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The Impact of Selective Cognitive and Non-Cognitive Factors on Academic Performance and Persistence Rate of First-Year College Students: Implications for Counseling.

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THE IMPACT OF SELECTIVE COGNITIVE AND NON-COGNITIVE FACTORS ON ACADEMIC PERFORMANCE AND PERSISTENCE RATE OF FIRST-YEAR COLLEGE STUDENTS: IMPLICATIONS FOR COUNSELING

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The issue of first-year college students academic performance and persistence rate has recently become a focal point for policy discussions because researchers, administrators, counselors, and policymakers are increasingly interested in understanding why some students succeed while others fail. To help incoming freshmen accomplish their academic and career goals, college and universities must gain the necessary insight on how to retain these students and assist them in matriculating on their campuses. Selective cognitive and non-cognitive characteristics associated with incoming freshmen will have a significant impact on them remaining in school and graduating.

The purpose of this study was to examine the impact of selected cognitive and non-cognitive factors on academic performance and persistence rate of first-year college students. This study is concerned with the predictable relationship between the cognitive and non-cognitive factors of high school GPA, SAT/ACT composite scores, first

semester GPA, parents' education level, ethnicity, SES, and gender on academic performance and persistence rate of first-year college students.

A correlational research design was employed in this study. The population consisted of 1,532 first-time freshmen students who enrolled at the targeted institution of higher learning during the 2018-2019 academic year. The archival (secondary) data for the present empirical investigation was obtained from the target university's office of Institutional, Assessment, Planning, and Effectiveness.

A linear relationship was found between cognitive factors and academic performance among first-year college students. High school grade point average was found to be an independent predictor of academic performance among first-year college students. The first-semester grade point average was found to contribute significantly to the academic performance of first-year college students.

A statistically linear relationship was found between non-cognitive factors and the academic performance of first-year college students. First-year college students' gender was found to be independently related to their first-year final grade point average. The non-cognitive factors of their mothers' education levels, their fathers' education levels, ethnicity, SES, and gender were not significant predictors in distinguishing those first-year college students who would return to the university and those who would not return to the university. Moreover, a statistically linear relationship was found between the combination of cognitive and non-cognitive factors and the academic performance among first-year college students.

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DEDICATION

This body of work is dedicated to my daughter Elizabeth Kennedy and my mother, Johnnie. Thank you both for your love and patience throughout this journey.

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CHAPTER I

INTRODUCTION

The issue of first-year college students' academic performance and persistence rate has recently become a focal point for policy discussions because researchers, administrators, counselors, and policymakers are increasingly interested in understanding why some students succeed while others fail. Students enter college with a wide range of personal attributes and experiences that cause significant variations in their abilities to persist (Kuh et al., 2006). This directly impacts the ability of colleges to retain students because precollege factors are largely beyond the control of most higher education institutions. As college completion rates are a top priority for institutions and other stakeholders, understanding college student persistence is important. Policy discussions revolve around increasing completion rates for already enrolled students (Ma et al., 2016). Two national organizations that are making graduation a priority is the Lumina Foundation and Complete College America (CCA). According to the CCA, as of 2025, 60% of adults will hold a degree or certificate (Lumina Foundation, 2017).

Historically, every year during the fall semester of high school, graduates enter the doors of higher education intuitions in America. These new college students bring with them psychological, academic, financial, and social concerns that higher education institutions must be able to address (Belfield et al., 2012; Crisp et al., 2015; Duckworth et al., 2015). A positive response to these needs or concerns on the part of higher education institutions will determine to a large extent the type of transition these students will make to a college campus.

The choice to attend college is seen by many of these new high school graduates as a way to initiate their paths towards achieving career aspirations and enhancing their academic goals. To help incoming freshmen accomplish their academic and career goals, college and universities must gain the necessary insight on how to retain these students and assist them in matriculating on their campuses. Most types of support colleges and universities will offer to their freshmen will not only depend on their freshmen academic support programs and financial resources, but also on selected characteristics associated with these students (Huyge et al., 2015).

The selected cognitive and non-cognitive characteristics associated with incoming freshmen will have a significant impact on them remaining in school and graduating. Researchers found that cognitive factors such as overall high school grade point average, ACT/SAT scores and first-semester college grade point were significant independent predictors of students' retention (Gershenfeld et al., 2016).

The aforementioned study has established that selected cognitive and non-cognitive factors are essential building blocks that determine the academic performance and persistence rate among incoming freshman college students. Not only do cognitive factors affect the academic performance of incoming freshmen college students, but non-cognitive factors as well. Previous research has shown that the non-cognitive factors of parent education, gender, ethnicity, and SES do have some predictive power with regards to academic performance and persistence among college students (National Center for Education Statistics, 2010).

The National Center for Education Statistics of the U.S. Department of Education published a study of first-generation college students that determined children of college-

educated parents were much more likely to obtain and complete an undergraduate degree than young people without college-educated parents (National Center for Education Statistics, 2010). Based on Lee et al. (2007) research, parent education level was positively related to college student academic preparation and persistence. In addition, Crisp et al. (2015) reported that gender was significantly related to both academic achievement and persistence. However, the finding concerning the relationship between gender, academic achievement, and persistence among college students are conflicting.

Furthermore, several studies have found that the variables ethnicity and SES were significant independent predictors of academic achievement and persistence rate among incoming freshman college students (Bailey & Dynarski, 2011; Blanden, 2013). In reference to gender, Fuller and Wehman (2003) found that male college students seem to do better academically than their female peers, especially on standardized examinations such as the SAT and ACT.

The impact that cognitive and non-cognitive factors have on academic performance and persistence rates among college students has been investigated. There is a gap when examining these factors with regard to first-year college students at Historically Black Colleges and Universities (HBCU). Thus, an empirical investigation is warranted.

Statement of the Problem

The purpose of this study is to examine the impact of selected cognitive and non-cognitive factors on the academic performance and persistence rate of first-year college students. This study will be concerned with the predictable relationship between the cognitive and non-cognitive factors of high school GPA, SAT/ACT composite score, first

semester GPA, parent education level, ethnicity, SES, and gender on academic performance and persistence rate of first-year college students.

Answers to the following questions were sought:

1. Do cognitive factors (High School GPA, SAT/ACT Composite Score, First Semester GPA) have any predictive power on the academic performance of first-year college students?
2. Do non-cognitive factors (Parent Education Level, Ethnicity, SES, Gender) have any predictive power on the academic performance of first-year college students?
3. Do cognitive factors (High School GPA, SAT/ACT Composite Score, First-Semester GPA) have any predictive power on persistence rates of first-year college students?
4. Do non-cognitive factors (Parent Education Level, Ethnicity, SES, Gender) have any predictive power on persistence rates of first-year college students?
5. Do cognitive and non-cognitive factors combined have any predictive power on student academic performance?
6. Do cognitive and non-cognitive factors combined have any predictive power on student persistence?

Significance of the Study

The significance of this study is to investigate and delineate the degree of association to the field of higher education as well as reveal the implications for counseling. Data of this magnitude can be used to develop matriculation plans, implement academic supportive services, create effective social/emotional interventions

for students, and assist in formulating admission requirements for prospective candidates. There is a need for stakeholders to understand how students process and adapt to an institution of higher learning. More importantly, institutions, professors, and counselors alike must help to create an environment of success. The Counseling Center can also benefit from this study as it can be utilized to create programming led by campus-based mental health professionals and individual counseling sessions to aid students' persistence and progress. The researcher would also like to present this study to the Dean of Student Success and Chair of Freshman Seminar to explore how the university can provide additional resources towards meeting the diverse needs of students as they continue to strive for graduation. To this end, the graduation rate is a construct that allows the university to measure retention, persistence, progression, and completion.

Theoretical Framework

The present investigation is based on Tinto's theory of student integration model. This theory argues that there is a temporal linkage between learning and persistence. The more students learn, the higher their academic achievement, the more likely they will be to continue learning. Tinto (1993) suggested that precollege educational experiences, individual attributes, and family background affect the commitment of the student to the institution. Factors like academic and social systems should be investigated to understand college persistence. Tinto (1993) suggested that students who are active in their campus communities academically and socially have the best chance of staying in school. In an attempt to achieve student persistence, Tinto (1993) indicated that three conditions must be met. To meet the first condition, students must be offered retention programs that are aimed at supporting them rather than the institution.

A second condition is that retention programs need to include all students, rather than focusing only on a particular group of students such as low-income and minority students. Retention programs are the third condition. Students must be able to integrate themselves into both academic and social communities through a successful retention program.

Based on Tinto's (1993) student integration theory, student integration is outlined as a process of social and academic integration, of a student's commitment, both to the institution and outside of it. Tinto (1993) recognized that students enrolling in higher education institutions bring to the institution a variety of personal qualities, family background and characteristics, skills, and financial resources, as well as precollege academic experiences. In his model, family background, skills and abilities, and prior schooling were considered as pre-entry attributes because they "speak to the longitudinal process of departure as it occurs within an institution of higher education" (p. 112). For this study, Tinto's model was deemed appropriate since the methodology is directed at examining the persistence behavior of traditionally aged students attending college for the first time.

Hypotheses

The following research hypotheses were tested in this investigation:

H_1: There is a statistically significant predictable relationship between cognitive factors (High School GPA, SAT/ACT Composite Score, First Semester GPA) and academic performance of first-year college students.

H_2: There is a statistically significant predictable relationship between non-cognitive factors (Parent Education Level, Ethnicity, Social Economic Status, Gender) and academic performance of first-year college students.

H_3: There is a statistically significant predictable relationship between cognitive factors (High School GPA, SAT/ACT Score Composite, First Semester GPA) and persistence rate of first-year college students.

H_4: There is a statistically significant predictable relationship between non-cognitive factors and (Parent Education Level, Ethnicity, Social Economic Status, Gender) and persistence of first-year college students.

H_5: There is a statistically significant predictable relationship between cognitive factors and non-cognitive factors and the academic performance of first-year college students?

H_6: There is a statistically significant predictable relationship between cognitive factors and non-cognitive factors and the persistence rate of first-year college students?

Assumptions

The following assumptions were made regarding this empirical investigation:

1. It was assumed that selected cognitive factors such as high school grade point average, SAT/ACT composite scores, and first-semester grade point average do have some impact on the academic performance and persistence rates of first-year college students.

2. It will be assumed that selected non-cognitive factors such as parent education level, ethnicity, SES, and gender do have some effect on academic performance and persistence rates among first-year college students.
3. Finally, it will be assumed that the data collected from the University Office of Institutional Assessment, Planning, and Effectiveness for the study was accurate.

Limitations/Delimitations

The following limitations were observed in the present investigation.

1. The study will be limited to first-year college students.
2. The study will be limited to college students attending a major university in the southern region of the United States.
3. The study will be limited to pre-existing data collected during the 2019-2020 academic year.
4. Finally, the generalizations that will be drawn from the finding of this study will be limited to first-year college students similar to those participating in the present study.

Definition of Variables /Terms

The following variables and terms are operationally defined for the current study:

1. Academic Performance- refers to a first-year college student's grade point average after his or her freshman year.
2. ACT/SAT Composite-refers to first-year college students' average raw score on the ACT/SAT examinations.

3. Cognitive Factors – refer to the academic characteristics associated with a first-year college student.
4. Ethnicity - refers to whether a first-year college student is African American, Anglo American, Hispanic American, Asian American, or other American.
5. First Semester Grade Point Average- refers to a first-year college student's cumulative grade point average after his or her first semester of college.
6. First-Year College Student- refers to a student who is taking college courses at the University during his or her freshman year.
7. First-generation Student- refers to students whose parents may have attended college, but did not graduate.
8. Gender- refers to whether a first-year college student is a male or female.
9. High School Grade Point Average-refers to first-year college students' cumulative grade point average.
10. Non-Cognitive Factors – refers to the demographic and personal characteristics associated with a first-year college student.
11. Parent Education Level- refers to the first-year college student's mother or father's education level.
12. Persistence- refers to whether a first-year college student will return or not return to the university after his or her freshman year.
13. Public University- refers to a four-year institution of higher learning receiving public funding.

14. Socioeconomic Status- refers to a first-year college student's annual family income.

Organization of the Study

This dissertation consists of five chapters. Chapter 1 includes the introduction, statement of the problem, significance of the study, theoretical framework, hypotheses, assumptions, limitations, definition of terms, and organization of the study. Chapter 2 presents the related literature on the impact of selective cognitive and non-cognitive factors on the academic performance and persistence rate of first-year college students. Chapter 3 contains the design and methodological framework of the study. This chapter includes the population and research setting, sampling procedure, instrumentation, data source and data collection procedure, null hypotheses, identification of the independent and dependent variables, statistical analysis, and evaluation of statistical assumption. Chapter 4 presents the results of the descriptive statistics and the hypothesis testing results. Finally, Chapter 5 provides a summary, findings of the study, discussion, conclusions, implications, and recommendations for further research.

CHAPTER 2

LITERATURE REVIEW

The purpose of this study was to examine the relationship and predictability of selected cognitive and non-cognitive factors on the academic performance and persistence rate of first-year college students. Specifically, this study is concerned with the predictability of the variables final high school GPA, SAT/ACT scores, first-semester college GPA (cognitive factors), parent education level, SES/social-economic, gender and ethnicity (non-cognitive factors) on the academic performance and persistent rate among first-year college students. The literature review is divided into twelve sections: (1) College Persistence; (2) Cognitive Factors and Academic Performance; (3) HSGPA and Academic Performance of First-Year College Students; (4) Impact of GPA on Persistence of First-Year College Students; (5) SAT/ACT Composite Score and Academic Performance of First-Year College Students ; (6) SAT/ACT Composite Score, First-Semester GPA and Persistence Rate of First-Year College Students ; (7) Non-cognitive Factors and Academic Performance; (8) Parent Educational Level and Academic Performance and Persistence Rate of First-Year College Students ; (9) Effect of Ethnicity on Academic Performance and Persistence; (10) Socioeconomic Status and Academic Performance of First-Year College Students; and (11) Gender of First-Year College Students and Academic Performance. Finally, the last section provides a summary of the literature regarding the impact of cognitive and non-cognitive factors on the Academic Performance and Persistence rates among first-year college students.

College Persistence

Many higher education institutions realize that the first year or even just the first few weeks of college may have an impact on a student's decision to persist (Sciarra et al., 2016). According to Reason (2009), persistence is an individual phenomenon where one's sets an educational goal and continues the path until one obtains the desired goal. College persistence refers to "the ability among students to enroll in college and remain two or more terms at a 2-year institution and four or more terms at a 4-year institution" (McCormick, 2010, p. 12). College persistence is also defined as first-to-second-year persistence (D'Amico et al., 2013). Many researchers have attempted to understand academic persistence after the high drop-out rates among first-year university students. According to Roland et al. (2016), persistence is a process that occurs over the year and is affected by different behaviors committed to studies.

To investigate what it takes to keep students enrolled, Roland, Frenay, and Boudrenghien (2016) conducted a qualitative study to examine the process of persistence since most research does consider the different significant moments that can affect student persistence during their first year. Semi-structured interviews were conducted with 15 students from a Belgium university carried out with students enrolled in a psychology course. Thematic analysis through meaning units was used to identify variables related to a student's persistence to categorize and describe data (Braun & Clarke, 2006). Roland et al. (2016) results also demonstrated that social integration and social support are very important in a student's desire to persist. The researchers concluded if persistence is necessary for academic achievement during the first year it does not mean students will persist because some students will leave despite success.

Roland et al. (2018) conducted their study in conjunction with their previous one focusing on the planned behavior theory, which considers context, motivation, and normative factors involved in behavior. A questionnaire was emailed to 727 first-year college students. In the online survey, intention, attitude, injunctive norms, descriptive norms, and perceived behavioral control were assessed. Based on a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree), the participants rated their responses. Results showed that a person has control over the decision to persist or stop his or her studies, which is dependent on the pressure placed on the expectations of others. The results also indicate that injunctive norms are most related to persistence than descriptive norms. Roland et al. (2018) results made it possible to highlight the importance of norms in the prediction of persistence. In this context, it is important to note that social pressure may lead students to persist in studies where they are not happy.

According to Tinto (2017), universities must be concerned with how to motivate students to persist. In doing so, universities must consider student experiences that can enhance student motivation. Tinto noted that self-efficacy, sense of belonging, and perceived value of the curriculum as having the strongest impact on student motivation. He further declared that what causes someone to persist in pursuing a goal is the quality of what is to be learned and the relevance to what students will use in the future. Tinto concluded that a student must want to persist to degree completion and have to apply efforts to achieve.

In a quantitative study, Buzzetto-Hollywood and Mitchell (2019) examined if grit (persistence and perseverance to achieve goals) influences student persistence and success at Historically Black Colleges and Universities (HBCUs). One hundred and

twenty freshmen students enrolled in a business course participated in the study. The findings further revealed that there is a significant positive relationship between higher grit scores, GPA, and persistence to graduation. First-year GPA, however, was not found to be a reliable predictor of academic success.

In a similar study, Gabi and Sharpe (2021) focused their study on student persistence in higher education. Factors were examined that affected student persistence in higher education using the mixed-methods approach to research. Specifically, the study examined student qualities that interact with assisting them in persisting in their studies despite challenges. A survey questionnaire was completed by 400 students from various departments via email. From the qualitative results, personal interview characteristics, academic integration, and network of support were factors identified as enabling students to persist. A data reduction technique called exploratory factor analysis was used to make sense of the 89 variables in the survey questionnaire, which allowed relationships and patterns to emerge from the data. The results of this study indicated that optimism, academic engagement, and positive relationships are the most important factors of student persistence. Additionally, the results pointed out that institutions also play a large role in how students choose to stay on and complete their education. The findings based on the results alluded that successful student persistence leads to a complex relationship between the personal factors of students and the environment. Gabi and Sharpe (2021) stressed the importance of developing strategies to support students' transition into college, as well as tutors developing positive relationships with students to provide academic support. Study results indicate that students who believe they can succeed if they work hard and persevere tend to do well despite academic challenges

(Dweck, 2008). Additional findings revealed that despite student challenges they were able to persist in attaining their degrees.

Cognitive Factors and Academic Performance

Tinto's (1993) conceptual framework proposes that the level of academic preparation in high school and college admission tests influence students' academic performance and persistence. The high school GPA and the college admission test scores are valid predictors of future academic performance, but when combined, they predict future success even more accurately (Bridgeman et al., 2008; Kobrin et al., 2008; Sawyer, 2010).

High School GPA and Academic Performance of First-Year College Students

In postsecondary education, many college students are lacking in both academic and social skills. The majority of students will graduate from high school with a diploma showing college and career readiness; however, students will need remedial coursework before they will be eligible to enroll in credit-bearing college coursework (Castellano et al., 2014).

In Gershenfeld et al. (2016), the grade point averages of first-semester students were examined. Students admitted between 2005 and 2006 at a Midwestern university were used in the study, which institutional data was gathered about 1,947 students. This study was primarily concerned with predicting whether a student's first-semester GPA contributes to their success.

The variables that were analyzed included first-semester GPA, the college enrolled first-semester enrollment, and major declared when first enrolled, such as STEM and non-STEM. The first model was based on variables of race, gender, ACT composite

score, and program designation. First-semester GPA, first-enrolled academic college, and STEM college variables were incorporated into the second model. The last model 3 used the same variables except it converted the first-semester GPA from a variable that could have any value between its minimum and maximum to a definite variable that corresponded with university grade point average to know an at-risk student's GPA.

A first-semester GPA of 2.84 was average for the graduating students, while only 2.20 was average for those who did not graduate. The data indicates that students with a GPA of 2.33 or less were more likely to not graduate compared to those with a score of more than 2.33. The findings noted the importance of students' first semester GPA, but no factors were given that contributed to students' having a GPA of less than 2.33. This study concluded that first-semester GPA can be a good early indicator of college success.

Furthermore, Gershenfeld et al.'s (2016) research identified first-semester at-risk students for whom university programs and research have not addressed this issue. The researchers suggested that colleges should pay more attention to first-semester students, especially those with a GPA below 2.33. The researchers also recommended addressing factors that reduce students' first-semester GPAs since the beginning of a degree requires first-semester success.

A study by Easton, Johnson, and Sartain (2017) examined the predictability of high school GPAs. Specifically, Easton et al. (2017) examined how GPAs changed over time and how GPAs differed among students with different academic and demographic backgrounds. Researchers examined grades in eight Chicago Public high schools that are not charters or alternative schools. Generally speaking, the study found that a high grade point average is a valid indicator of student success in the future. In addition, the study

found that college admission may also be influenced by the twelfth-grade GPA, which is highly predictive. Further, high school GPAs are used to predict high school graduation and college enrollment, as well as being a much better predictor for college enrollment than test scores.

As part of an empirical study, Hodara and Lewis (2017) concluded that high school grade point averages have a similar predictive power when applied to graduates in rural and urban areas. Within the study, students who started college within one year after graduation from high school were compared to those who did not enroll in college for at least one year after graduation. An analysis of a set of logistic regression models indicates that low first-semester GPAs are a statistically significant factor for explaining why underrepresented students fail to graduate within 6 years. According to the data, students who entered college within the first year after graduation have a stronger relationship with their high school grade point average than those who waited longer. The authors suggest that further research will provide an in-depth understanding of the relationship between high school grades and college readiness and success.

Karwacinski (2017) examined how cognitive and psychological factors interact to affect freshman students' GPAs and the degree to which they influence one another. Specifically, this study focused on cognitive (academic factors) and non-cognitive (non-academic factors) as established predictors. To help develop a model that illustrates how cognitive, non-cognitive, and psychological variables are responsible for academic success, the study examined the link between aspects of psychological well-being and cognitive indicators like high school GPAs and ACT scores.

Karwacinski (2017) employed a non-experimental correlational design in this study. The participants were 174 first-year, first-semester students registered at Southwestern Michigan College in the fall of 2015, who completed a questionnaire. Five participants were under 18 years old, 160 were between 18 and 24 years old, and five were over 25 years old. On the questionnaire, students reported demographic information such as their ethnicity, major, and level of education. According to student records, high school grades and first-year, first-semester college grades ranged from 0.0 to 4.0. In terms of cognitive factors, participants' high school GPA was 2.92, and their first-semester college GPA was 2.84. Data collected indicated college GPA was the strongest and may not be due to chance. In this study, the researcher found that high school GPA is the best predictor of FYFS college GPA. Students' high school GPA explained the variation found in college students' first year, first semester GPA.

Likewise, Dorta-Guerra et al. (2019) conducted a study to examine the effect of high school GPA and the University Access Test scores on first-year student success The researchers devised a new academic performance metric for the first-semester science degree program students. During the academic years 2015/2016 and 2016/2017, samples were drawn from first-year students. Participating students were 79 majoring in mathematics, 85 majoring in chemistry, 81 majoring in physics, 113 majoring in biology, and 57 majoring in environmental science. In their first year, students took five classes. A combination of high school GPA and University's Access Test was analyzed to determine academic performance indicators. Physics and biology first-year students had the highest academic performance and their previous achievements were the highest. In contrast, environmental sciences students had the lowest API scores. As a whole, the

findings indicated that high school GPA was mostly associated with first-year student academic success across all degrees. The authors concluded that the high school grade point average was the best predictor of academic success among first-year STEM students.

Using high school course enrollment, cumulative high school GPA, and first-semester college GPA as a measure, Warren and Goins (2019) sought to quantify the relationship between high school course enrollment and first-semester college GPA. The authors developed a demographic questionnaire that was administered to college freshmen enrolled at a public minority institution in the southeast region of the United States. College participants were questioned about their first semester in college and their experiences in high school. The high school GPA and college GPA were positively correlated. Furthermore, the results showed that the higher a student's high school GPA is, the higher their first-semester college GPA will be. These findings suggest that students with high GPAs at graduation from high school are likely to have high GPAs after their first semester of college. The results of this study support previous research showing a correlation between high school GPA and college GPA (Hodara & Lewis, 2017; Mould & DeLoach, 2017). Despite shedding light on factors that predict first-semester college GPAs, future research should explore variables that predict first-semester college GPAs also including students who did not persist beyond the first semester.

Allensworth and Clark (2020) investigate whether high school students prepare for college in the same way. The authors compared high school GPAs across high schools to determine college readiness. The study found that students attending the same

high schools, but with varying HSGPA scores, graduated at different rates. HSGPAs were, however, correlated strongly, consistently, and significantly more with college graduations than school attended.

In a study by Warne et al. (2014), it was found that an unweighted high school grade point average (HSGPA) predicted the college GPA better than a weighted HSGPA, which takes course difficulty into account. To determine the probability of college success, Warne et al. recommended against using weighted HSGPAs. "While research has shown the statistical significance of high school grade point averages (HSGPAs) in predicting future academic outcomes, the systems with which HSGPAs are calculated vary drastically across schools" (Warne et al., 2014, p. 261). In college admissions, Sadler and Tai (2007) found that high school grade point average carries the greatest weight. Sadler and Tai stated “If large differences in college performance exist based on taking advanced courses, then weighted HSGPAs make sense. If the differences are small, unweighted HSGPAs will do” (2007, p. 11). It was concluded that if weighed GPAs are continuously predictive of college outcomes, they may be appropriate.

The study by Cyrenne and Chan (2012) examined high school grade point averages in predicting academic performance for university students who entered the university over a six-year period after graduating high school in Manitoba. According to hierarchical linear regression analysis, university grade point averages were strongly predicted by their high school GPA. Higher high school expenditures, favorable neighborhood effects, and greater student resources were also associated with higher university grades when comparing high school grades.

Impact of GPA on Persistence of First-Year College Students

As students progress through their freshman year and graduate with a four-year degree, researchers have studied what positively influences persistence, and what contributes to attrition. The relationship between graduation rates and factors such as gender, race and ethnicity, high school grade point average (GPA), and standardized test scores have been examined by many researchers (Huang et al., 2017).

Stewart (2010) examined factors that affected the persistence of 3,213 freshmen at the University of Oklahoma in her dissertation. She examined specific factors that affect student retention as well as whether the effects varied between students who were placed in remedial classes and those who were not. The data shows that 60.5% of remedially placed students persist for five or more semesters as opposed to 73.2% of non-remedial students. In this study, it was found that ethnicity, financial aid, and remedial status all significantly affected persistence for both groups of students. Additionally, high school GPA, first-semester college GPA, ACT composite scores, and persistence were related. The results indicated that high school grade point averages, ACT composite scores, and college first-semester cumulative grade point averages correlated statistically significantly. In her study, Stewart recommends that social integration, institutional commitment, and outside-the-classroom experiences should be explored to enhance college retention and persistence.

DeAngelo and Franke (2016) examined the correlation between students' GPA and their college readiness. They found that persistence and generational status depended on college readiness. The rates of persistence of first-generation students and their continuing-generation peers after their first year were the same for students who met the

college-ready threshold. However, continuing-generation students tended to return after their first year of college at a higher rate than first-generation students, those students not identified as college-ready returned in greater numbers. Consequently, the study finds that first-generation students who are academically "college ready" when they arrive on campus are as likely to be successful academically as their peers. Nevertheless, if they are not academically "college ready," they are more likely to drop out than their peers.

Empirical research examines both college and high school academic performance indicators to examine academic barriers to college persistence. A longitudinal study from the NCES (2017) examined the barriers to college entrance faced by first-generation students. The findings revealed that fewer first-generation college students had a GPA of at least 3.5 in their high school years than in any of the lower categories, compared to continuing-generation college students with a GPA of 1.99. In addition, more first-generation college students said they hadn't thought about the SAT/ACT in comparison to continuing-generation students.

SAT/ACT Composite Score and Academic Performance of First-Year College Students

For students, educators, and institutions of higher education, grades in high school are important indicators of academic performance. Nevertheless, standardized test scores are often viewed as more objective and reliable indicators of academic preparation than grades, because each student is judged under the same conditions and on a similar set of tasks. ACT or SAT scores are used by 45 states to determine a student's college readiness (Nayar, 2015). To determine college admissions, colleges evaluate applicants using many factors.

There are several factors that colleges and universities consider when evaluating applicants for college admissions. Institutions rely heavily on standardized measures of academic achievement, including the ACT and SAT. In the 2019 State of College Admissions Report of the National Association for College Admission Counseling (NACAC), 82.8% of colleges rated admission test scores as being "considerable" or "moderate" (Clinedinst, 2019). ACT and SAT scores are used in conjunction with other factors, such as high school grades and curriculum strength, to determine whether students are ready for college-level work and how likely they will be to succeed in college if admitted. To justify the use and interpretation of admission test scores, validity evidence is essential (AERA, APA, & NCME, 2014). Based on controlling for high school GPAs and comparing students at the same colleges, Bowen et al. (2009) found that there was a small and sometimes no correlation between SAT and ACT scores and college outcomes. On the other hand, controlling for students' test scores, HSGPAs had a significant impact on college outcomes.

Blanchet (2016) conducted a quantitative study to assess the influence of standardized tests and high school grade point average (GPA) and non-cognitive factors on first-semester college GPA. In the first semester of the first year, the target population was composed of 787 full-time, first-year college students. This study involved 386 students from a technology college in New York. College students with a wide range of academic abilities were admitted to the institution and offered associate and baccalaureate degrees. Research in this study aimed to understand how non-cognitive variables affect academic achievement in first-year college students. According to the academic program chosen, high school GPAs could range from 70 to 92. The average high school GPA for freshmen was 87, and the average SAT math and the critical reading

score was 1024 in the fall of 2015. Student information system Banner college, which stores students' biographical and academic records, was used to retrieve cognitive variables such as high school GPA and standardized test scores. The researcher extracted each student's high school GPA and standardized test scores from Banner.

Multivariate correlations were used by Blanket in his study to predict and explain the relationship between multiple cognitive independent variables, such as high school GPAs, standardized test scores, and non-cognitive demographic variables. A GPA for the first semester and a transition from the first semester to the second semester were the dependent variables. A linear and logistical regression analysis was conducted to test the potential predictive power of each cognitive and non-cognitive variable on the first-semester GPA and the transition from first to second semester. During the first four weeks of the fall 2015 semester, 367 first-year students were given the Student Strengths Inventory (SSI). According to the survey, the average high school GPA was 84.7, the combined SAT score was 905, and the college first semester GPA was 2.64. Of the 367 students, only 305 returned for the second semester. The research findings suggest that high school grade point average predicts the highest first-semester grade point average and the best transition from the first to the second semester.

A study conducted by Saunders-Scott et al. (2017) compared ACT scores and GPA in high school to predict students' college success and GPA. A self-report questionnaire was used to collect information on students' high school and college GPAs as well as their ACT scores from 165 undergraduates. The ACT score was positively correlated with the cumulative GPA of college students. A statistically significant relationship was observed between the ACT scores and college grades, but the high

school grade point average was found to be a stronger predictor of college grades and retention. These findings are consistent with other findings from universities across the country. High school GPAs are the best predictors of graduation rates and retention, rather than ACT/SAT scores, as demonstrated by Bowen et al. (2009).

In a study of high school graduates with ACT scores, Allensworth and Clark (2020) examined how HSGPA's predict college graduation. As measures of college readiness, the authors examined variation across high schools in high school grades and ACT scores. Based on the study, graduates who were at the same high school and had the same grade point average and ACT score graduated at a very different rate. A weaker correlation existed between ACT scores and college graduation than between high school grades and college graduation, and the slope of this relationship varied by high school.

Radunzel and Mattern's study (2020) examines the predictive strength and predictive accuracy of four composite scoring methods (last, highest, average, and superscore) to predict completing a college degree as another measure of student success. ACT section tests were administered concurrently to freshmen who had previously taken the test in high school for students enrolled in a postsecondary institution. The data were available for 118 students who had previously taken the ACT. A total of 39 subjects were tested in reading and math, 50 in English and math, and 46 in science. All data were provided by the institution for its 2019 freshman cohort. A total of 2,729 non-student participants took the ACT in high school. For comparison, a sample of nonparticipants who took the ACT test was used. On a scale from 0.00 to 4.00, the primary outcome was the first-term college GPA. Participants' average GPA for the first term was 3.36 with a standard deviation of 0.52. ACT superscores, calculated from test administrations

including single-subject section tests, were predictive of first-term grade point average, and of high school grade point average, together. Furthermore, the strength of this relationship was not significantly different from the relationship based on ACT Composite scores. The results of this large multi-institutional study validate the use of ACT superscores in the context of college admissions, scholarship, placement, and intervention decisions. The results of this study found that ACT superscores were as predictive of degree completion. Second, the study found that students who tested more often had a lower chance of obtaining a college degree.

SAT/ACT Composite Score, First- Semester GPA Persistence Rates of First-Year College Students

Academic performance in high school and scores on standardized tests like the Scholastic Aptitude Test (SAT) and ACT are traditional measures of college success. Higher education uses these two measures to determine students' eligibility for college, as well as predict their success in their first year. The relationship between first-time freshmen enrollment data in 87 colleges and universities spanning four states and the ACT composite scores and persistence was studied by Tracey and Robbins (2006). In the hierarchical linear regression analysis, the ACT scores and persistence were statistically significant.

In 2008, Johnson tested whether aggregate-level high school effects exist on college enrollment, persistence, and degree attainment. The applicants admitted from 2001-2005 are included in the dataset for the model explaining matriculation odds. As a measure of a school's academic quality, the aggregate school characteristics taken into account are the percentage of students taking SATs. She found that the effect of the SAT-

taker percentage is positive, suggesting that students from schools with a higher percentage of test-takers have a better chance of enrolling in college. The most likely matriculants are those whose schools have 30% to 50% of students taking the SAT test. Ultimately, enrollment at a particular institution matters for persistence and graduation. As Johnson mentioned, school characteristics can be helpful to enrollment managers in choosing which schools to visit and send mailers to.

In a study released in 2015, Stewart, Lim, and Kim examined the correlation between ACT composite score, high school GPA, and first-semester SAT scores and persistence rate. A total of 3,213 degree-seeking freshmen enrolled continuously during the Fall 2006 semester through the Fall 2008 semester were included in this study. The subjects were both full-time and part-time, aged 17 to 21 years old. An analysis of variance (ANOVA) was conducted on longitudinal data of 3,213 students. As a result of Pearson's product-moment correlation analysis, certain variables such as ACT composite scores, college cumulative GPAs, and persistence were correlated. Based on Pearson's correlation coefficients, ACT composite scores strongly correlated with persistence, although it was a weak correlation, indicating that students with high ACT scores were more likely to remain in their sophomore year.

Non-Cognitive Factors and Academic Performance

In order to measure student academic achievement, non-cognitive factors need to be identified and measured. Several non-cognitive factors are associated with academic success in the first year. Non-cognitive factors have been studied in past research, but are currently being investigated more thoroughly in education research (Lipnevich & Roberts, 2012). An "emerging body of literature persuasively argues that non-cognitive

factors are as important as or even more important than cognitive skills" (Sohn, 2010, p. 125). "A wide range of theoretical perspectives and research indicates how non-cognitive predictors influence students' academic performance" (Marti, 2008, p. 4). In the second half of the 20th century, Pascarella and Terenzini counted 3,000 studies on non-cognitive factors influencing students' performance (1998, p.158).

Parent Educational Level and Academic Performance and Persistence Rate of First-Year College Students

The literature indicates that parenting styles influence educational attainment and contribute to the difference between first-generation students and non-first-generation students in terms of their cultural capital (Nichols & Islas, 2016). Educated parents possess the financial resources and abilities to develop environments in the home that foster their children's cognitive and non-cognitive development, (Mayhew et al., 2016). Mayhew et al. (2016) claimed that “When compared to students whose parents had at least some college, first-generation students' cognitive and intellectual gains were rela1ed to (I) attending a two-year institution, and (2) higher cumulative grades” (p. 157). Moreover, college-educated parents are considered to have higher social capital. That is because their children have grown up having been exposed to college and completing it, whereas non-college-educated parents do not. Additionally, understanding college expectations and processes will make it easier for students to rely on their parents' advice, guidance, and encouragement as they adjust to college (Palbusa & Gauvain, 2017).

Degree completion for mothers can provide several positive benefits to her household and family, according to Lashley (2014). Women who complete college degrees have better self-esteem, a greater sense of self-worth, and are more confident and

self-efficacious of college (Hill, 2013). The first group of support for students is their parents, as they can motivate them to remain in college due to the benefits they know personally from their college experience (Rachell, 2014). Lashley (2014) analyzed the self-perception of 29 African-American mothers who attended a four-year college program in the United States of America to add to the existing body of research proving family support for mothers. In this study, structured interviews were used to collect data, in which six themes emerged: "family cohesiveness, education, spirituality, support networks (family and government), motivation for a better life, and teaching respect to children" (Lashley, 2014, p. 6). As the result of this study, family support was noted in 18 of the 22 interviews (Lashley, 2014). According to the researcher, it might be interesting to examine how spirituality and family support influence parents' parenting practices and educational and professional development in the future. In addition, the researcher encouraged more research about the ethnic differences within groups of African-American and Afro-Caribbean mothers.

As part of her dissertation, Rozon (2015) identified several new factors that may influence college success, such as parents' educational levels, household income, and extracurricular activities. Study participants were primarily low socio-economic status students from an urban public college. The study was conducted with 251 students enrolled during the fall 2009 semester. The college experience, demographics, and family background were collected from participants through a questionnaire. Parental education and students' understanding of college's economic benefits both contributed significantly to persistence through college among students. Parents who have a college degree are more likely to stress the importance of higher education and to encourage their children

in their academic endeavors. The study found that only the education of the mother was significant when predicting college attendance. However, the father's education did not have an impact on college attendance. A major finding of the study showed that students who knew about the benefits of a college degree were more likely to persist to the end of their education, than their peers who do not. Furthermore, a child's mother's education level was found to have a significant impact on her child's academic success. The likelihood of students persisting through college was related to the presence of their mother with a college degree. Consequentially. as a result of this finding, it appears that mothers have become an integral part of students' success rates, with fathers having a lesser impact. Several solutions may help increase college success rates based on these findings. To motivate their students to pursue a degree, public colleges should encourage the involvement of mothers in their students' college lives.

Nichols and Islas (2016) examined the availability and use of social capital in college based on parents' educational backgrounds. of first-year college students. Network ties provide access to resources in the context of social capital (Lin, 2002). An interview sample of 21 first-generation and 23 continuing-generation college students attending a private university in California was conducted. Data were gathered through interviews and academic transcripts. Students with parents with advanced degrees or bachelor's degrees made up the majority. More precisely, 11 parents had only a high school diploma, while 10 parents had some college but not a bachelor's degree. Most students interviewed reported that their parents were instrumental in supporting them in college and provided both emotional and instrumental support. Parental help, though, differed significantly depending on the parents' educational background. Students in all

groups reported frequent contact with their parents, though most FGC students emphasized a sense of support from their parents, whereas CGC students cited specific instances of receiving help from their parents during their first year in college. According to the authors, continuing generation college students have parents with at least a bachelor's degree, which provides them with advice and support regarding success in college, whereas first-generation college students don't. The study found that students of college-educated parents (CGC) had substantial social capital, strong relationships with that capital (usually through family members), and they used that capital in a variety of ways to improve their success, including asking their parents for advice.

Effect of Ethnicity on Academic Performance and Persistence

Based on national data on persistence and graduation rates by race, it is evident that students of color experience greater disparities than their white peers. Among four-year institutions, Black students are the least likely to graduate, followed by Hispanic students (Shapiro et al., 2017). Asian students have the highest persistence and graduation rate, followed by White students (Shapiro et al., 2017). Disparities between blacks and whites in college completion rates are not just limited to first-year students. Transfer students from community colleges showed similar disparities. A quarter of Asian and a fifth of White transfer students graduate, but only one-tenth of Hispanic and one-third of Black students do (Shapiro et al., 2017).

D'Lima, Winsler, and Kitsantas (2014) found that ethnic minority students in the United States are less likely to enroll, persist, and complete college than Caucasian students. A lower proportion of Hispanic Americans and African Americans attend college than Asian Americans or Caucasians. Also, minority students earned fewer

undergraduate degrees in 2002-2003 than their Caucasian peers (National Center for Education Statistics, 2005, 2007).

D'Lima et al. (2014) examined the association between ethnicity and gender with freshman student academic performance (GPA) in their first semesters. D'Lima et al. (2014) studied the impact of ethnic, gender, and first-semester academic participation on freshman student performance. Study participants were 591 college students at a major university in their first year of studies, an important time for academic progress and retention. Semester student GPAs were obtained from university records. Students' official college GPAs for their first semester was examined using an ANOVA. Based on ethnicity, there were no significant differences in first-semester GPA. Student scores increased faster for male students than for female students but were not statistically significant. The authors recommend that teachers design learning tasks that are challenging for students while avoiding placing them in situations that will cause them to fail. Furthermore, future research was suggested that examine how motivational beliefs influence academic performance and retention during the first year of study.

Among Malaysian first-year undergraduate students, Rajandran et al. (2015) examined the influences of age, gender, race, and university level on academic performance. From the year 2013-2014, 100 students were randomly selected among Asian, Chinese, and Malay undergraduates. In order to collect the data, a questionnaire was distributed to students asking about their first-year CGPA, their gender, race, and their place of origin. Students' gender and place of origin did not significantly affect their first-year academic performance. However, students' entry grade point average (CGPA) was the strongest predictor of their first-year CGPA. The researchers contended further

research can be conducted by looking at other factors such as family income and instructor characteristics, as well as using different samples of students from other faculties at University Malaya for all academic years.

Using a quantitative research design, Liang et al. (2018) investigated the effects of ethnicity and gender on college students' academic performance and Grade Point Average (GPA). This study included 1,122 undergraduate students from a medium-sized university in a southern state. Specifically, undergraduate students comprised 656 Caucasians, 280 African Americans, 161 Hispanics, and 25 Asians. Results showed that female students earned higher GPAs than male students, which indicates that GPA scores are statistically influenced by gender. The GPA of Hispanic, Caucasian, Asian, and African American students ranged remarkably from the highest to the lowest. It was not statistically significant whether ethnicity or ethnicity-gender interaction affected GPA scores. There was no association between ethnicity and GPA as previously reported in previous studies (Bottia et al., 2016; Davis & Otto, 2016) or among Asian students (Sheu et al., 2016). Students of other ethnic groups received a higher GPA than African American students. The research conducted by Lige et al. (2017) showed that African American students' self-esteem is lowered and their academic threats increase by stereotypes of negative evaluations and perceived discrimination. To assist college students in overcoming academic challenges, Liang and her colleagues recommend that educators and counselors facilitate educational and counseling interventions. It was suggested that counselors and educators should have a deeper understanding of diverse ethnicities to optimize counseling and educational interventions to assist students in achieving academic success and identity integration.

Hispanic college students are the most likely to be found to be FGCS, compared to all other racial and ethnic groups (Balemian & Feng, 2013). Hence, Hispanic FGCS have the highest probability of experiencing both underserved identities in their quest to obtain a college degree and equal economic status.

Latino et al. (2020) compared the cumulative GPAs and retention of Hispanic FGCSs to those of Hispanic non-FGCSs at one Hispanic-serving institution. An incoming first-time student sample, numbering 2,499 from a university in the southeastern United States that serves a large Hispanic population, was surveyed. Students had taken the ACT and SAT before enrolling in college, as well as the ACT Engage. The ACT Composite Score and high school GPA (HSGPA) were used to measure previous academic achievement. Analyses were conducted using a student's most recent standardized test score. Analyses were conducted based on students' most recent standardized test scores. ACT scores were compared to SAT scores. The university provided the HSGPA. A student's self-reported HSGPA was used when the HSGPA was not provided. According to research, self-reported HSGPAs are a good indicator of transcript GPAs (Sanchez & Buddin, 2016). Studies have shown that the combination of ACT Composite scores and HSGPAs can better predict first-year college GPAs (Sanchez, 2013) as well as long-term college success (Radunzel & Noble, 2013). Among students with similar characteristics, female students had a higher first-year cumulative grade point average. Study results showed that Hispanic FGCS had worse first-year outcomes than Hispanic non-FGCS. According to results, Hispanic FGCS had significantly lower average first-year cumulative GPAs compared to their Hispanic peers and significantly lower retention rates during their first to second years. This finding of significantly lower GPAs for Hispanic

FGCSs compared to Hispanic non-FGCSs differs from Kouyoumdjian et al. (2017), who found no significant difference. The researchers recommended that educators and counselors encourage Hispanic FGCS to engage in accelerated learning programs to prepare them for college coursework while simultaneously earning college credit at the same time.

Socioeconomic Status and Academic Performance of First-Year College Students

An individual's development is influenced by many cognitive and non-cognitive factors (Darrow, 2016). In the same way, the development of a student is influenced by both internal and external factors. Similarly, both internal and external variables affect the development of a student. In particular, the type of environment in which children are raised influences their later-in-life characteristics and behaviors (Van Bergen et al., 2016), and the nature of their economic environments affects their academic performance (UNESCO, 2014).

According to Tavares et al. (2008), socioeconomic and cultural capital correlate with students' preference for prestigious courses such as law, fine arts, health, and science. As an example, the authors found that the parents of students enrolled in a university course in medicine hold higher education degrees, while the parents of students enrolled in a polytechnic course in health care do not hold higher education degrees. As such, these findings focus the equity debate on the transition from high school to college and the rules around access to public higher education, since the studies appear to demonstrate that socioeconomic factors play a significant role in determining who gets into college.

Altschul (2012) examined the effects of family SES on the academic outcomes of Mexican-American youths. Data from the National Educational Longitudinal Study, a center opened in 1988 to study educational processes and outcomes in secondary school students, were collected in four waves of surveys administered to samples in 1990, 1992, 1994, and 2000. Academic achievement was measured through four standardized tests in reading, math, science, and history. SES was analyzed using family income, mothers' education, fathers' education, mothers' occupation, and fathers' occupation. Family income was self-reported by checking one of fifteen income ranges. Maternal and paternal education levels and occupations were also self-reported. Correlations were calculated using pair-wise deletion. The primary path model tested the relationships between the set of SES factors, on the one hand, and the standardized tests, on the other. The results showed that socioeconomic factors were predictive of Mexican American children's academic achievement, with mothers' occupation revealing a stronger positive effect on academic achievement than any other measure of SES. The researchers also found that the effect of mothers' occupation exceeded the effect of income, which was found to be the second-largest influence on academic achievement. Both of the parents' education levels were related to academic achievement; however, fathers' occupation was not directly related to academic achievement.

Jez (2014) examined how wealth and income influence college attendance decisions. Rent, child support, and wages were all considered income. Information about wealth, education, and upbringing is contained in the National Longitudinal Study of Youth. The integrated postsecondary education data system includes information on institutions and organizations, such as enrollment, racial and ethnic breakdown, degree

completion, and graduation rates. Information on institutions and educational organizations, including racial and ethnic diversity, completion rates, enrollments, and graduation rates are included in the integrated postsecondary education data system, a data set offering statistics on postsecondary institutions. In this analysis, the two data sets were matched based on respondents who attended college in 2003. Multiple imputation was used to analyze the results as well as survey data analysis. Wealth did affect who attends college but did not affect who applies. In other words, wealthy students are more likely to attend college than low-income students. The results also revealed that students with lower incomes are also more likely to complete college than those with less wealth, and higher-income students are less likely to complete college. Wealth was more important than income in predicting attendance at a less selective 4-year college over no college attendance. Wealth and income, on the other hand, predicted attendance at a more selective four-year institution.

Students from low socioeconomic backgrounds perform poorly academically (Hipolito-Delgado & Zion, 2017) and do not demonstrate evidence of attaining academic skills. In addition to finances, inquiries have shown that the type of school a child attends has a direct impact on the quality of their performance. According to Hipolito-Delgado and Zion (2017), students from low socioeconomic status backgrounds perform poorly academically when compared with those from higher socioeconomic status backgrounds. They found a correlation between socioeconomic marginalization and the ethnic marginalization resulting from the U.S. financial class structure.

According to a 2017 study by the National Center for Education Statistics (NCES), first-generation college students are more likely to come from lower-income

households than students from continuing-generation homes (Redford & Hoyer, 2017). According to the same data, the percent of first-generation college students who are White is lower than the percent of continuing-generation college students, while the percent of Black first-generation college students is greater than the percent of continuing-generation college students. First-generation college students represented 27% of the Latino population, while continuing-generation students accounted for 9%. In other words, low-income students and students of color represent a disproportionate share of the cohort of first-generation college-goers.

Gender of First-Year College Students and Academic Performance

Many studies have explored how differences in gender impact students' success in college. There have been mixed results in research on gender and academic achievement. A study by Páramo, Tinajero, and Rodriguez (2015) examined the relationship between first-year students' adjustment levels, gender, and academic achievement. A sample was randomly drawn from undergraduate degree courses offered at a university in Spain. A total of 300 first-year students were surveyed, of whom 198 were females and 102 were males. To collect data, the Student Adaptation to College Questionnaire and the Academic Management Services were employed. Two instruments were used to collect data, the Student Adaptation to College Questionnaire and the Academic Management Services. Students' adjustment to college is addressed by the Student Adaptation to College Questionnaire and information on academic achievement and pre-university grades is reported by Academic Management Services. Analysis revealed that students' academic performance was negatively affected by low levels of academic achievement and the inability to adjust to college. There was a strong relationship between college

adjustment and achievement levels. University grade point averages among pre-university students were linked with achievement. Academic achievement was closely related to students' pre-university and first-year undergraduate grades. Those who enter with strong grades acclimate better academically, resulting in better performance in their first year. Therefore, high-achieving students become better integrated academically, resulting in higher first-year academic achievement. Academic achievement of first-year students was not affected by gender, even though females earned higher entry-level grades than males. The researcher went on to conclude that academic achievement in the first year is more closely related to entry grade than overall adjustment. In all dimensions of adjustment, except for personal adjustment, the grade at entry and the grade at the end of the first year are highly related. It has been shown that students with higher entry grades do better in school, academically and socially, and their academic achievement is higher in their first year.

Clark (2015) examined whether males and females differ in persistence. It has been shown that students with higher entry grades do better in school, academically and socially, and their academic achievement is higher in their first year. A total of 33 students aged 20-23 took part in the study. Students' cumulative GPA, academic and co-curricular activities were retrieved from the institution's database. During interviews, focus groups, and emails, three themes surfaced - family support, goal-directed college education, and an internal drive for achievement. Women and men approach academic work differently, as both non-significant and significant differences were found. In her analysis of the first-year cumulative GPA results.

In her analysis of the first-year cumulative GPA results, Clark discovered that males did not apply themselves to classes during the first year, which resulted in a low GPA. The results for grades were not significant, but information from the female and male students suggested that females were more likely to attend classes, reserved study time, and worked with instructors more frequently than males. A lack of focus on academics was attributed to men's involvement in activities and sports. The support of college friends, on the other hand, was cited by women as an influence on their academic work.

Dulabaum (2016) used unstructured interviews to investigate the barriers to degree completion faced by African American and Hispanic males in predominantly white institutions Some students of color complained about having difficulty relating to instructors, counselors, and teachers, particularly those who felt professors didn't care about their success or did not have flexible office hours (Dulabaum, 2016). African American males report feeling stereotyped and discriminated against by professors, being viewed as irrelevant, and incapable of succeeding (Dulabaum, 2016). This same finding has been noted in other research as well.

As part of a qualitative study, Moragne-Patterson and Barnett (2017) investigated the experiences of African Americans and their interpretations of racial and gender-based microaggressions. In this qualitative interpretive meta-analysis, we examined African American undergraduate students at historically White, four-year colleges and universities to better understand how African American students experience, justify, and resist microaggressions that occur when race and gender intersect during the college experience. Based on the reviews of 41 articles, the sample for this QIMS was composed

of four studies published between 2001-2012 which described the experiences of 108 African American undergraduate students enrolled in PWIs. The findings showed that African American students on predominantly white campuses felt isolated, experienced a lack of support from the institution, and had to prove their intellectual capabilities (Moragne-Patterson & Barnett, 2017). One African American student whose test revealed a high score was accused of cheating by a professor in one instance (Moragne-Patterson & Barnett, 2017). This student was required to retake the test in a room while a graduate assistant monitored (Moragne-Patterson & Barnett, 2017). Many students of color expressed feeling exhausted trying to prove themselves, regardless of their past successes (Moragne-Patterson & Barnett, 2017). African American men's persistence and success in urban, public universities may be attributed to their close relationships with their peers of the same race, which provide them with a means of sharing their experiences and combatting overt racism (Strayhorn, 2017).

In 2017, Strayhorn examined factors influencing Black men's success in urban public universities. Strayhorn (2017) identified factors that influence the success and persistence of Black men at urban public universities. A sampling of urban universities was used for the analytic sample, including 332 university campuses such as Alabama A&M, University of California-Berkeley, University of Georgia, Wayne State University, Norfolk State University, and North Carolina State University. Simultaneous analysis of IPEDS data and semi-structured interviews with Black men at urban public universities was conducted. In informal, semi-structured one-on-one interviews, data were collected from willing participants. The interview protocol included questions about students' academic and social experiences in college, as well as challenges they faced and

successes they achieved, and factors that made them successful. To determine the college readiness of students, IPEDS measures were used, including the American College Test (ACT) and Scholastic Aptitude Test (SAT). There is a difference between aggregate ACT/SAT scores among students of HBCU urban public universities and similar students of non-HBCU/PWI urban schools, indicating that academic preparation matters. Among the main findings of this study is that universities need to focus on increasing college readiness among all students, especially Black students who typically score lower on traditional college readiness tests. There are a few points that emerge from this study regarding student retention and persistence in urban, public universities. As an example, students from all groups, including first-year students, men, women, Whites, Blacks, and Asians, tend to be more likely to persist at non-HBCU/PWI urban, public universities. Strayhorn suggests that more research is needed to better understand the experiences of Black men and other racial minorities at urban, public universities. universities. According to him, an additional study might look at the experiences of Black students in urban, public institutions, as well as the factors and conditions that facilitate success.

Black Male Initiative Programs offered at historically white institutions were the subject matter of a study conducted by Brooms (2018) with 40 semi-structured, open-ended interviews with black men, 36 of whom attended urban schools. Programs such as "The Brothers and Scholars Program" and "Minority Men Mentoring Program" aim to increase student retention and engagement (Brooms, 2018). Black male students participating in these programs have the unique opportunity to meet and communicate with each other about real experiences on campus in an open, safe environment (Brooms,

2018). The students reported feeling more connected as a result. The result was that students reported feeling more connected to their school. The feeling of belonging has been shown to influence engagement and retention (Soria & Taylor, 2018). Additionally, Brooms (2018) argues that students' increased sense of self was influenced by group consciousness and collective identity, which increased accountabilities and responsibilities for each other. In addition to opportunities outside of the classroom, the programs provided academic support as well (Brooms, 2018).

Summary

This chapter identified the literature findings on the subjects of cognitive and non-cognitive factors on the academic performance and persistence among first-year college students. College failure is attributable to certain precursor characteristics a person carries with them into college. Examining the previously mentioned literature identifies the need for the current research study. Tinto's (1993) conceptual framework proposes that the level of academic preparation in high school and college admission tests influence students' academic performance and persistence. As a result of these factors, as well as students' commitment, they can interact with the institution and academic programs, which is crucial for persistence. Students enrolling in higher education institutions bring to the institution a variety of personal qualities, family background and characteristics, skills, and financial resources, as well as precollege academic experiences.

Students whose parents have higher education levels of educational attainment are more likely to persist than those whose parents have relatively lower levels of education. In addition to academic ability, parental involvement, support, and education level have all contributed to student success. The persistence literature also describes gender and

ethnicity as precursors or background characteristics of students. Researchers have studied ethnicity to understand why some students are not completing college degrees. Minority students identified barriers to their academic success as having difficulty relating to instructors, counselors, and teachers. As a result, minority students of color lag behind their Caucasian peers in completing their college degree.

CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to examine the impact of selective cognitive and non-cognitive factors on academic performance and persistence rates. This study was concerned with the cognitive and non-cognitive factors of high school grade point average, ACT/SAT composite scores, first-semester grade point average, levels of first-year college students, and the impact it has on GPA, parent education level, ethnicity, socio-economic status and gender of first-year college students. This chapter is divided into the following sections: 1) Type of Research; 2) Population and Research Setting; 3) Sampling; 4) Source of Data; 5) Data Collection Procedure; 6) Null Hypotheses; 7) Identification of Independent and Dependent Variables; 8) Statistical, Analysis, and Evaluation of Statistical Assumptions.

Type of Research Design

A correlational research design (See Figure 1) was employed in this study. This type of design as a methodological framework permitted the investigator the opportunity to determine the predictable relationship between two or more predictor variable relationships between two or more predictor variables and one criterion variable (Mertler & Vannatta, 2013).

Moreover, the correlational design enabled the investigator the chance to analyze several variables to determine if there is a linear combination effect between the predictor variables with the criterion variable. The strength of the correlational research design is

that it can provide the investigator with an explanation of possible causal relationship among a set of variables (Mertler & Vannatta, 2013). Thus, the correctional research design afforded the investigator a systematic and practical way of examining the predictability of selected cognitive and non-cognitive factors on the academic achievement and persistence rate among first-year college students.

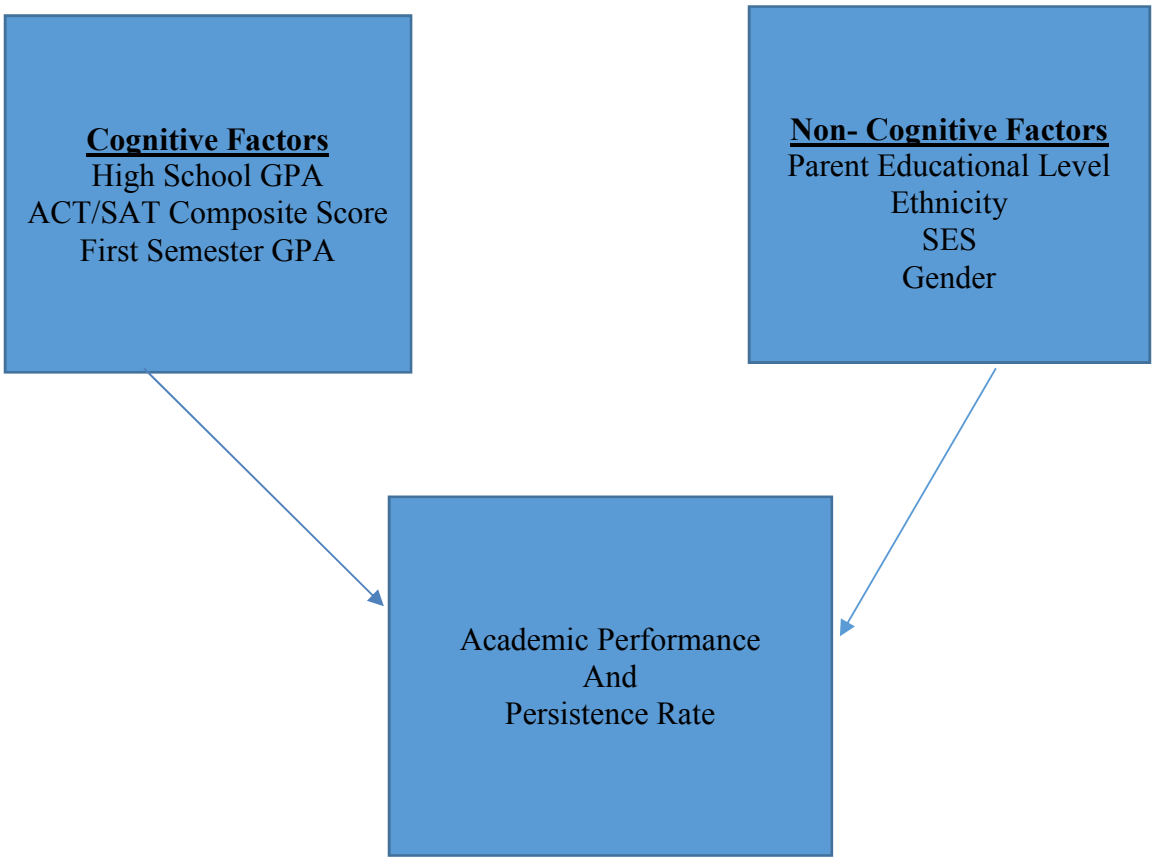

Figure 1. Predictive Correlation Model

Population and Research

The population of the present study consisted of 1,532 first-time freshmen students who enrolled at the targeted institution of higher learning during the 2018-2019

academic year. Ninety-four percent of these first-time freshmen were coded and classified as full-time students.

The target university participating in this study has a student population that ranks it as the second-highest among historically Black institutions of higher learning. Furthermore, the targeted university has been designated as a special institution for urban programming. Its primary objective as a special institution is to prepare its' student clientele by offering over 120 degrees in nine colleges and schools with over 700 faculty members.

Sampling Procedure

The systematic sampling procedure was used in the present investigation. This type of random sampling involved selecting students during the 2018-2019 academic year by taking every Kth name (Taherdoost, 2016). From this list of students, every 5th student was randomly selected to participate in the study.

The fifth person was determined by taking 20 percent of the population and dividing it into the total population. This process continued until a random sample of 320 first-time college students was selected to participate in this study.

Source of Data

The archival (secondary) data for the present empirical investigation was obtained from the target University's office Institutional, Assessment, Planning, and Effectiveness. One of the primary functions of this unit of the university is to collect, analyze and maintain all data of the students to disseminate results to other units of the intuition and state and federal agencies.

The Office of Institutional, Assessment, Planning, and Effectiveness generated the data once the request submitted by the investigator to the office of the General Counsel is approved. Based on the open Records Act the following data was obtained for the yearly parameters 2018-2019 academic school year. High School Grade Point Average, ACT/SAT Composite Score, and First Semester Grade Point Average were gleaned for the cognitive data and serve as an independent variable. While Parent Education Level, Ethnicity, Socio-Economic Status, First Year Cumulative data were collected to address the non-cognitive factors and serve as the second independent variable. First Year Grade Point Average and Persistence Rate data were used as the dependent variable for this study.

Data Collection Procedure

The data for this study were obtained from the student information database of (the target) public, university participating in the study. The University is in the southern region of the United States. Since the data for this investigation was archival and generated from an Office of Institutional Assessment, Planning, and Effectiveness working in conjunction with the Office of the General Council, no informed consent letter was necessary.

Moreover, the data set assembled from the IAPE is anonymous and no identifying student information was included. Each individual student's information entry was assigned a number starting with 0001, 0002, and 0003. The researcher followed this systemic numerical pattern until a sample of 20 percent of the students was randomly selected. The researcher audited the data set to ensure that all student's entries met the criteria for the study.

Furthermore, the researcher then dummy coded the data as required for all criterion variables to be configured to the same levels of measurement. The predictor variables were denoted with a qualitative or quantitative value. The coded data set was analyzed, with the use of the Statistical Package for Social Sciences (SPSS) Program.

Null Hypotheses

The following research null hypotheses were tested in this investigation:

Ho_1: There is no statistically significant predictable relationship between cognitive factors (High School GPA, SAT/ACT Composite Score, First Semester GPA) and academic performance of first-year college students.

Ho_2: There is no statistically significant predictable relationship between non-cognitive factors (Parent Education Level, Ethnicity, SES/Social Economic Status, Gender) and academic performance of first-year college students.

Ho_3: There is no statistically significant predictable relationship between cognitive factors (High School GPA, SAT/ACT Score Composite, First Semester GPA) and persistence rate of first-year college students.

Ho_4: There is no statistically significant predictable relationship between non-cognitive factors and (Parent Education Level, Ethnicity, SES/Social Economic Status, Gender) and persistence of first-year college students.

Ho_5: There is no statistically significant predictable relationship between cognitive and non-cognitive factors and the academic performance of first-year college students.

Ho_6: There is no statistically significant predictable relationship between cognitive and non-cognitive factors and the persistence rate of first-year college students.

Independent and Dependent Variables

For this study, two predictors variables were employed. The first set of predictor variables measured select cognitive characteristics of first-year college students (High school GPA, SAT/ACT Composite Score, and First Semester GPA). The second set of predictor variables measured select non-cognitive characteristics of first-year college students (parent education level, ethnicity, SES, and gender). Both sets of predictor variables are assumed to have a predictable relationship with the criterion variables: academic performance and persistence role of first-year college students.

Statistical Analysis

Two types of multiple regression procedures were employed in the study. They were the standard Multiple Regression technique and the Logistics Regression technique. The multiple regression procedures are appropriate relationships of more than one predictable relationship of more than one predictor to one criterion variable (Mertler & Vannatta, 2013).

According to Mertler and Vannatta (2013), the standard multiple regression procedure is a statistical method where all predictor variables enter the regression model at once. Each one of the predictors the regression model at once. Each one of the predictor variables had been included. Each predictor variable is assessed in true of what adds to the prediction of the criterion variable that is different from the predictability afforded by all other independent variables.

Moreover, according to Metler and Vanatta (2013), the logistic multiple regression technique is a statistical method used to predict a dichotomous dependent variable from two or more continuous or nominal predictor variables. In the logistic regression technique, the investigator used odds of an individual being in one group compared to another group. One of the main emphases of this test is group membership.

Evaluation of Statistical Assumptions

There were five major assumptions, associated with standard multiple regression. They are the assumption of normality, homoscedasticity, linearity, independence of errors, and collinearity. Normality is any criterion variable used in the regression model that should approximate a bell-shaped curve. The assumption of normality was tested with the Shapiro-Wilk test. According to Tabachnick and Fidell (2013), homoscedasticity exists when multiple variables are assumed to be normally distributed (assumption of multivariate normality). This assumption was tested with Box's M Test. However, linearity refers to the linear relationship between the predictor and criterion variables in a regression model. This assumption was tested with residual plots. While the independence of errors refers to the process where two cases in the data set are in some way related to one another, then their error terms are also related. In other words, the disturbance of one case is uncorrelated with those of another case. This assumption too was tested with residual plots. The final assumption is collinearity, which is the process where two or more predictor variables are highly correlated with one another. This assumption was tested by the variance inflation factor (Osborne & Waters, 2002).

Moreover, these are four key assumptions associated with the Binary Logistic Regression procedures. They are assumptions on the linearity of the logit ratio of cases to

variables, independence, and collinearity. Linearity on the logit is the linear relationship between continuous variables in the regression model with the natural log of the odd (dependent variable). This assumption was tested with the Box-Tidwell test. While the ratio of cases to variables refers to the numbers of responses to every given category. His assumption was met if there is between 15 to 50 respondents for each independent variable in the model. However, independence refers to the naturally exclusive and mutually exhaustive categories concerning the dependent variable. Each category should have at least 5 expected frequencies. Finally, collinearity- refers to the process when two or more predictor variables are highly correlated with one another. The assumption was tested by the tolerance technique (Tabachnick & Fidell, 2013).

CHAPTER 4

DATA ANALYSIS

The purpose of this study was to examine the relationship and predictability of selected cognitive and non-cognitive factors on the academic performance and persistence rate of first-year college students. Specifically, this study was concerned with the predictability of the variables final high school GPA, SAT scores, first-semester college GPA, parent educational level, SES, gender, and ethnicity on the academic performance and persistent rate among first-year college students.

This study provided answers to the following research questions:

1) Is there a relationship between cognitive factors (High School GPA, SAT/ACT Composite Score, First Semester GPA) and academic performance of first-year college students?
2) Is there a relationship between non-cognitive factors (Parent Education Level, Ethnicity, SES/Social Economic Status, Gender) and academic performance of first-year college students?
3) Is there a relationship between cognitive factors (High School GPA, SAT/ACT Composite Score, First Semester GPA) and the persistence rate of first-year college students?
4) Is there a relationship between non-cognitive factors (Parent Education Level, Ethnicity, SES/Social Economic Status, Gender) and persistence rate of first-year college students?

5) Is there a relationship between cognitive and non-cognitive factors combined and the academic performance of first-year college students?

6) Is there a relationship between cognitive and non-cognitive factors combined and the persistent rate of first-year college students?

A nonprobability purposive sample of 400 first-year college students was selected to participate in the study. Archival data were generated from the University's database, then downloaded, recoded, and used in this study. The data analysis component of this study was divided into four sections. Section one provided the demographic characteristics of the participants using frequency distribution. Section two presented the descriptive measures of the mean and standard deviation on the independent and dependent variables. Section three dealt with the intercorrelation results regarding the independent and dependent variables. The fourth and final section addresses the six null hypotheses formulated for the study. The Standard Multiple Regression technique, Multiple Correlation procedures, Pearson Product Movement Correlation, Point Biserial, and Biserial Correlation Procedures were utilized to treat the data. All of the hypotheses were tested at the .05 level of significance or better.

Demographic Characteristics of the First Year Student Participants

Four hundred (400) first-year college students participated in this study. The first-year students were classified descriptively by their gender ethnicity, SES, mothers' education level, and fathers' educational level.

Gender. There were two hundred and fifty (250) or 62.5 percent of first-year college students who classified themselves as females. In comparison, there were 150 or 37.5 percent who classified themselves as males (See table 1).

Table 1

Frequency Distribution of First-Year College Participants by Gender

Variable	Number	Percent
Gender		
Female	250	62.5
Male	150	37.5
Total	400	100.0

Ethnicity. For the present study, the variable ethnicity was re-categorized into two groups. There were 358 or 89.5 percent of the first-year college students who reported their ethnic status as African American. Likewise, 42 or 10.5 percent of the first-year college students indicated their ethnic identity was non-African American. (See Tables 2).

Table 2

Frequency Distribution of First-Year College Participants by Ethnicity

Variable	Number	Percent
Ethnicity		
African American	358	89.5
Non-African American	42	10.5
Total	400	100.0

SES. The variable SES was grouped into six categories. There were 252 or 63 percent of the first-year college students who reported their annual family income as $40,000 or below and 33 or 8.3 percent of them expressed their annual family income as $40,001 to $50,000. On the other hand, 57 or 14.2 percent of the first-year college students revealed their annual family income was $50,001 to $60,000, and 7 or 1.8 percent of them stated their annual family income was $60,001 to $70,000. Finally, 10 or 2.5 percent of first-year college students reported their family income was $70,001 to $80,000, and 41 or 10.3 percent of them acknowledged their family income as $80,001 and above (See Table 3).

Table 3

Frequency Distribution of First-Year College Participants by SES

Variable	Number	Percent
SES		
$40,000 or less	252	63.0
$40,001 to $50,000	33	8.3
$50,001 to $60,000	57	14.2
$60,001 to $70,000	7	1.8
$70,001 to $80,000	10	2.5
$80,001 and above	41	10.3
Total	400	100.0

Mother's Education Level. The variable mother's education level was reclassified in the study into three categories. There were 153 or 38.3 percent of first-year college students who indicated their mothers' education level as below high school and 152 or 38 percent of them who reported their mothers' educational level as high school completion. Finally, 95 or 23.8 percent of first-year college students revealed their mothers' educational level as a bachelor's degree or advanced degree (See Table 4).

Table 4

Table Frequency Distribution of First-Year College Participants by Mother's Education Level

Variable	Number	Percent
Mother's Education Level		
Less than High School	153	38.3
High School Completion	152	38.0
Bachelor's degree or Advanced Degree	95	23.8
Total	400	100.0

Father's Educational Level. There were 36 or 9 percent of first-year college students who reported their fathers' education level is below high school and 177 or 44.3 percent of the employees acknowledged their fathers' education level as high school completion. Likewise, 187 or 46.8 percent of the first-year college students expressed their fathers' education level as bachelor's degree or Advanced degree (See Table 5).

Table 5

Table Frequency Distribution of First-Year College Participants by Father's Education Level

Variable	Number	Percent
Father's Education Level		
Less than High School	36	9.0
High School Completion	177	44.3
Bachelor's degree or Advanced Degree	187	46.8
Total	400	100.0

Mean and Standard Deviation Results Regarding Independent and Dependent Variables

The means and standard deviations for the independent and dependent variables employed in the regression paradigm were computed for the study. On the average, first-year college students had SAT scores of 893.17 (SD = 117.55) and a high school grade point average of 2.86 (SD = .45). The first-year college students' first-semester grade average was 2.6 (SD = 1.56).

Additionally, the average, first-year college students' mothers' education level was high school completion. Similarly, their fathers' educational level was also high school completion. Further, first-year college students' family income on average was

$42,633.91 (SD=32,582.54). The first-year cumulative grade point average of first-year college students was 2.28 (SD=1.08).

Moreover, two of the non-cognitive variables, (ethnicity and gender) were dummy coded for the study. The variable ethnicity was coded "1" for African Americans and "0" for non-African Americans. The gender variable was coded "1" for females and "0" for males. Finally, the variable persistence rate was coded "1" for returning to the University and "0) for not returning to the University (See Table 6).

Table 6

Mean and Standard Deviation Results Pertaining to the Independent and Dependent Variables

Variables	Mean	Standard Deviation
High School GPA	2.86	.454
SAT/ACT Composite Score	893.17	117.554
First Semester GPA	2.26	1.56
Mothers' Education Level	1.85	.78
Fathers' Education Level	2.38	.65
Ethnicity	.90	.30
SES	42,633.91	32,582.54
Gender	.62	.49
Persistence rate	.40	.40
Academic Performance	2.28	1.08

Correlational Results Regarding Independent and Dependent Variables in the Regression Model

Correlational results (See Table 7) were calculated among the seven independent variables and two dependent variables. The Pearson Product Moment Correlation, Point Biserial Correlation, and the Biserial Correlation techniques were employed to determine the intercorrelation among quantitative, qualitative, and binary variables used in the study.

Among the three cognitive variables, the variable high school grade point average (r=.315), SAT score (r=.158), and first-semester grade point average (r=.451) were found to be significantly and positively related to academic performance. Relative to the non-cognitive factors, gender was found to be significantly and positively related to academic performance.

Moreover, the cognitive factors first-semester grade point average (r=.356) and high school grade point average (r =.290) were found to be statistically and significantly related to the persistence rate among first-year college students. Also, the cognitive factor SAT scores were found to be positively related to persistence rate (r=.137) (See Table 7).

Table 7

Correlational Results Regarding Independent and Dependent Variable

Independent Variable	Dependent Variable Academic Performance	Persistence Rates
High School GPA	.315***	.290***
SAT Score	.158***	.137**
First Semester GPA	.451***	.356***
Mother's Education Level	-.007	.022
Father's Education Level	-.017	-.014
Ethnicity	-.076	-.035
SES	.083	.081
Gender	.122*	.088

Testing of Hypotheses

HO_1: There is no statistically significant relationship between cognitive factors (high school GPA, SAT scores, and first semester GPA) and academic performance of first-year college students.

Illustrated in Table 8 were the Standard Multiple Regression findings regarding the predictable relationship between cognitive factors (HSGPA, SAT scores, and FSGPA) and the academic performance of first-year college students. The regression model yielded a multiple correlation of .478. The three cognitive factors of high school grade point average, SAT scores, and first-semester grade point average combined

accounted for 22.8 percent (Adjusted = 22.2%) of the variance in the academic performance among first-year college students.

A statistically significant linear relationship was found between the cognitive factors of high school grade point average, SAT scores, first-semester grade point average, and the academic performance of first-year college students at the.001 level ($F(3, 396) = 34.014$, $P < .001$). When SAT scores and first-semester grade point average were controlled, high school grade point average ($t(396) = 3.022$, $P < .01$) was found to contribute significantly to the academic performance of first-year college students. Also, when the variables SAT scores and high school grade point average were controlled, first-semester grade point average ($t(396) = 7.749$, $P < .001$) was found to contribute significantly to the academic performance of first-year college students. Thus, hypothesis 1 was rejected.

Table 8

Standard Multiple Regression Results Pertaining to the Relationship Between Cognitive Factors and Academic Performance

Model	B	SE	Beta	t	P
(Constant)	-.087	.445			
HSGPA	.350	.116	.147	3.022	.003**
SAT	.001	.000	.070	1.549	.122
FSGPA	.353	.046	.378	7.749	.000***

Note: R=.478; R^2 =.228; Adjusted R^2 = .222; F =39.014; df= 3,396, P <.001
**Significant at the .01 level
***Significant at the .001level

HO_2: There is no statistically significant relationship between non-cognitive factors (Parent education level, ethnicity, social-economic status, and gender) and academic performance of first-year college students.

Included in Table 9 were the Standard Multiple Regression analysis pertaining to the predictable relationship between non-cognitive factors (mother's education level, father's educational level, ethnicity, social-economic status, and gender) and the academic performance of first-year college students. The multiple regression paradigm yielded a multiple correlation of .169. The five non-cognitive factors collectively were found to explain 2.8 percent (Adjusted =1.6%) of the variance in academic performance among first-year college students.

A significant linear relationship was found to exist between the non-cognitive factors of mother's education level, father's education level, SES, ethnicity, gender, and the academic performance of first-year college students ($F(5, 394) = 2.305$, $P < .05$). The variable gender was the only non -cognitive factor ($t(394) = 2.475$, $P < .05$) to contribute significantly to the academic performance of first-year college students. Accordingly, hypothesis two was rejected.

Table 9

Standard Multiple Regression Results Pertaining to the Relationship Between Non-Cognitive Factors and Academic Performance

Model	B	SE	Beta	t	P
(Constant)	2.214	.268			
Mother's Ed. Level	-.003	.073	-.002	-.037	.971
Father's Ed. Level	.012	.089	.007	.133	.894
SES	2.908-6	.000	.088	1.753	.083
Ethnicity	-.283	.178	-.081	-1.588	.113
Gender	.276	.111	.124	2.475	.014*

Note: R=.169; R^2 =.028; Adjusted R^2 = .016; F =2.305; df= 5,394, P =.044*
*Significant at the .05 level

HO_3: There is no statistically significant relationship between cognitive factors (high school GPA, SAT scores, and first semester GPA) and persistent rates of first-year college students.

A Direct logistic regression technique was computed to determine the relationship between cognitive factors (high school GPA, SAT scores, and first semester GPA) and the persistence rates among first-year college students. Regression results indicated the overall model of the three cognitive independent variables were statistically reliable in distinguishing between those first-year college students who would return to the university and those who would not return to the university (-2 log-likelihood = 471.726, X^2 (3) = 67.483, P < .001). Additionally, the NagelKerke R Square tests revealed that the

variable high school GPA, SAT scores, and first semester GPA, collectively accounted for 21 percent of the variance in persistence rate (See Table 10).

Table 10

Overall Model Fit Results Regarding the Relationship Between Cognitive Factors and Persistence Rates

Model	Chi Square	df	P
Final	67.483	3	.000***

-2 log likelihood= 471.726; NagelKerke R Square =.210
***Significant at the .001 level

The prediction of persistence rate was very accurate in terms of correctly classifying those first-year college students who would not return to the university (82.8%). However, it did not predict those first-year college students who would return to the university (55.3%) for an overall classification of persisting of 71.8 percent (See Table 11).

Table 11

Classification Table Results Regarding Persistence Rate

Persistence Rate	No	Yes	Percent Correct
No	198	41	82.8
Yes	72	89	55.3

Overall Correct = 71.8

Moreover, the Wald Statistics was used to measure the contribution of each individual predictor on the persistence rates among first-year college students. The Wald

tests revealed that high school grade point average (Z = 10.035, P< .01) and first-semester grade point average (Z =25.804, P< .001) were found to be independent predictors of the persistent rates of first-year college students. Finally, first-time college students who had high grade point averages in high school were twice more likely to persist than those who had low grade point averages in high school. Also, first-time college students who had high first-semester grade point averages were almost two times more likely to persist than their counterparts who had low first-semester grade point averages. Consequently, hypothesis three was rejected.

Table 12

Regression Coefficients Regarding the Relationship Between Cognitive Factors and Persistent Rates

Variable	B	SE	Wald	df	P	Exp (B)
HSGPA	.890	.281	10.035	1	.002**	2.435
SAT	.001	.001	1.422	1	.230	1.001
FSGPA	.583	.115	25.804	1	.000***	1.791
Constant	-5.371	1.106				

**Significant at the.01 level
***Significant at the .001 level

HO_4: There is no statistically significant relationship between non-cognitive factors (parent education level ethnicity social-economic status and gender) and persistence rates of first-year college students.

Presented in Table 13 were the logistic regression results pertaining to the relationship between non-cognitive factors (parent education level, ethnicity, social-economic status, and gender) and the persistence rate among first-year college students.

The regression results revealed that the five non-cognitive factors on mothers' education level, fathers' education level, ethnicity, SES, and gender were not statistically reliable in predicting those first-year college students who would return to the university and those who would not (-2 log-likelihood= 532.548, X^2 (5)= 6.662, P > .05). The NagelKerke R Square procedure indicated that the non-cognitive variables (parent education level, ethnicity, SES, and gender) combined accounted for 2.2 percent of the variance in persistence rates (See Table 13).

Table 13

Overall Model Fit Results Regarding the Relationship Between Non-Cognitive Factors and Persistence Rates

Model	Chi-Square	df	P
Final	6.662	5	.247

-2 log-likelihood = 532.548; NagelKerke R Square = .022

Prediction of first-year college students' persistence rate was impressive with regard to correctly classifying those who would not return to the University (95.4%), but not so in terms of those who would return to the University (11.2%) with an overall classification of persistence rate for first-year college students of (61.5%) (See Table 14).

Table 14

Classification Table Results Regarding Persistence Rates

Persistence Rates	No	Yes	Percent Correct
No	228	11	95.4
Yes	143	18	11.2

Overall Correct = 61.5

Furthermore, the Wald statistics reported that neither one of the five non-cognitive factors were found to be an independent predictor of persistence rate among first-year college students. The odds ratios for these variables indicated little change in the likelihood of persisting among first-year college students. Therefore, hypothesis four was not rejected.

Table 15

Regression Coefficients Regarding the Relationship Between Non-Cognitive Factors and Persistence Rates

Variable	B	SE	Wald	df	P	Exp (R)
Mother's Ed. Level	.071	.141	.253	1	.615	1.073
Father's Ed. Level	-.031	.170	.033	1	.856	.970
Ethnicity	-.254	.338	.564	1	.452	.776
SES	.000	.000	2.534	1	.111	1.000
Gender	.393	.217	3.289	1	.070	1.481
Constant	-.691	.513				

HO_5: There is no statistically significant relationship between cognitive and non-cognitive factors (high school GPA, S80 scores, first semester GPA, parent education level, ethnicity, SES, and gender) combined and the academic performance of first-year college students.

Presented in Table 16 were Standard Multiple Regression results concerning the predictable relationship between cognitive and non-cognitive factors combined and the academic performance of first-year college students. The regression model yielded a

multiple correlation of .483. The eight cognitive and non-cognitive variables together accounted for 23.3 percent (Adjusted =21.8%) of the variance in academic performance.

A linear relationship was found to exist between the eight combined cognitive and non-cognitive independent variables (HSGPA, SAT scores, FSGPA, mother's education level, father's education level, ethnicity, SES, and gender) and the academic performance of first-year college students (F (8, 391) = 14.889, P< .001). The variable high school grade point average and first-semester grade point average were found to be independent predictors of the academic performance of first-year college students. Based on their above analyses, hypothesis 5 was rejected.

Table 16

Standard Multiple Regression Results Regarding the Relationship Between Cognitive and Non-Cognitive Factors and Academic Performance

Model	B	SE	Beta	t	P
Constant	.238	.524			
Mother's Ed. Level	.021	.065	.015	.318	.751
Father's Ed. Level	-.023	.079	-.014	-.293	.770
SES	1.406E-6	.000	.042	.945	.345
Gender	.130	.101	.059	1.288	.199
Ethnicity	.015	.162	.162	.093	.923
SAT	.001	.000	.077	1.682	.093
HSGPA	.342	.117	.144	2.928	.004**
FSGPA	.342	.046	.367	7.378	.000***

Note: R=.483; R^2 =.233; Adjusted R^2 = .218; F = 14.889; df =8,391; P =.000***
**Significant at the .01 level ***Significant at the .001 level

HO_6: There is no statistically significant relationship between cognitive and non-cognitive factors high school GPA SAT scores, first semester GPA, parent education level, and ethnicity.

SES and gender combined and the persistence rates for first-year college students. Reporting in Table 17 were the Standard Logistic Regression results with regard to the predictable relationship between cognitive and non-cognitive factors and the persistence rate of first-year college students. The regression results revealed that the eight cognitive and non-cognitive factors combined were statistically reliable in predicting those first-year college students who would return to the university and those who would not (-2 log-likelihood = 468.541, X^2 (8) = 70.669, P< .001).

Table 17

Overall Model Fit Results Regarding the Relationship Between Cognitive and Non-Cognitive and Persistence Rates

Model	Chi-Square	df	P
Final	70.669	8	.000***

-2 log likelihood=468.541; NagelKerke R Square =.219
***Significant at the .001 level

The NagelKerke R Square technique indicated that the eight cognitive and non-cognitive variables together accounted for 21.9 percent of the variance in persistence rates (See Table 17). The prediction of first-year college students' persistence rates was impressive with regard to correctly classifying those who would not return (84.1%) but not so in terms of those who would return (52.8%) with an overall classification of persisting 71.5 percent (See table 18).

Table 18

Classification Table Results Regarding Persistence Rate

Persistence Rates	No	Yes	Percent Correct
No	201	38	84.1
Yes	76	85	52.8

Overall Correct = 71.5

Moreover, the Wald Statistics revealed that high school grade point average (Z = 10.352, P <.001) and first-semester grade point average (Z = 24.307, P <.001) were independent predictors of the persistence rate of first-year college students. Finally, those first-year college students who had high grade point averages in high school and first-semester grade point averages were 2 times more likely to persist than those who had low grade point averages in high school and low first-semester grade point averages in college (See Table 19).

Table 19

Regression Coefficient Regarding the Relationship Between Cognitive and Non-Cognitive and Persistence Rates

Model	B	SE	Wald	df	P	Exp (B)
Mother's Ed level	.147	.154	.907	1	.341	1.158
Father's Ed level	-.120	.184	.421	1	.517	.887
SES	.000	.000	.789	1	.374	1.000
Ethnicity	.298	.375	.631	1	.427	1.347
Gender	.298	.237	.553	1	.457	1.193
HSGPA	.713	.284	10.352	1	.001	2.482***
SAT	.001	.001	2.063	1	.151	1.001
FSGPA	.576	.117	24.307	1	.000	1.779***
Constant	-6.155	.306				

Summary of Hypotheses

There were six null hypotheses analyzed in this study. All six of these hypotheses were tested to assess the predictable relationship between selected cognitive and non-cognitive factors and the academic performance and persistence rate among first-year college students. Of the six hypotheses, five of them were found to be statistically significant.

The cognitive factors (see hypothesis one) high school grade point averages, SAT scores of first-semester grade point averages were found to be linearly related to the academic performance among first-year college students. Additionally, the noncognitive

(See hypothesis two) of mother's education level, fathers' education level, SES, ethnicity, and gender were found to be statistically significantly related to the academic performance among first-year college students.

Furthermore, the cognitive factors (See hypothesis three) of high school grade point averages, SAT scores, and first-semester grade point averages were found to be significantly related to the persistence rate among first-year college students. Nonetheless, the non-cognitive factors (See hypothesis four) of mother's educational level, father's education level, SES, ethnicity, and gender were found not to be significantly related to the persistence rate of first-year college students.

Moreover, the cognitive and non-cognitive factors combined were found to be linearly related to the academic performance among first-year college students. Likewise, the cognitive and non-cognitive factors combined were found to be statistically related to the persistence rate among first-year college students (See Table 20).

Table 20

Summary Table of Hypotheses Tested

Hypotheses	R	R^2	X^2 or F	df	Conclusion
HO_1	.478	.228	39.014***	3,396***	Significant
HO_2	.169	.028	2.305*	5,394	Significant
HO_3			67.483***	3	Significant
HO_4			6.662	5	Non-Significant
HO_5	.483	.233	8.39***	8,391	Significant
HO_6			70.669***	8	Significant

*Significant at the .05 level
***Significant at the .001 level

CHAPTER 5

SUMMARY, FINDINGS, DISCUSSION, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to examine the relationship and predictability of selected cognitive and non-cognitive factors on the academic performance and persistence rate of first-year college students. Specifically, the study was concerned with the predictability of the variables for final high school grade point average, SAT scores, first-semester college grade point average, parents' education level, SES, gender, and ethnicity on the academic performance and persistence rate among first-year college students.

A correlational research design was employed in the present investigation. Four hundred (400) first-year college students attending an urban university in the southern region of the United States were selected to participate in the investigation. Archival (pre-existing) data generated from the Office of Institutional Assessment, Planning, and Effectiveness of the target university were used in the current study.

Finally, the data were analyzed using Simultaneous Multiple Regression Procedure and the Standard Logistic Regression technique. The following null hypotheses were formulated and tested in this study:

HO1: There is no statistically significant relationship between cognitive factors (high school GPA, SAT scores, and first semester GPA) and academic performance of first-year college students.

HO2: There is no statistically significant relationship between non-cognitive factors (parents' education level, ethnicity, SES, and gender) and academic performance of first-year college students.

HO3: There is no statistically significant relationship between cognitive factors (high school GPA, SAT scores, and first semester GPA) and persistence rate of first-year college students.

HO4: There is no statistically significant relationship between non-cognitive factors (parents' education level, ethnicity, SES, and gender) and persistence rate of first-year college students.

HO5: There is no statistically significant relationship between cognitive and non- cognitive factors (high school GPA SAT scores, first semester GPA, parents' education level, ethnicity, SES, and gender) combined in the academic performance of first-year college students.

HO6: There is no statistically significant relationship between cognitive and non- cognitive factors (high school GPA, SAT scores, first semester GPA, parents educational level, ethnicity, SES, and gender) combined and the persistence rates of first-year college students.

Findings

The following findings were generated from the results of this investigation:

1. A linear relationship was found between cognitive factors and the academic performance among first-year college students.
2. High school grade point average was found to be an independent predictor of the academic performance among first-year college students.

3. First-semester grade point average was found to contribute significantly to the academic performance of first-year college students.
4. A statistically linear relationship was found between non-cognitive factors and the academic performance of first-year college students.
5. First-year college students' gender was found to be independently related to their first-year final grade point average.
6. The cognitive factor of high school grade point average, first-semester grade point average and SAT scores were significant predictors in distinguishing those first-year college students who would return to the university and those who would not return to the university.
7. The cognitive factors high school grade point average and first-semester grade point average were independently related to the persistence rate among first-year college students.
8. The non-cognitive factors of mother's education level, father's education level, ethnicity, SES, and gender were not significant predictors in distinguishing those first-year college students who would return to the university and those who would not return to the university.
9. A statistically linear relationship was found between the combination of cognitive and non-cognitive factors and the academic performance among first-year college students.
10. The cognitive factors of high school grade point averages and first-semester grade point averages were found to be independent predictors of

first-year college students' academic performance when cognitive and non-cognitive factors were combined.

11. The combined cognitive and noncognitive factors of high school grade point average, SAT scores, first-semester grade point average, parents' education level, ethnicity, SES and gender were significant predictors and distinguishing those first-year college students who would return to the university and those first-year college students who would not return to the university.

12. Finally, the cognitive factors of high school grade point averages and first-semester grade point averages were found to be independently related to the persistence rate among first-year college students when cognitive and non-cognitive factors word combined.

Discussion

One of the most significant findings of the present study was the predictable relationship between cognitive factors and the academic performance of first-year college students. Specifically, the variables high school grade point average, SAT scores, and first-semester grade point average were found to have a linear relationship with academic performance. These findings were consistent with those of Roderick, Naguoka, and Coco (2009), Bridgeman et al. (2008) Kobrin et al. (2008), Robbins et al. (2004), Richardson, Abraham, and Bond (2012), Fuller, Wilson, and Tobin (2011), Berg and Hofma (2005), Yorke and Longden (2008), Mattern and Patterson (2011), Cyrenne and Chan (2012) and Higdem et al. (2016).

Findings by the above researchers revealed that high school grade point averages, SAT Scores, and first-semester grade point average were significant predictors of the academic performance among college students. Nevertheless, the findings regarding SAT were contrary to those of Zwick and Sklar (2005) and Daniels and his associates (2012). These researchers found that SAT had little predictive power as a standalone variable.

A plausible explanation for the current findings regarding the relationship between cognitive factors and academic performance may be that the academic work that first-year college students were exposed to was similar to what they had in their final year of high school as well as the materials they were exposed to on SAT examination. Because of this exposure and familiarity, the academic behavior results of first-year college students seemed to be significantly related to their high school grade point average, SAT scores, and first-semester grade point average.

Other notable findings of the present study were the significant linear relationships found between the non-cognitive factors of parents' education level, ethnicity, SES, and gender and the academic performances of first-year college students. These findings were favorable to those of Lashley (2014), Duckworth and Seligman (2006), Sackett et al. (2012), Dennis, Phinnney and Chuateco (2005) and Voyer and Voyer (2014).

All of the aforementioned researchers found that one or more of the above non-cognitive factors were statistically related to the academic performance of college students. Nonetheless, only the variable gender was an independent predictor of academic performance among college students. Female first-year college students were found to have higher grade point averages than their male counterparts. These findings were

consistent with those of Richardson, Abraham, and Bond (2012) and Duckworth, Shulman, Mastronarde, Patrick, Zhang, and Druckman (2015).

An explanation for the gender finding may be that female first-time college students are more motivated within the academic classroom to do their work than their male peers. Also, another reasonable explanation for these findings may be that female students tend to integrate more easily within the college environment and are more aware of the type of effort needed to achieve a college degree than male college students.

Moreover, another interesting finding of the current study pertains to the relationship between cognitive factors and persistence rate among first-year college students. To be sure, the cognitive factors of high school's great point average, SAT scores, and first-semester grade point average were reliable in predicting those first-year college students who would return to the university and those who would not return.

The above findings were confirmed by those of Geiser and Stantelices (2007), Stump and Stanley (2002), Seidman (2005), Rohr (2012), Mattern and Patterson (2011), and Korbin, Patterson, Shaw, Mattern, and Barbuti (2008). All of the aforementioned researchers found that cognitive factors of high school grade point average, SAT scores, and first-semester grade point average were significantly related to the persistence rate among first-year college students.

An explanation for these findings may be that first-year college students who do well academically in high school and on standardized examinations seem to exhibit positive expectations of themselves as being able to do the academic work in college.

These positive expectations on the part of first-year college students to perform well academically on college campuses probably add support to cognitive factors being key indicators of students returning or not returning to the university.

Finally, another important but somewhat surprising finding of the present study dealt with the relationship between non-cognitive factors and the persistence rates among first-year college students. A significant linear predictable relationship was not found between the non-cognitive factors of parents' education level, SES, ethnicity, gender, and the persistence rate of first-year college students.

The aforementioned findings were not supported in research conducted by Carneiro and Heckman (2005), Chetty et al. (2014), O'Shea, Heilbronner and Reis (2010), Crisp et al. (2015), Huyge, Van Maele and Van Houtte (2015), and Corak (2013). All of these researchers found that non-cognitive factors such as mothers' education levels, fathers' education levels, SES, gender, and ethnicity were significantly related to the persistence rate among first-year college students. A reasonable explanation for the current finding may be regardless of first-year college students' gender, ethnicity, social-economic status, or their parents' education levels, they all seem to value a college education. Collectively the previous non-cognitive factors seem to be related to first-year college students' academic decision making which tends to influence their persistence decisions.

Conclusion

The following conclusions were drawn from the findings of the current study:

1. In general, it appeared that any regression model developed to predict the academic performance of first-year college students should include the

cognitive factors of final high school grade point average, SAT scores, and first-semester college grade point averages.

2. It appeared that for every one-point increase in the final high school grade point average, there was a .350 point increase in the first-year grade point average of first-year college students.
3. In general, it appeared that for every one-point increase in the first-semester grade point average, there was a .353 point increase in the first-year grade point average among first-year college students.
4. Any attempt to predict the academic performance of first-year college students should include the non-cognitive factors of mothers' education level, fathers' education levels, ethnicity, SES, and gender.
5. Female first-year college students had a significantly higher first-year grade point average than their male counterparts.
6. Cognitive factors such as final high school grade point average, SAT scores, and 1st-semester grade point average appeared to be significantly reliable in predicting the persistence rate among first-year college students.
7. It appeared that first-year college students who possessed a high grade point average in high school were 2.4 times more likely to persist than those who possess low grade point averages in high school.
8. It appeared that first-year college students with high first-semester grade point averages were 1.79 times more likely to persist than those with low first-semester grade point averages.

9. Non-cognitive factors such as parents' educational level, gender, ethnicity, and SES had no impact on the persistence rate among first-year college students.
10. In general, when cognitive and non-cognitive factors were combined, they accounted for 23.3 percent of the variance in the first-year grade point averages among first-year college students.
11. Finally, when cognitive and non-cognitive factors were combined, they were found to explain 21.9 percent of the variance in the persistence rate among first-year college students**.**

Implications

The following implications were drawn from the results of this investigation:

1. The significant influence of cognitive factors on the academic performance of first-year college students suggests that student services officials including counselors who are responsible for the academic integration of students into the college environment should develop and implement academic programs to assist them in making this transition. This will allow counselors and other student services personnel to connect with the academic training of students on a more personal level and help increase their motivation to improve their overall academic performance.
2. The relationship between non-cognitive factors and the academic performance of first-year college students suggests that counselors and other school service personnel should pay close attention to the effects that family and personal characteristics of students have on the academic integration of students on

college campuses. An understanding of how these factors interplay on students' academic achievement integration and assist counselors and their student service counterparts in their attempt to develop strategies to minimize any negative effect that they might have on the academic growth of students.

3. The significant relationship between cognitive factors and the persistence rates among first-year college students suggests that counselors and other student services personnel should help the university to implement policies and guidelines that encourage faculty and staff at the departmental levels to be more involved in the transition process of students into the culture of the institution. This will highlight the importance of the university's commitment to their success and their total well-being as an essential part of the institution.
4. Finally, the most significant relationship between the non-cognitive factors and the persistence rate among first-year college students suggests that more needs to be done not only on the departmental level, but at the institutional level to encourage the participation of all university personnel in identifying those students who might have some difficulties in adjusting college life. An awareness of the social attributes of these students can assist university personnel particularly counselors, in their efforts to develop interventions to help in the adjustment process.

Recommendations for Further Research

The following recommendations are offered for future research. Therefore, it is recommended that:

1. A follow-up study is conducted involving a larger population such a study, if conducted, would provide additional data to better understand the predictable relationship between cognitive and non-cognitive factors and the academic and persistent behavior among first-year college students.
2. A study is conducted to examine the effects of cognitive and non-cognitive factors on student behavior at the individual and the contextual levels of the university.
3. A study should be conducted to investigate the predictability of student services' influences on the academic and persistence behavior of first-year college students.
4. Finally, a study should be conducted to further examine the impact of family background in conjunction with family cultural factors on the academic and persistence behavior of college students.

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