognitive variables on the success of students from low-performing high schools could greatly enhance the results related to the success of this population. A qualitative study using the eight NCVs as a guide and framework for a study could provide an in-depth understanding of how these variables affect academic success, at least with respect to FY GPA. To compare and contrast the themes of the qualitative study with the results of the current study would provide a more robust perspective on the impact of non-cognitive variables.

Also noted in the discussion section, some variables were not significant in the current study yet were significant in other studies, albeit in later years of college. A qualitative study might explore the impact of NCVs beyond the first year. Lastly, a qualitative study might

discover additional non-cognitive variables beyond the eight used in this study that have a relationship with college success measures.

Conclusion

Some students who graduate from low-performing high schools and enroll in universities defy the odds, which suggests they are more likely than other students to drop out prior to graduation. The question of why some of these students experience success in college while others do not has been answered by reference to some of the NCVs (positive self-concept, realistic self-appraisal, demonstrated community involvement, preference for long range goals, and the availability of a strong support system). The results of this study are directly applicable to the work of enrollment managers as well as student affairs practitioners, as they can develop assessments and create intervention programs and activities to foster the variables positively associated with FY GPA. Leveraging the significant variables when working with students from low-performing high schools could prove mutually beneficial for both students and institutions.

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Appendices

Appendix A

COUNSELING CENTER
UNIVERSITY OF MARYLAND
COLLEGE PARK, MARYLAND 20742

SUPPLEMENTARY ADMISSIONS QUESTIONNAIRE II*

The University of Maryland, College Park (UMCP), is trying to improve its admissions procedures by studying additional information about students. Results will be reported for groups only; no individuals will be identified. Please mark your responses on this sheet.

Please fill in the blank or circle the appropriate answers.

1. Your social security number
2. Your sex is:
 1. Male
 2. Female
3. Your age is: years
4. Your father's occupation:
5. Your mother's occupation:
6. Your race is:
 1. Black (African-American)
 2. White (not of Hispanic origin)
 3. Asian (Pacific Islander)
 4. Hispanic (Latin American)
 5. American Indian (Alaskan native)
 6. Other
7. How much education do you expect to get during your lifetime?
 1. College, but less than a bachelor's degree
 2. B.A. or equivalent
 3. 1 or 2 years of graduate or professional study (Master's degree)

4. Doctoral degree such as M.D., Ph.D., etc.
8. Please list three goals that you have for yourself right now:
 - 1.
 - 2.
 - 3.
9. About 50% of university students typically leave before receiving a degree.

If this should happen to you, what would be the most likely cause?

1. Absolutely certain that I will obtain a degree
2. To accept a good job
3. To enter military service
4. It would cost more than my family could afford
5. Marriage
6. Disinterest in study
7. Lack of academic ability
8. Insufficient reading or study skills
9. Other
10. Please list three things that you are proud of having done:
 - 1.
 - 2.
 - 3.

Please indicate the extent to which you agree or disagree with each of the following items.

Respond to the statements below with your feelings at present or with your expectations of how things will be. Write in your answer to the left of each item.

1	2	3	4	5
Strongly				Strongly
Agree	Agree	Neutral	Disagree	Disagree

11. The University should use its influence to improve social conditions in the State.
12. It should not be very hard to get a B (3.0) average at UMCP.

13. I get easily discouraged when I try to do something and it doesn't work.
14. I am sometimes looked up to by others.
15. If I run into problems concerning school, I have someone who would listen to me and help me.
16. There is no use in doing things for people, you only find that you get it in the neck in the long run.
17. In groups where I am comfortable, I am often looked to as leader.
18. I expect to have a harder time than most students at UMCP.
19. Once I start something, I finish it.
20. When I believe strongly in something, I act on it.
21. I am as skilled academically as the average applicant to UMCP.
22. I expect I will encounter racism at UMCP.
23. People can pretty easily change me even though I thought my mind was already made up on the subject.
24. My friends and relatives don't feel I should go to college.
25. My family has always wanted me to go to college.
26. If course tutoring is made available on campus at no cost, I would attend regularly.
27. I want a chance to prove myself academically.
28. My high school grades don't really reflect what I can do.
29. Please list offices held and/or groups belonged to in high school or in your community.

COUNSELING CENTER
UNIVERSITY OF MARYLAND
COLLEGE PARK, MARYLAND 20742

SCORING KEY FOR SUPPLEMENTARY ADMISSIONS QUESTIONNAIRE II

William E. Sedlacek

QUESTIONNAIRE

VARIABLE NAME (NUMBER)

ITEMS

Use to score for Self-Concept (I)

Option 1 = 1; 2 = 2; 3 = 3; 4 = 4; No response = 2

8

A. Options for Long Range Goals (IV)

Each goal is coded according to this scheme:

- 1 = a vague and/or immediate, short-term goal (e.g., "to meet people," "to get a good schedule," "to gain self-confidence")
- 2 = a specific goal with a stated future orientation which could be accomplished during undergraduate study (e.g., "to join a sorority so I can meet more people," "to get a good schedule so I can get good grades in the fall," "to run for a student government office")
- 3 = a specific goal with a stated future orientation which would occur after undergraduate study (e.g., "to get a good schedule so I can get the classes I need for graduate school;" "to become president of a Fortune 500 company")

B. Options for Knowledge Acquired in a Field(VIII)

Each goal is coded according to this scheme:

- 1 = not at all academically or school related; vague or unclear (e.g., "to get married," "to do better," "to become a better person")

- 2 = school related, but not necessarily or primarily educationally oriented (e.g., "to join a fraternity," "to become student body president")
- 3 = directly related to education (e.g., "to get a 3.5 GPA," "to get to know my teachers")

Find the mean for each dimension (e.g. Long Range Goals) and round to the nearest whole number.

QUESTIONNAIRE

VARIABLE NAME (NUMBER)

ITEMS

- 9 Use to score for Self-Concept(I)and Self-Appraisal(II)

Option 1 = 4; 2 through 9 = 2; No response = 2

- 10 Use to score for Self-Concept (I)

Each accomplishment is coded according to this scheme:

- 1 = at least 75% of applicants to your school could have accomplished it (e.g., "graduated from high school," "held a part-time summer job")
- 2 = at least 50% of applicants to your school could have accomplished it (e.g., played on an intramural sports team," "was a member of a school club")
- 3 = only top 25% of applicants to your school could have accomplished it (e.g., "won an academic award," "was captain of football team")

Find the mean code for this dimension and round to the nearest whole number.

For items 11 through 28, positive (+) items are scored as is. Negative (-) items are reversed, so that 1 = 5, 2 = 4, 3 = 3, 4 = 2, and 5 = 1. A shortcut is to subtract all negative item responses from 6.

QUESTIONNAIRE ITEMS	DIRECTION	VARIABLE NAME (NUMBER)
11	-	Use to score for Racism (III)
12	-	Use to score for Realistic Self-Appraisal (II)
13	+	Use to score for Long-Range Goals (IV)
14	-	Use to score for Leadership (VI)
15	-	Use to score for Availability of Strong Support (V)
16	+	Use to score for Community Service (VII)
17	-	Use to score for Leadership (VI)
18	+	Use to score for Racism (III)
19	-	Use to score for Long-Range Goals (IV)
20	-	Use to score for Positive Self-Concept (I)
21	-	Use to score for Realistic Self-Appraisal (II)
22	-	Use to score for Racism (III)
23	+	Use to score for Positive Self Concept (I)
24	+	Use to score for Availability of Strong Support(V)
25	-	Use to score for Availability of Strong Support (V)
26	-	Use to score for Racism (III)
27	-	Use to score for Racism (III)
28	-	Use to score for Positive Self Concept (I)
29		Use to score for Leadership (VI), Community Service (VII) and Knowledge Acquired in a Field (VIII). Each organization is given a code for A, B, and C below.

Find the mean for each dimension (e.g. Leadership) and round to the nearest whole number.

A. Leadership (VI)

- 1 = ambiguous group or no clear reference to activity performed (e.g., "helped in school")
- 2 = indicates membership but no formal or implied leadership role; it has to be clear that it's a functioning group and, unless the criteria are met for a score of "3" as described below, all groups should be coded as "2" even if you, as the rater, are not familiar with the group (e.g., "Fashionettes," "was part of a group that worked on community service projects through my church")
- 3 = leadership was required to fulfill role in group (e.g., officer or implied initiator, organizer, or founder) or entrance into the group was dependent upon prior leadership (e.g., "organized a tutoring group for underprivileged children in my community," "student council")

B. Community Service Relatedness (VII)

- 1 = no community service performed by group, or vague or unclear in relation to community service (e.g., "basketball team").
- 2 = some community service involved but it is not the primary purpose of the group (e.g., "Scouts")
- 3 = group's main purpose is community service (e.g., "Big Brothers/Big Sisters")

C. Knowledge Acquired in a Field (VIII) (same coding criteria as used for item 8B.)

SUPPLEMENTARY ADMISSIONS QUESTIONNAIRE II

Worksheet for Scoring

1. POSITIVE SELF-CONCEPT OR CONFIDENCE
$$\text{item7*} + \text{item9*} + \text{item10*} + (6 - \text{item20}) + \text{item23} + (6 - \text{item28})$$
2. REALISTIC SELF-APPRAISAL
$$\text{item9*} + (6 - \text{item12}) + (6 - \text{item21})$$
3. UNDERSTANDS and DEALS with RACISM
$$(6 - \text{item11}) + \text{item18} + (6 - \text{item22}) + (6 - \text{item26}) + (6 - \text{item27})$$
4. PREFERS LONG-RANGE GOALS to SHORT-TERM or IMMEDIATE NEEDS
$$\text{item8A*} + \text{item13} + (6 - \text{item19})$$
5. AVAILABILITY of a STRONG SUPPORT PERSON
$$(6 - \text{item15}) + \text{item24} + (6 - \text{item25})$$
6. SUCCESSFUL LEADERSHIP EXPERIENCE
$$(6 - \text{item14}) + (6 - \text{item17}) + \text{item29A*}$$
7. DEMONSTRATED COMMUNITY SERVICE
$$\text{item16} + \text{item29B*}$$
8. KNOWLEDGE ACQUIRED in a FIELD

item8B* + item29C*

* Recoded item. See scoring instructions for these items on pages 1-3 herein.

Revised 12/90

Appendix B

Eric- You have my permission to use the NCQ as revised- Please keep me informed of your results & good luck on your study. I am attaching a n article of possible interest & check my website below for possible additional references- The Big Test book noted below my name is also a possible reference of interest. I will have a new book on noncogs & their use by many schools & programs which will be out later this year- ref below

Sedlacek, W. E. Measuring Noncognitive Variables for Student Success and Retention: Improving Admissions and Student Affairs Services for Diverse Groups Including Women and Students of Color. (in press) Sterling VA. Stylus Publishing

William E. Sedlacek

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Great Cacapon, WV 25422-0539

Website <http://williamsedlacek.info>

Thought for today <http://www.williamsedlacek.info/SedCal/>

Latest book "Beyond the Big Test: Noncognitive Assessment in Higher Education"

<http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118660579.html>

From: Stokes, Eric M [estokes2@utk.edu]

Sent: Wednesday, July 13, 2016 4:35 PM

To: William E. Sedlacek

Subject: Permission to Use the NCQ

Greetings Dr. Sedlacek,

My name is Eric Stokes, and I am a doctoral student at The University of Tennessee. I work in the Office of Undergraduate Admissions and needless-to-say I am inspired by your work to explore criteria beyond the traditional factors to consider when making admissions decisions. Non-cognitive factors seem to be a well-studied area for success of non-traditional students. One group of students that has not been studied much, if any, are students from low-performing high schools. Therefore, the focus of my dissertation is to examine the impact of *Non-cognitive Factors on First-year GPA for University-eligible Students from Low Performing High Schools*.

I plan to use a modified version of your Non-cognitive Questionnaire (NCQ) as the instrument for my study. **Thus, the purpose of this email is a request your permission to use the NCQ,**

and your permission to modify it for use in my study? For your information I have attached a copy of the modified version of the NCQ that I plan to use, as well as an excerpt of the purpose of my study, the research questions, and instrumentation section. The modifications only affect the wording of some questions in order to be more inclusive to today's student demographic. Additionally, some demographic questions were removed and others added in order to collect data germane to my study.

Please review the attached survey and let me know if I have your permission to use this modified version or if you have any questions or objections to me using it.

Respectfully,

Eric Stokes

Appendix C

Non-Cognitive Questionnaire by William Sedlacek (1976)

Adaptation by Eric Stokes (2016)

Please fill in the blank or circle the appropriate answers.

1. What is the full name of the high school in which you graduated?
2. In what county is the high school located?
3. What was your highest cumulative GPA at the time of your high school graduation (either weighted or unweighted)?
4. What was your highest composite ACT score (exclude writing score) or SAT score (Critical Reasoning and Math only) at the time of your high school graduation?
5. How do you describe your gender identity:
 1. Male
 2. Female
 3. Transgender Male
 4. Transgender Female
 5. Other
6. Your age is:
 1. 17 or younger
 2. 18
 3. 19
 4. 20
 5. 21
 6. 22
 7. 23 or older
7. The race in which you identify is:
 - American Indian/Alaskan native
 - Asian/Asian American (Middle East and Pacific Islander)
 - Black/African American
 - Hispanic/Latin American
 - White/Caucasian (not of Hispanic origin)
 - Other
8. Please indicate the highest level of education attained by those who raised you (you may respond regarding up to two people):

1. Parent/Guardian 1
 - Less than high school diploma
 - High school diploma/GED
 - Trade School/Vocational Training
 - Earned Associates Degree
 - Earned Bachelor's Degree
 - Earned Advanced Degree (Masters, Doctoral, Professional)
 - Don't Know
2. Parent/Guardian 2
 - Less than high school diploma
 - High school diploma/GED
 - Trade School/Vocational Training
 - Earned Associates Degree
 - Earned Bachelor's Degree
 - Earned Advanced Degree (Masters, Doctoral, Professional)
 - Don't Know
9. Please indicate the dollar range that best reflects your total household income at the time in which you graduated from high school?
 - Less than \$28,000 per year
 - \$29,000-\$42,000 per year
 - \$43,000-\$56,000 per year
 - \$57,000-\$70,000 per year
 - More than \$71,000 per year
 - Don't Know
10. What was your cumulative college GPA at the end of your first year (consecutive summer, fall, and spring semesters from initial enrollment)?
11. How much education do you expect to get during your lifetime?
 1. College, but less than a bachelor's degree
 2. B.A. or equivalent
 3. 1 or 2 years of graduate or professional study (Master's degree)
 4. Doctoral degree such as M.D., Ph.D., etc.
12. Please list three goals that you had for yourself (at the time of your pre or initial college enrollment):
 - 1.
 - 2.
 - 3.
13. About 50% of university students typically leave before receiving a degree. If this should happen to you, what would be the most likely cause?
 1. Absolutely certain that I will obtain a degree

2. To accept a good job
3. To enter military service
4. It would cost more than my family could afford
5. Marriage
6. Disinterest in study
7. Lack of academic ability
8. Insufficient reading or study skills
9. Other

14. Please list three things that you are proud of having done (at the time of your pre or initial college enrollment):

- 1.
- 2.
- 3.

Respond to the statements below with your feelings and/or expectations at the time of your pre or initial college enrollment.

Please indicate the extent to which you agree or disagree with each of the following items.

1	2	3	4	5
Strongly				Strongly
Agree	Agree	Neutral	Disagree	Disagree

15. The University should use its influence to improve social conditions in the State.

16. It should not be very hard to get a B (3.0) average in college.

17. I get easily discouraged when I try to do something and it doesn't work.

18. I am sometimes looked up to by others.

19. If I run into problems concerning school, I have someone who would listen to me and help me.

20. There is no use in doing things for people; you only find that you get taken advantage of in the long run.

21. In groups where I am comfortable, I am often looked to as leader.

22. I expect to have a harder time than most students at the college I attend.

23. Once I start something, I finish it.

24. When I believe strongly in something, I act on it.
25. I am as skilled academically as the average applicant to the college in which I enrolled.
26. I expect I will encounter discrimination at the college in which I enrolled.
27. People can pretty easily change me even though I thought my mind was already made up on the subject.
28. My friends and relatives don't feel I should go to college.
29. My family has always wanted me to go to college.
30. If course tutoring is made available on campus at no cost, I would attend regularly.
31. I want a chance to prove myself academically.
32. My high school grades don't really reflect what I can do.
33. Please list offices held and/or groups belonged to in high school or in your community.

Appendix D

Scoring Key

NCQ questions and which non-cognitive variable(s) were tested and scored by each one.

*(Note: questions 1-6 [NCQ*1-10] were demographic in nature)*

NCQ* refers to the modified version of the original NCQ used for this study.

NCQ (*) Question #	Non-cognitive Variable Tested by the Question	Scoring Key for each NCQ Question
Question #7 NCQ*#11	Use to score for Self-Concept (I)	Option 1=1point Option 2=2points Option 3=3points Option 4=4points No Response=2points
Question #8 NCQ*#12	Part A 3 Options for Long Range Goals (IV)	Coding scheme for each goal 1point=vague and/or immediate goal 2points=specific goal with future orientation 3points=specific goal with future orientation
	Part B 3 Options for Knowledge Acquired in a Field (VIII)	and occurs after undergraduate

		1point=not academically related 2points=school related but not primary educational goal 3points=directly related to education
Question #9 NCQ*#13	Self-Concept (I) and Self-Appraisal (II)	Option 1=4points Option 2-9=2points No Response=2points
Question #10 NCQ*#14	Self-Concept (I)	Coding scheme for each goal 1point=at least 75% of applicants could accomplish 2points=at least 50% of applicants could accomplish 3points=only top 25% of applicants could accomplish

Questions		For Items 11-28
#11-28		response range:
NCQ*		1=Strongly Agree, 2=
#15-32		Agree, 3=Neutral,
		4=Disagree,
		5=Strongly Disagree
		Coding of response
		varies based on
		positive or negative
		item:
		[+] items: 1=1point,
		2=2points, 3=3points,
		4=4points, 5=5points
		[-] items: 1=5point,
		2=4points, 3=3points,
		4=2points, 5=1point
Question	Racism (III) [-]	1=5, 2=4, 3=3, 4=2,
#11		5=1
NCQ*#15		
Question	Realistic Self-Appraisal (II) [-]	1=5, 2=4, 3=3, 4=2,
#12		5=1
NCQ*#16		

Question #13 NCQ*#17	Long-range goals (IV) [+]	1=1, 2=2, 3=3, 4=4, 5=5
Question #14 NCQ*#18	Leadership (VI) [-]	1=5, 2=4, 3=3, 4=2, 5=1
Question #15 NCQ*#19	Availability of Strong Support(V) [-]	1=5, 2=4, 3=3, 4=2, 5=1
Question #16 NCQ*#20	Community Service (VII) [+]	1=1, 2=2, 3=3, 4=4, 5=5
Question #17 NCQ*#21	Leadership (VI) [-]	1=5, 2=4, 3=3, 4=2, 5=1
Question #18 NCQ*#22	Racism (III) [+]	1=1, 2=2, 3=3, 4=4, 5=5
Question #19 NCQ*#23	Long-range goals (IV) [-]	1=5, 2=4, 3=3, 4=2, 5=1
Question #20	Positive self-concept (I) [-]	1=5, 2=4, 3=3, 4=2, 5=1

NCQ*#24		
Question #21 NCQ*#25	Realistic Self-Appraisal (II) [-]	1=5, 2=4, 3=3, 4=2, 5=1
Question #22 NCQ*#26	Racism (III) [-]	1=5, 2=4, 3=3, 4=2, 5=1
Question #23 NCQ*#27	Positive Self Concept (I) [+]	1=1, 2=2, 3=3, 4=4, 5=5
Question #24 NCQ*#28	Availability of Strong Support (V) [+]	1=1, 2=2, 3=3, 4=4, 5=5
Question #25 NCQ*#29	Availability of Strong Support (V) [-]	1=5, 2=4, 3=3, 4=2, 5=1
Question #26 NCQ*#30	Racism (III) [-]	1=5, 2=4, 3=3, 4=2, 5=1
Question #27 NCQ*#31	Racism (III) [-]	1=5, 2=4, 3=3, 4=2, 5=1

Question	Positive Self Concept (I) [-]	1=5, 2=4, 3=3, 4=2,
#28		5=1
NCQ*#32		
Question	Leadership (VI) [A]	[A]
#29		1=no clear reference to
NCQ*#33		activity
		2=membership but no
	Community Service (VII) [B]	leadership role
		3=leadership required
		to fulfill role
		[B]
	Knowledge Acquired in a Field (VIII) [C]	1=no community
		service performed
		2=some community
		service performed
		3=group's main
		purpose is service
		[C]
		1=no community
		service performed
		2=some community
		service performed

3=group's main
purpose is service

Appendix E

IRB Approval Form Will Go Here – need to add the actual copy of the PDF letter.

December 14, 2016

Eric M Stokes, UTK - Undergrad Academic Services

Re: UTK IRB-16-03389-XM Study Title: The Impact of Non-cognitive Factors on First-Year College GPA for University-eligible Students from Low-performing High Schools

Dear Eric Stokes:

The Administrative Section of the UTK Institutional Review Board (IRB) reviewed your application for the above referenced project. The IRB determined that your application is eligible for exempt review under 45 CFR 46. However, approval of your exempt application is dependent on a satisfactory response to the following administrative stipulations. It is essential that the IRB receive written acceptance of and/or response to these stipulations before final approval for this project can be issued.

You must respond to the following stipulations using the PI Response to Review form found in your “Incomplete Tasks” and labeled as a “Submission Correction” located in the iMedRIS system online. NOTE: DO NOT complete a new Form 1, Form 2, Form 3, etc. to answer any stipulations. Please use the PI Response to Review form to create any necessary revisions to study documents. Call the IRB at 974-7697 with any questions.

Submission stipulations 1. Please submit a more official document from SERA supporting your project; the Word document you have submitted cannot be verified as having come from either Monique Anderson or Caroline Mann.

2. Please clarify whether or not you have already conducted this research activity and if not, please revise (925) Study/Project Synopsis which is in the past tense.

3. Please clarify why you are asking in your “decline participation” email for the individuals' email addresses so that they can be removed from your master list. This task should be handled automatically by Qualtrics so that you are not aware who has participated in your study and who has not. (It should also be possible for individuals to be routed directly to the page allowing them to enter into the drawing from the first screen/consent statement, without these intermediate emails from you which could increase the risk of identification of participants.)

Upon receipt of your written acceptance of and/or response to these stipulations, a letter of full approval will be issued. In the event the IRB does not receive a response to this letter within 60 days, your application will be considered inactive and reactivation may require resubmission of the original application for review.

Sincerely,

Colleen P. Gilrane, Ph.D. Chair

Appendix F

January 3, 2017

Eric Stokes, Assistant Director of Admissions
320 Student Services Building
Campus

Dear Eric:

As you requested, I am writing to approve your request for student directory information related to your dissertation. It is my understanding that your dissertation focus is "to examine the impact of non-cognitive factors on first-year GPA for university eligible students from low-performing high schools. " You provided Caroline Mann a spreadsheet of high schools that you identified based on a set of criteria (below average End of Course (EOC) scores on the TN English 3 and Algebra 2 exams). It is my understanding that you will be sending a mailing to the students identified from these schools and asking them to participate in your study.

If you have additional questions, please contact Caroline Mann or me.

Sincerely,

A handwritten signature in blue ink that reads "Monique W. Anderson". The signature is fluid and cursive, with a long horizontal line extending from the end.

Monique W. Anderson, Associate Dean and University Registrar
Enrollment Management

Appendix G

Email Exchange from Monique Anderson and Caroline Mann

Eric. At this point Caroline will be giving you what you need. Good luck with your project
Monique

Sent from my iPhone

On Jul 20, 2016, at 4:04 PM, Stokes, Eric M <estokes2@utk.edu> wrote:

Monique and Caroline,

Last summer I met with you all and team to discuss access to data for my dissertation and assistance in disseminating my survey. You all were very helpful and so nice to agree to the request. As a reminder my dissertation focus is to examine the impact of non-cognitive factors on first-year GPA for university-eligible students from low-performing high schools.

Caroline, I previously sent you a spreadsheet (2nd attachment) that included the 196 TN low-performing high schools that I identified based on a set of criteria (below average End of Course (EOC) scores on the TN English 3 and Algebra 2 exams). Your team replied (*thank you*) with a report (1st attachment) that included the number of students enrolled at UT who graduated from one of these schools. I needed this information to determine a viable population for my study.

Monique, I asked you if your office would be able to email my survey to the population of students once I had secured IRB approval. You recommended that I could send it myself and your office would provide me the university emails of the students.

I am now at the point to submit my proposal for IRB approval. In order to do this I want to include in my appendices a confirmation from both the Office of the Registrar and the Office of Strategic Enrollment Reporting and Analysis that you can provide me with the university emails of enrolled students from the list of high schools and that I can send the survey myself. If you are ok with this request, then please reply to affirm your office's support. If so, then I will contact you again and resend the list pending IRB approval.

Thank you,

estokes

Eric M. Stokes

Appendix H

Dear Respondent,

You are invited to participate in a research project to study the effects of non-cognitive variables on first-year GPA for university-eligible students from low-performing high schools. This study is being conducted by Eric Stokes with guidance by Norma Mertz (faculty advisor), from the Department of Educational Administration and Policy Studies at the University of Tennessee. This study is being conducted as part of a dissertation.

You are being asked to participate because you are a graduate of a high school that has been deemed low-performing and I am seeking to understand why some students from such schools persist in college, while others do not. The procedure involves completing a survey that will take approximately 10-20 minutes. The survey will first collect non-identifiable demographic information, followed by questions that relate to your academic behaviors. You must be at least 18 years old to participate.

I will do my best to keep your information confidential. To help protect your confidentiality, the survey will not require information that will personally identify you, and I will not ask for your name. All invited participants have the opportunity to enter a drawing in which they must enter their preferred email address in order to be notified of the results. All other information collected in this study will be kept completely confidential to the extent permitted by law.

Participation in this study is voluntary. There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. This survey is anonymous. No IP addresses will be collected, however absolute anonymity cannot be guaranteed. No one will be able to identify you, and no one will know whether you participated in this study. Nothing you say on the questionnaire will in any way influence your present or future enrollment at the university.

If you have any questions or concerns about completing the questionnaire or about being in this study, you may contact me at (865) 974-1159 or at estokes2@utk.edu.

The University of Tennessee Institutional Review Board has reviewed my request to conduct this project. If you have any concerns about your rights in this study, please contact the University of Tennessee-Office of Research and Engagement at 865-974-7697 or email utkirb@utk.edu.

Appendix I

Dear Respondent,

You are invited to participate in a research project to study the effects of non-cognitive variables on first-year GPA for university-eligible students from low-performing high schools. This study is being conducted by Eric Stokes with guidance by Norma Mertz (faculty advisor), from the Department of Educational Administration and Policy Studies at the University of Tennessee. This study is being conducted as part of a dissertation.

You are being asked to participate because you are a graduate of a high school that has been deemed low-performing and I am seeking to understand why some students from such schools persist in college, while others do not. The procedure involves completing a survey that will take approximately 10-20 minutes. The survey will first collect non-identifiable demographic information, followed by questions that relate to your academic behaviors. You must be at least 18 years old to participate.

I will do my best to keep your information confidential. To help protect your confidentiality, the survey will not require information that will personally identify you, and I will not ask for your name. All findings will be aggregated for reporting purposes. All invited participants will have the opportunity to enter a drawing in which they must enter their preferred email address in order to be notified of the results. All other information collected in this study will be kept to the extent permitted by law.

Participation in this study is voluntary. There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. This survey is anonymous. No IP addresses will be collected, however absolute anonymity cannot be guaranteed over the Internet. No one will be able to identify you, and no one will know whether you participated in this study. Nothing you say on the questionnaire will in any way influence your present or future enrollment at the university.

If you have any questions or concerns about completing the questionnaire or about being in this study, you may contact me at (865) 974-1159 or at estokes2@utk.edu.

The University of Tennessee Institutional Review Board has reviewed my request to conduct this project. If you have any concerns about your rights in this study, please contact the University of Tennessee-Office of Research and Engagement at 865-974-7697 or email utkirb@utk.edu.

Appendix J

Consent Cover Statement

Title of Study

The Impact of Non-cognitive Factors on First-Year College GPA for University-eligible Students from Low-performing High Schools

INTRODUCTION

You are invited to participate in a research project to study the impact of an individual's skills and characteristics on their first-year GPA. This study is being conducted by Eric Stokes with guidance by Norma Mertz (faculty sponsor), from the Department of Educational Leadership and Policy Studies at the University of Tennessee. This study is being conducted as part of a dissertation.

INFORMATION ABOUT PARTICIPANTS' INVOLVEMENT IN THE STUDY

The objective of this study is to examine the college performance of students who graduate from low-performing high schools. You are being asked to participate because you are a graduate of a high school that has been deemed low-performing based on criteria (scores on a standardized state exam) outlined for this study. The procedure involves completing a survey that will take approximately 20-30 minutes. The survey will first collect demographic information, follow by questions that relate to your academic behaviors (i.e. self-appraisal, goal setting, leadership experience, etc.). Through your participation I hope to understand why some students persist in college while others do not. You must be at least 18 years old to participate.

RISKS

There are no known risks beyond those encountered in everyday life if you decide to participate in this research study. I will do my best to keep your information anonymous. To help protect your anonymity, the survey will not require information that will personally identify you, and I will not ask for your name. All invited participants have the opportunity to enter a drawing in which they must enter their preferred email address in order to be notified of the results. Using Qualtrics protections this information will be saved in a different file than your survey responses, so I will not be able to link your name to your data.

There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. Nothing you say on the questionnaire will in any way influence your present or future enrollment at the university.

BENEFITS

There are no benefits that will directly accrue to the participants of this study. However, through your participation I hope to better understand why some students persist in college while others do not.

CONFIDENTIALITY

This survey is anonymous. No one will know whether you participated in this study. No IP addresses will be collected, however absolute anonymity cannot be guaranteed over the Internet.

COMPENSATION

All invited participants, survey completers and non-completers, are given the option of entering a drawing for a gift card. A page with the details for the drawing is presented within the survey link. It also provides an approximate time frame for when the drawing will be held. After entering your email address and click submit, you will be directed to a Thank You page, after which you may exit the survey.

CONTACT INFORMATION

If you have questions about the study you may contact Eric Stokes (principle investigator) at 865-974-1159 or estokes2@utk.edu. You may also contact Norma Mertz (faculty advisors) at nmertz@utk.edu. If you have questions about your rights as a participant, you may contact the University of Tennessee IRB Compliance Officer at utkirb@utk.edu or (865) 974-7697.

PARTICIPATION

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will not be included in the survey results.

CONSENT

I have read the above information. I have received (or had the opportunity to print) a copy of this form.

Clicking on the link to continue and completing the survey (questionnaire) constitutes my consent to participate.

Click this link to begin the survey: [NonCognitive_Questionnaire](#)

Click this link to bi-pass the survey and only participate in the drawing): [Decline NCQ Participation](#)

Appendix K

Thank you for taking the time to complete this questionnaire. As a good-faith display of my gratitude I invite you to submit your email address in order to enter a drawing for a chance to win a \$10 gift card. A total of 10 gift cards will be distributed.

All emails entered will be numbered in the order in which they are received. The selection of winning email addresses will be randomly chosen using a random number generator from www.randomnumbergenerator.com. The selection of numbers will take place within three business days of the survey closing.

You will only receive a notice if your email has been selected. The notice will inform you of your selection as a winner, and provide a university office location where you may pick up your gift card.

Please enter your email to be entered into the drawing for a chance to win a \$10 Regal Cinemas gift card. _____

Once again, thank you for taking the time to complete this questionnaire. Your responses will be useful in the advancement of research with college student success.

You may now exit the survey.

Appendix L

Thank you for taking the time to read this email.

Do you wish to be entered into the drawing for a chance to win a \$10 Regal Cinemas gift card? Yes___ No ___

If yes, then please enter your email address _____

(if yes, then you will only receive a notice if your email has been selected. The notice will inform you of your selection as a winner, and provide a university office location where you may pick up your gift card)

A total of 10 gift cards will be distributed. All emails entered will be numbered in the order in which they are received. The selection of winning email addresses will be randomly chosen using a random number generator from www.randomnumbergenerator.com. The selection of numbers will take place within three business days of the survey closing.

If you continue to receive unwanted communication after having entered your email then you may contact the University of Tennessee IRB Compliance Office at utkirb@utk.edu or (865) 974-7697.

I wish you all the best with the remainder of your college career.

You may now exit this survey.

Appendix M

Recoding of Variables

Variable Name	Measure	Value	Missing
HSGPA	Scale	None	None
ACT	Scale	None	-9
Gender	Nominal	{1, Male; 2, Female; 3, Transgender/Other; 4, No Response}	None
GenderDummy	Nominal	{0, Other; 1, Female}	None
Race	Nominal	{1, White; 2, Black; 3, Am.Indian,Asian,Hispanic,Other; 4, No Response}	None
MinorityDummy	Nominal	{0, White; 1, Minority}	None
P_Educ	Nominal	{1, LessHS,HS/GED,Trade/Voc,Associates; 2, Bachelors,Advanced; 3, Don't Know, No Response}	None
NoBachDummy	Nominal	{0, Other; 1, No Bachelor}	None
Income	Ordinal	{1, LessThan\$28,000; 2, \$29,000-\$42,000; 3, \$43,000-\$56,000; 4, \$57,000-\$70,000; 6, Don't Know; 7, No Response}	None
IncomeDummy	Nominal	{0, Other; 1, Less Than \$28,000}	None
FYCollegeGPA	Scale	None	-9
PositiveSelfConcept	Scale	None	None
RealisticSelfAppraisal	Scale	None	None
UnderstandsDealswDiscrimination	Scale	None	None
LongRangeGoals	Scale	None	None
AvailabilityStrongSupportSystem	Scale	None	None
SuccessfulLeadershipExperience	Scale	None	None
DemonstratedCommunityService	Scale	None	None
KnowledgeAcquiredinaField	Scale	None	None

Note: “-9” represents the code for missing data

Appendix N

Correlations

	Positive Self- Concept	Realistic Self- Appraisal	Understands Deals w/ Discrimination	Long- Range Goals	Availability Strong Support System	Successful Leadership Experience	Demonstrated Community Involvement	Knowledge Acquired in a Field
Positive Self- Concept	1	.782**	.695**	.655**	.667**	.463**	.618**	.314**
Pearson Correlation								
Sig. (2- tailed)		.000	.000	.000	.000	.000	.000	.000
N	604	604	604	604	604	604	604	604
Realistic Self- Appraisal	.782**	1	.585**	.501**	.589**	.408**	.500**	.303**
Pearson Correlation								
Sig. (2- tailed)	.000		.000	.000	.000	.000	.000	.000
N	604	604	604	604	604	604	604	604
Understands Deals w/ Discrimination	.695**	.585**	1	.698**	.771**	.560**	.651**	.334**
Pearson Correlation								
Sig. (2- tailed)	.000	.000		.000	.000	.000	.000	.000
N	604	604	604	604	604	604	604	604
Long-Range Goals	.655**	.501**	.698**	1	.678**	.563**	.637**	.366**
Pearson Correlation								
Sig. (2- tailed)	.000	.000	.000		.000	.000	.000	.000
N	604	604	604	604	604	604	604	604
Availability Strong Support System	.667**	.589**	.771**	.678**	1	.663**	.723**	.303**
Pearson Correlation								
Sig. (2- tailed)	.000	.000	.000	.000		.000	.000	.000
N	604	604	604	604	604	604	604	604

Successful Leadership Experience	Pearson Correlation	.463**	.408**	.560**	.563**	.663**	1	.601**	.231**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000
	N	604	604	604	604	604	604	604	604
Demonstrated Community Involvement	Pearson Correlation	.618**	.500**	.651**	.637**	.723**	.601**	1	.334**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000
	N	604	604	604	604	604	604	604	604
Knowledge Acquired in a Field	Pearson Correlation	.314**	.303**	.334**	.366**	.303**	.231**	.334**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	
	N	604	604	604	604	604	604	604	604

** . Correlation is significant at the 0.01 level (2-tailed).

Appendix O

Coefficient Table

		Collinearity Statistics	
		Tolerance	VIF
1	Realistic Self-Appraisal	.597	1.675
	Understands Deals w/ Discrimination	.329	3.039
	Long-Range Goals	.419	2.384
	Availability Strong Support System	.272	3.681
	Successful Leadership Experience	.517	1.934
	Demonstrated Community involvement	.410	2.439
	Knowledge Acquired in a Field	.834	1.199

a. Dependent Variable: Positive Self-Concept

Appendix P

Test of Normality – Descriptives

		Statistic	Std. Error
FY College GPA	Mean	3.3278	.02705
	95% Confidence Interval for Mean	Lower Bound	3.2747
		Upper Bound	3.3809
	5% Trimmed Mean	3.4007	
	Median	3.5000	
	Variance	.442	
	Std. Deviation	.66484	
	Minimum	.00	
	Maximum	4.00	
	Range	4.00	
	Interquartile Range	.80	
	Skewness	-2.011	.099
	Kurtosis	6.109	.199

Appendix Q

Tests of Normality

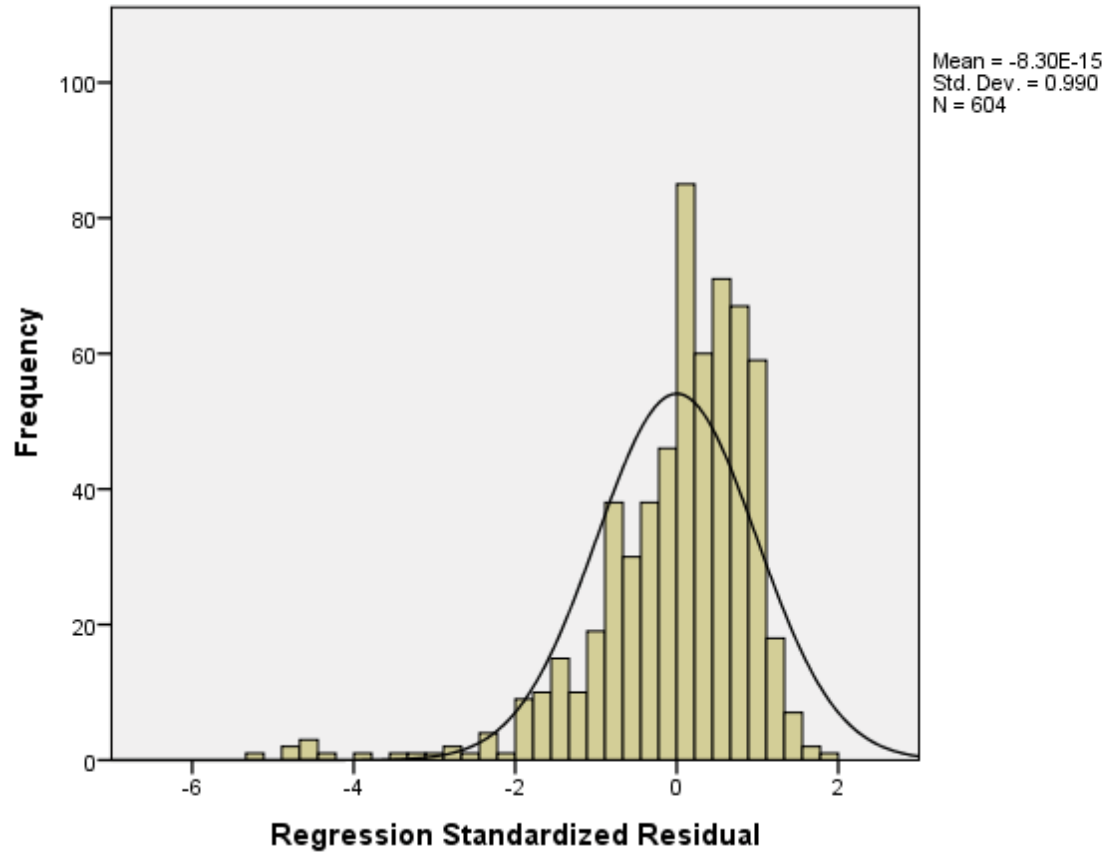
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
FY College GPA	.156	604	.000	.825	604	.000

a. Lilliefors Significance Correction

Appendix R

Histogram

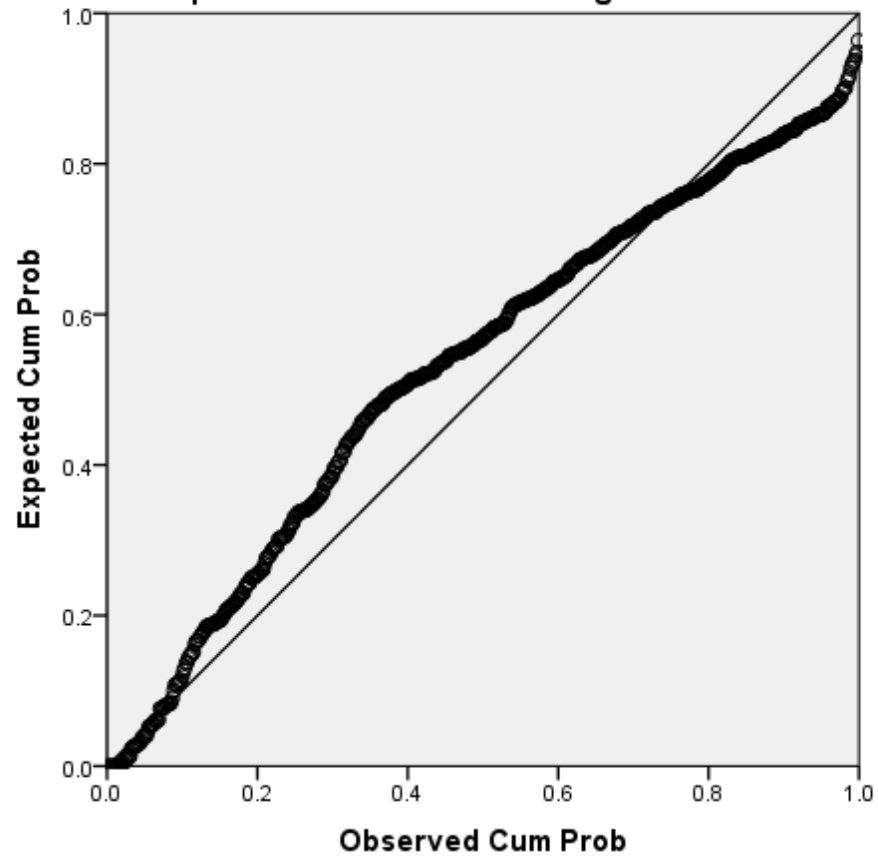
Dependent Variable: FY College GPA



Appendix S

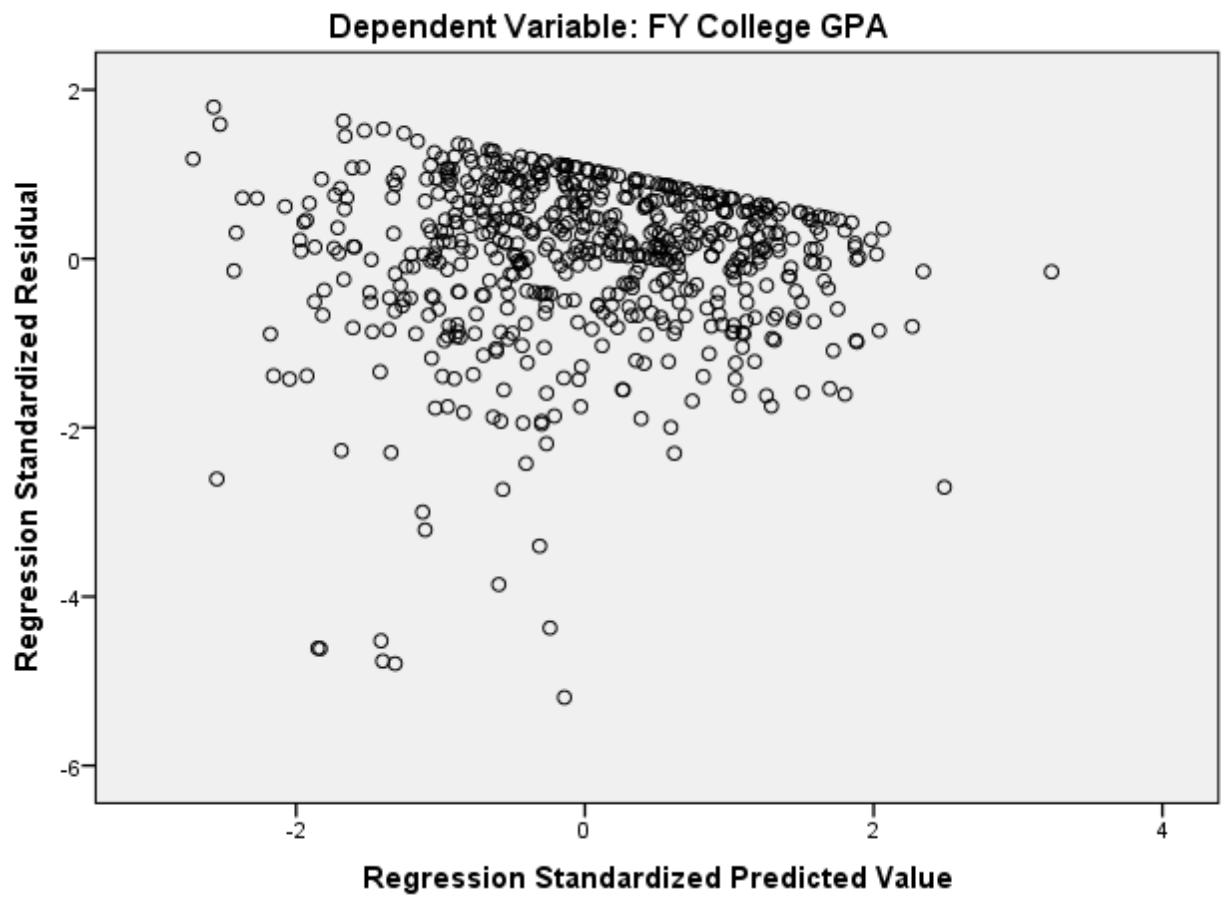
Normal P-P Plot of Regression Standardized Residual

Dependent Variable: FY College GPA



Appendix T

Scatterplot



Vita

Eric M. Stokes



Dr. Eric Stokes is a native of Knoxville, TN. He earned a Bachelor's Degree in Secondary Education: History and Economics from the University of Tennessee at Chattanooga in 2002. Two years later, he earned a Master's Degree in College Student Personnel from The University of Tennessee in Knoxville, followed by his Ph.D. in Higher Education Administration at UT. His dissertation title is: *The impact of non-cognitive factors on first-year GPA for university eligible students from low-performing high schools.*

After spending nearly 14 years at UT, Dr. Stokes has proudly joined the Tiger family as the Director of Undergraduate Admissions and Orientation at the University of Memphis. His mission is to increase freshmen and transfer enrollment, while also enhancing the academic quality and diversity of the class.

Eric is an enthusiastic young professional with a passion to serve his community. Eric obligates time to work with young people in a variety of settings including: K-12 schools, community based organizations such as the Urban League, Upward Bound, GEAR UP, and at church.

Eric has a beautiful and phenomenal wife, Dr. Jamia Stokes, who is the Associate Dean of Students at Rhodes College. They have been married for eleven years and have two children. Kendalyn is a sophomore at Pellissippi State Community College, and Evan is an energetic 3 year old. Eric is the son of Douglas and Beverly Stokes, long-time educators in Knoxville, and has an older brother and younger sister, both college graduates as well. In his spare time, Eric enjoys interacting with family and friends, traveling, watching TV and movies, trying to be something-like-a pit master on the grill, playing PlayStation, and flag football. He is a second-generation brother of Alpha Phi Alpha Fraternity, Inc. Eric is most proud to be a Christian and a member of Rogers Memorial Baptist Church.