

The Effect of Formal Mentoring Programs on Persistence of College Sophomores

by

Kerry James Palmer

A dissertation submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

Auburn, Alabama
December 15, 2018

Keywords: retention, sophomore, university,
student services, mentoring, mentorship

Copyright 2018 by Kerry James Palmer

Approved by:

James Witte, Chair, Professor of Educational Foundations, Leadership, and Technology
Maria Witte, Professor of Educational Foundations, Leadership, and Technology
Jane Teel, Assistant Clinical Professor of Educational Foundations, Leadership, and Technology
William Murrah, Assistant Professor of Educational Foundations, Leadership, and Technology

Abstract

Retention has been an issue in higher education for decades (Freedman, 1956; Noel et al., 1986; Tinto, 1987, 2012). Many attempts have been made to address this issue, with most research focusing on the freshman year. Recently, increasing focus has centered on sophomore students and what may cause them to leave college early. However, even after identification of the sophomore slump as an issue as far back as 1956 (Freedman, 1956), universities have only sporadically addressed retention at this critical juncture.

Mentoring has been implemented in many areas in an effort to increase retention. While mentoring programs are conducted to some extent in the university setting, the impact of mentoring has not been studied to the same extent as freshman retention initiatives. Consequently, little is known about the impact of robust advising and mentoring programs on academic performance and persistence among sophomores. Even though university administrators acknowledge the issues surrounding low academic performance and high dropout among sophomores, most resources geared toward retention are aimed at freshmen (Freedman, 1956; Noel et al., 1986; Tinto, 1987, 2012).

Using a quasi-experimental research design with matched control groups, this study attempted to determine whether a relationship exists between formal mentoring programs and retention at a mid-sized, liberal arts university in the southeastern United States. Research questions were analyzed using multiple regression and binary logistic regression, and indicated that, at least with the sample studied herein, there was not a statistically significant relationship

between placement in a formal mentoring program and improvement of GPA or persistence to the junior year of study. Even so, examination of raw data indicated that students in the treatment group entered the junior year at a higher rate, and with a higher percentage of GPA increase, than those in the control group.

Acknowledgements

This dissertation, and the preceding graduate studies, would not have been possible without the unwavering support of my family. I would like to especially thank my wife, Robyn, and my children: LeeAnn and Benton. They unselfishly allowed me the time needed for travel to Auburn and for study. Not once did I ever hear a complaint from any of them. Their support and encouragement mean the world to me. I also deeply appreciate my parents and my mother- and father-in-law. Special thanks are due my father-in-law, Dr. L. V. Self, for encouraging me to take this step for nearly twenty years. Thanks also to Dr. Tami Shelley, my former colleague and dear friend, who encouraged me to apply to the doctoral program at Auburn University. Thank you for opening the doors for me!

I am deeply appreciative of Dr. Jack Hawkins, Jr., my dear friend, mentor, and former college president. His steady encouragement, enthusiasm, and belief in me will never be forgotten. Thanks also to Dr. Jim Vickrey who has taken a keen interest in my PhD studies, my career, and me as a person. The friendship of both of these men is a tremendous blessing.

Many thanks to the members of my doctoral committee: Dr. James Witte, Dr. Maria Witte, Dr. Jane Teel, and Dr. Hank Murrah. Your support, encouragement, and direction proved helpful every step of the way. Thanks also to Dr. Hal Fulmer and Dr. Hank Dasinger for their assistance throughout this project, and to Dr. Diane Boyd for serving as university reader for this project.

Finally, I would like to thank the Trinity Presbyterian School Board of Trustees for facilitating this degree in the most tangible of ways. It has been the greatest honor of my life to serve you as Head of Trinity School.

Table of Contents

Abstract	ii
Acknowledgments.....	iv
List of Tables	x
List of Figures.....	xi
CHAPTER 1 – INTRODUCTION	1
Retention.....	1
The Sophomore Slump	2
Mentoring.....	3
Mentoring Concept	4
Mentoring and Sophomore Retention.....	5
Statement of the Problem.....	6
Purpose of the Study	7
Research Questions.....	7
Significance of the Study	7
Limitations	8
Definitions.....	8
Organization of the Study.....	11

CHAPTER 2 – REVIEW OF LITERATURE	13
Introduction.....	13
Purpose of the Study	13
Research Questions.....	13
College Retention.....	14
Early Retention Studies.....	14
A Focus on Culture and Adjustment.....	14
Early Retention-Specific Study.....	15
College as a Social System	17
A Focus on Psychology	20
A Focus on Prevention.....	21
A Case for Administration.....	22
The Tinto Model	25
Criticism of the Tinto Model	27
Social Behaviors and Retention	28
Ethnicity and Retention.....	29
Federal TRIO Programs and Retention.....	30
Mentor-Specific College Scholarship Programs.....	32
Counseling Services and Retention	35
Incentives and Retention.....	36
Retention in Adult Learners.....	37
Retention Issues at the Sophomore Level.....	39
Sophomore Retention.....	41
The Sophomore Slump	41
Sophomore-Specific Retention Strategies	45

Mentoring.....	47
Benefits of Mentoring.....	47
Mentor Matching	49
Sophomore-Specific Mentoring Programs	50
Summary.....	52
CHAPTER 3 – METHODS.....	54
Introduction.....	54
Purpose of the Study	54
Research Questions.....	54
Research Design.....	55
Matching Method.....	57
Setting	58
Human Subjects Review and Data Collection Procedures	59
Participants.....	60
Variables	60
Independent and Dependent Variables	61
Data Analysis	61
Matched Control Groups.....	62
Summary.....	64
CHAPTER 4 – FINDINGS.....	65
Introduction.....	65
Purpose of the Study	65
Research Questions.....	65

Demographic Results	66
Matching Method.....	66
Analysis.....	70
Research Questions Results	76
Research Question 1	76
Research Question 2	79
Summary.....	84
CHAPTER 5 – SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS	85
Introduction.....	85
Purpose of the Study.....	86
Research Questions.....	86
Summary.....	86
Limitations of the Study.....	87
Conclusions.....	88
Recommendations for Future Research	89
Implications.....	90
References.....	92
Appendix A: IRB Approval Documents.....	101

List of Tables

Table 1 – Description of Matched Factors.....	56
Table 2 – Leadership Scholar Treatment Group and Matched Control Group.....	62
Table 3 – Description of Covariates	63
Table 4 – Demographic Information by Group	68
Table 5 – Coefficients (GPA Increase Freshman to Sophomore).....	72
Table 6 – Variables in the Equation.....	73
Table 7 – Coefficients – GPA.....	78
Table 8 – Model Summary – GPA	79
Table 9 – Omnibus Test of Model Coefficients – Persistence.....	80
Table 10 – Model Summary – Persistence	80
Table 11 – Variables in the Equation – Persistence.....	81
Table 12 – Classification Table – Persistence	82
Table 13 – Control Group Persistence Percentages.....	82
Table 14 – Treatment Group Persistence Percentages.....	83
Table 15 – Control Group GPA Increase Percentages.....	83
Table 16 – Treatment Group GPA Increase Percentages	84

List of Figures

Figure 1 – GPA of Students at the End of the First Term of the Freshman Year	69
Figure 2 – GPA of Students at the End of the Second Term of the Sophomore Year	70
Figure 3 – Scatterplot – Standardized Residuals and Standardized Predicted Values	75
Figure 4 – GPA Distribution.....	76

CHAPTER 1. INTRODUCTION

Retention

Retention is a major issue at most institutions of higher learning (Freedman, 1956; Tinto, 1987, 2012; Noel et al., 1986). In recent years, particular interest has been applied to first year college students, commonly referred to as freshmen. Studies of freshman retention have led to myriad student services programs designed to enhance the first-year experience and assist students in progressing to the second year of study, commonly referred to as the sophomore year (Graunke & Woosley, 2005; Tinto, 1975, 1988, 1993, 2000). It is at this sophomore level that the intensive and deliberate implementation of highly programmatic student academic services often stops, as does much of the research on this topic (Graunke & Woosley, 2005; Lee, 2014; Schaller, 2010).

While there is research to suggest that many students disengage during the sophomore year, there is a dearth in the literature as it pertains to potential causes of this disengagement (Graunke & Woosley, 2005; Lee, 2014). In fact, the prevalence of second year issues gave rise decades ago to a new phrase in higher education: the sophomore slump (Freedman, 1956; Sanchez-Leguelinel, 2008; Schaller, 2005). Yet, research has been slow to address what has increasingly become an issue of concern at colleges and universities throughout the United States (Graunke & Woosley, 2005; Lambdin, 2014; Ligouri & Lonbaken, 2015).

While emphasis in recent years has been centered on specific programs designed to enhance and improve the freshman collegiate experience, research indicated that sophomore

success, as determined by progression to the junior year of study, has a direct impact on overall institutional success, as indicated by graduation rates (Lambdin, 2014; Schreiner & Pattengale, 2000). Therefore, there is a growing interest among university administrators and policymakers in enhancing and improving the sophomore experience, with the hopes of retaining a greater number of students, thus improving graduation rates (Low, 2000; Schreiner & Pattengale, 2000). Hall (2007) clearly and succinctly outlined some of the reasons why sophomores may be uniquely isolated in the American higher education experience:

Sophomores receive the least attention of any student class; making fewer contact points with faculty and garnering minimal support from student affairs staff. The sophomore year has fewer high-impact programs and curricular offerings compared to other years, particularly in four-year institutions... There is front-loading of summer bridge programs, orientations, first-year seminars, and multiple engagement opportunities for freshman, whereas for juniors and seniors there are internships, chances to conduct undergraduate research, and senior capstone experiences. Sophomores are the group with the highest risk of attrition. (p. 2)

The Sophomore Slump

Although many universities have geared tremendous resources toward freshman retention initiatives, the sophomore year is beginning to gain attention due to the alarming number of students who fail to persist to the junior year of study (Whittle, 2018). Making the case for programmatic development at the sophomore level, Tabolowsky (2008) stated that, “Educators should be interested in the sophomore year because this is the year in which students make many of the decisions that help them succeed in subsequent years” (p. 60). Coined by Freedman (1956), the term ‘sophomore slump’ refers to lack of motivation on the part of sophomore

students due to not having declared a major, coupled with courses that become more challenging during the second year – especially those that are unrelated to a major field of study (Tobolowsky, 2008). According to Tower et al. (2015), “The sophomore slump occurs as a period of self-reflection and confusion as students seek to demonstrate academic competence, self-direction and autonomy and setting their individual pathway towards achieving personal and professional goals” (p. 1131).

Mentoring

The practice of mentoring is a specific student services activity that has been studied at the sophomore level only on a limited basis (Lee, 2014). The term ‘mentoring’ (or mentorship) is derived from ancient literature. As described in Homer’s *Odyssey* (Homer & Wilson, 2018), Odysseus assigned Mentor to his son, Telemachus, as a tutor during the Trojan War. As a result, the term ‘mentor’ has been assigned to experienced persons who counsel, instruct, provide constructive feedback, and otherwise develop their mentee or protégé (Klinge, 2015). As further described by Klinge, “Mentoring functions in a learning organization include role modeling, exposure and visibility, protection, acceptance and affirmation, teaching, counseling, and friendship” (p. 161). In more foundational literature regarding mentoring as a teaching technique, Daloz (2004) described mentorship in terms that resonate with the scope of this study:

Mentorship is of particular concern to adult educators, and in the growing numbers of programs designed especially for adults, mentor often refers to a faculty member who has a more formal and explicitly didactic role than does a mentor in a natural setting. The mentor may be an academic advisor, an independent study tutor, or a counselor who teaches the student as well. (p. 452)

The study to follow was constructed with the above-stated definition of mentorship, within the context of higher education.

Mentoring Concept

While the idea of mentoring is as old as Greek mythology, the concept of its formal inclusion in higher education programs is a much more recent phenomenon (Cheah et al., 2015). This study revealed that implementing mentoring in higher education programs is advantageous to students due to evidence that structured mentoring activities, over time, increase learning potential and confidence among students, in addition to allowing for personal and professional growth for students at undergraduate and graduate levels of education (Mijares, Baxley, & Bond, 2013). Studies conducted over time have indicated that effective mentoring has the potential to “improve job satisfaction, raise confidence levels, increase retention rates, and facilitate learning through role-modeling, guidance, and experience” (Mijares et al., 2013). While the learning organization model of adult education did not originally include the concept of mentoring, Klinge (2015) asserted that a conceptual framework for mentoring has its place in adult education, especially with respect to formal higher education programs. As asserted by Klinge (2015), mentoring can “be a reciprocal and collaborative learning relationship and a basic form of adult learning ... linked to career success, personal growth, leadership development, and increased productivity” (p. 161).

Mentoring is highly relational in nature, as it is characterized by long-term, one-on-one relationships between mentor and mentee. Indeed, these relationships are fundamental to the concept of mentoring and to the process of successful mentoring program implementation. The relationships formed in mentoring programs, if they are to be highly successful, do so by being based upon trust, respect, and oftentimes-mutual admiration (Yaghjian, 2013). As an educational

practice, mentoring is often described as a caring action, and is thus seen more frequently in the education of those students preparing for careers in the helping professions (Yaghjian, 2013).

Rashid, Marra, and Woo (2015) studied the roles of supervisor and mentor in an effort to discover overlap of duties and activities. Data revealed several basic functions of the mentoring relationship: structural (the basic concept of senior mentor and junior mentee, within a formalized program), interactional (mentoring as less of a supervisory model and more of a personal development process), and temporal (mentoring processes bound by a specific period of time, with definite start and end dates observed). Specific mentor roles identified included critic, examiner, expert, facilitator, manager, teacher, adviser, coach, colleague, counselor, friend, guide, networker, referee, and supporter (Rashid et al., 2015). Mentoring is only one of many possible interventions that may be effective at the sophomore level.

Mentoring and Sophomore Retention

While the sophomore slump has been a recognized phenomenon in higher education (D’Arcangelo, 2013; Flanagan, 1991; Freedman, 1956; Hall, 2017; Kim-Lee, 2017; Lamdin, 2014; Ligouri & Lonbaken, 2015), “there have been few efforts to document the impact of intervention strategies for addressing second-year student adjustment” (Harris, 2012, p. 2). Even though mentoring has been shown to have a positive impact on students with respect to academic achievement and social engagement, little has been researched regarding its impact on persistence from the sophomore year to the junior year (Flanagan, 1991; Harris, 2012; Lee, 2014; Ligouri & Lonbaken, 2015). Indeed, the National Resource Center for The First-Year Experience and Students in Transition indicated that face-to-face mentoring programs exist for a majority of sophomore students nationwide, although the impact of such programs has not been richly studied (Harris, 2012). Harris (2012) was prompted by this fact to study the effect of e-

mentoring on sophomore retention, in place of more traditional face-to-face methods of engagement in this activity. Within the context of this study, mentoring was defined as a “trusted relationship derived from a meaningful connection with another individual, with the objective of that relationship including mutual trust and respect, the use of interpersonal skills, and willingness to learn from each other” (Harris, 2012, p. 54). More specifically, e-mentoring was defined by Birema and Merriam (2002) as a “computer mediated, mutually beneficial relationship between a mentor and a protégé which provides learning, advising, encouraging, promoting, and modeling, that is often boundaryless, egalitarian, and qualitatively different than traditional face-to-face mentoring” (p. 214). While there has been much in the way of study on the effectiveness of mentoring programs in the workplace, in healthcare organizations, and broadly in education, “few were attentive to discovering the effect [mentoring] programs have on the academic success of sophomore students” (Lee, 2014, p. 4).

Statement of the Problem

Some research has been conducted regarding the effectiveness of a formal mentoring program on the academic success, and subsequent persistence, of university students at the sophomore level (Flanagan, 1991; Harris, 2012; Lee, 2014; Ligouri & Lonbaken, 2015). While many colleges and universities have implemented a variety of formal academic mentoring programs, limited studies exist describing the impact of such programs on academic success, cultural acclimation, and persistence to the junior year (Lee, 2014). Additionally, even though the sophomore slump is considered a legitimate and widespread phenomenon, most institutions have done little to address the issue (Graunke & Woosley, 2005).

Purpose of the Study

The purpose of this study was to examine the relationship between participation in a formal academic mentoring program on college sophomores. Specifically examined was the impact of mentor program placement on academic achievement as measured by GPA, as well as persistence to the junior year.

Research Questions

The following research questions were used in this study:

1. Does participation in a formal mentoring program improve academic performance of sophomore students as measured by cumulative GPA?
2. Does participation in a formal mentoring program affect persistence of students from sophomore to junior standing?

Significance of the Study

The overwhelming majority of college retention studies have focused on the freshman year of study (Flanagan, 1991; Harris, 2012; Lee, 2014; Ligouri & Lonbaken, 2015). Few of these types of studies have looked specifically at the sophomore level, with fewer still doing so with the inclusion of a formal mentoring component (Lee, 2014).

This study seeks to determine whether participation in a formal academic mentoring program leads to higher academic performance during the sophomore year, as well as increased persistence to the junior year of study. This study could potentially benefit university administrators who are grappling with issues pertaining to retention at the sophomore level (Astin, 1975; Miller, 2017; Shapiro et al., 2017). As leaders in higher education are investigating ways to attract and retain students, mentoring programs in their many forms are implemented to some extent throughout the nation (Beattie, 2013; Chea et al., 2015; Dawson, Bernstein, &

Bekki, 2015; Lee, 2014; Peden, 2016; Walsh, 2013). With increased understanding of the effectiveness of such programs, university administrators can better tailor mentoring initiatives to meet the needs of today's college student (CITE).

Limitations

Several potential limitations existed as this study was conducted:

1. The study focused only on sophomore students.
2. The study focused only on students at a single university.
3. The study was quasi-experimental in nature, with matched control groups and the study group coming from the same institution.
4. The study was quantitative in nature, using ex post facto data collected by the university. There was no means within this study to gauge opinions of students, preconceived notions upon entering college, attitudes, or other factors that would have been gleaned through a qualitative analysis of the subject.

Definitions

Terms used within and throughout the study include:

1. Academic Advisee – A university student receiving advisement as part of an organized student services program.
2. Academic Advising – A series of intentional interactions with a curriculum, pedagogy, and a set of student learning outcomes, designed to enhance the university experience for students.
3. Academic Advisor – One who advises university students in a formal capacity, usually as part of an organized student services program.

4. Academic Performance – For the purpose of this study, academic performance will be defined as how well students perform in their classes at higher education institutions as measured by GPA.
5. ACT – Four subject, standardized test used by many colleges and universities to make admission decisions at the undergraduate level.
6. Admission – The granting of an offer to a prospective student to enroll in a course of study at a college or university based upon successful selection criteria.
7. Advanced Placement (AP) Credit – A standardized curriculum and examination that allows students to potentially earn college credit while in high school. Supervised by The College Board.
8. Attrition – The departure from all forms of higher education prior to completion of a degree or other credential.
9. Enrollment – Term used to describe those who have become official students at a college or university and are registered in specific courses.
10. Ethnicity – As defined by the university participating in this study, ethnicity refers to one of seven major categories: Hispanic/Latino, American Indian or Alaskan Native, Asian, Black/African American, Native Hawaiian or Other Pacific Islander, multiracial, or White/Caucasian.
11. First Generation – A student who has no immediate family members who have ever attended a college or university.
12. Freshman – A first-year student at a college or university.
13. Full-Time Student – A student who is enrolled in twelve or more semester hours of study.

14. GPA – Grade point average. An indication of a student’s academic achievement at a college or university, calculated as the total number of grade points received over a given period divided by the total number of credits awarded.
15. Higher Education Institution – A postsecondary institution within the United States that provides degrees beyond the high school diploma.
16. HS GPA – High school grade point average. Refers to an individual’s final, cumulative grade point average at high school graduation, based upon a 4.00 scale.
17. Legacy – Student who has a parent who previously attended the same college or university in which the student is presently enrolled.
18. Mentee – One who is being mentored. In an academic setting, an academic advisee may be considered to be a mentee.
19. Mentor – A trusted counselor or guide. In an academic setting, an academic advisor may be considered to be a mentor.
20. Mentoring – The process of advising or training another, usually younger, individual.
21. Non-Traditional Students – Students who did not immediately transition from high school into college. Typically, older than traditional freshman students.
22. Part-Time Students – Students enrolled and taking fewer than 12 academic credits per semester.
23. Persistence – The continual enrollment in a degree program leading toward the completion of the program and the attainment of a degree.
24. Policies – Actual policies of a college or university that stipulate how services and programs are to be administered to students in terms of the variable in question during the sophomore and junior years of study.

25. Programs – Actual services provided by a college or university for the specific purpose of addressing the variable in question during the freshman and/or sophomore years of study.
26. Protégé – One who is protected or trained or whose career is furthered by a person of experience, prominence, or influence. In an academic setting, and academic advisee may be considered to be a protégé.
27. Retention Rate – The percentage of a school’s first-time, first-year undergraduate students who continue at that school the next year. May also be calculated for subsequent years of study, through degree completion.
28. Sophomore – A second-year student at a college or university. For the purpose of this study, students will only be considered sophomores if they are in the second consecutive year of enrollment at the university where the study took place.
29. Sophomore Slump – A drop in GPA during the second year of study at a college or university. Often follows a strong freshman experience, supported by extensive first-year student services.
30. Student Services – Department or division tasked with providing services and support for student success at institutions of higher education.
31. Traditional Student – Students who immediately transition from high school to college, typically entering the fall semester after their graduation from high school the previous spring semester.

Organization of the Study

Chapter 1 introduces the study, presenting the problems, purpose, research questions, limitations, and definition of terms. Chapter 2 includes a review of literature related to the concept of retention at the freshman and sophomore levels, the concept of the sophomore slump

in American higher education, student services in American higher education, and the concept of mentoring and its use in American higher education. Chapter 3 reports the methods and procedures used in this study, including the population and sample; data collection; and data analysis. The findings of the study are presented in Chapter 4. Chapter 5 includes a summary of the study, conclusions, implications, and recommendations for further study.

CHAPTER 2. REVIEW OF LITERATURE

Introduction

This review examines historical and more recent literature pertaining to retention issues in American higher education, various theories surrounding retention, and attempts to reduce attrition, especially at the conclusion of the freshman year. The concept of mentoring is discussed historically and presently, in general and at the sophomore level. Finally, literature is reviewed that specifically attempts to stem the attrition issue at the sophomore level, with particular emphasis placed upon mentoring or enhanced advising programs designed for this purpose.

Purpose of the Study

The purpose of this study was to examine the relationship between participation in a formal academic mentoring program on college sophomores. Specifically examined was the impact of mentor program placement on academic achievement as measured by GPA, as well as persistence to the junior year.

Research Questions

The following research questions were used in this study:

1. Does participation in a formal mentoring program improve academic performance of sophomore students as measured by cumulative GPA?
2. Does participation in a formal mentoring program affect persistence of students from sophomore to junior standing?

College Retention

Early Retention Studies

A focus on culture and adjustment. Angell (1930) undertook one of the earliest known studies on retention issues in American higher education. Conducted at the University of Michigan during the late 1920s, the author stated that,

The present study is offered with the hope that it may prove of value in two directions. Its findings of fact may add somewhat to our knowledge of undergraduates and of the problems which they face; its method may be of interest to those engaged in devising and testing techniques of social research. (p. vii)

By sheer coincidence (due to the classes in which surveys were issued) this seminal study was comprised of data collected almost entirely from students in the sophomore year of study. In remarking on findings that indicated that students in the study were unsettled and had difficulty adjusting to college life, the author asserted that this was “partly attributable to the predominance of Sophomores – this being the year often cited as the most upsetting” (Angell, 1930, p. 10).

Primary findings of this early study indicated that students who tended to persist to graduation, and who generally indicated satisfaction with college life, were able to make adjustments to college life in three areas: academic studies, social engagement, and general life adjustment. While grades were a factor in persistence rates, students who performed at a mediocre level academically tended to adjust better to college life, and, thus, persisted at rates similar to students who achieved at a high level academically, but who were not socially as well adjusted. Those students who performed poorly academically, whether or not they adjusted well

socially, tended to leave the university in higher numbers than students who fell into the other two categories (Angell, 1930).

In summarizing this earliest of studies on adjustment issues at the college level, the author made statements that could well be made today:

It is apparent that undergraduates reflect the spirit of the times. The inclinations revealed toward modernism, economic liberalism, and free moral standards are typical of young America. Though these boys and girls tend to come from the homes of the better educated, they seem to share to a considerable extent in the general indifference to cultural things ...

Many will probably be surprised at the amount of personality disorganization among undergraduates that this study reveals. The general public in particular is likely to think of college years as a carefree period – a time of few responsibilities and no serious problems. This is because the most obvious features of undergraduate life are festive occasions like football games, house parties, and graduation exercises. There is no appreciation of the genuine hardships experienced by many students ... (Angell, 1930, p. 142)

Early retention-specific study. McNeely (1937) engaged in the first known study into the specifics of college dropout (referred to as mortality in the early years). The opening statement of this study indicated that issues of retention had been problematic for institutions of higher education for decades. Additionally, the research questions for this study could be found in dissertations and studies conducted today:

1. What proportion of students registered for degrees leave college prior to graduation?
2. What proportion complete their work and graduate with degrees in the regular 4-year period?
3. How long do students remain in college?
4. To what extent do students transfer to other institutions?
5. What percentage of students after leaving college return at a later date to continue their work?
6. To what degree does the rate of student mortality differ among the various types of colleges and professional schools?
7. To what extent are personal and environmental factors operating on students responsible for their withdrawal from college?
8. Does any causal relationship exist between student mortality and academic achievement? (McNeely, 1937, p. 1)

Similarly, covariates gathered by McNeely look much the same as those used for this study and others conducted today:

... sex of student, age at time of entrance, college or school in which registered, proximity of home to college, place of lodging, causes of leaving university, credit hours registered for and earned during each semester or quarter, academic marks made by student, membership in social fraternity or sorority, participation in extracurricular activities, and engagement in part-time work. (p. 3)

This groundbreaking study (which consisted of greater than 22 public and private participant colleges and universities and included 15,535 students) reported a net completion rate of 54.8%, while commenting on a wide disparity between various types of colleges and

universities throughout the nation. The study also found that freshmen departed college early at a rate of 33.8%, and sophomores departed early at a rate of 16.7%. Juniors and seniors departed at rates of 7.7% and 3.9% respectively (McNeely, 1937). Interestingly, according to the National Student Clearinghouse (Shapiro et al., 2017), students in the 2011 cohort (the most recent group studied) also completed college at a rate of 54.8%, which was up 1.9% from the previous year, and constituted the first increase in retention since the advent of the great recession in 2009. For traditional students, the retention rate was 61.7%, and for non-traditional students the retention rate was 41.7% — both increases over the previous year, but not to the point of pre-recession numbers. The data were not broken down by year in college, as was done in the earlier study (Shapiro et al., 2017).

As may be seen by examining these data, the overall retention percentage in 2017 is strikingly similar to that of 1937, although the causes of and means of solving such issues continue to evolve. As stated in the most recent National Clearinghouse report (Shapiro et al., 2017).

In the coming years, demographic changes will overtake economic shifts in their impact on college completion rates, as the number of high school graduates declines and their diversity continues to increase. The challenges for institutions now serving the potential graduates of the cohorts that entered college in 2012 and later include continuing to adapt their programs to better meet the size, demographic composition, and academic needs of cohorts. (p. 48)

College as a social system. A foundational 1943 study by Hartshorne sought to examine the university setting as a social community and commented on the importance of housing and social life as it related to persistence. In comparing and contrasting the emphasis placed by

university administrators on curriculum, faculty selection, and overall educational philosophy with the actual arrangement of university campus buildings, the author stated that “the architecture of college buildings, their grouping, and their setting within the larger community – city, town, or village – may have implications for informal student culture equal in importance to a college president’s educational philosophy” (p. 322). Prophetically, this early study advocated for the creation of a different type of living arrangement from the rank and file dormitories found during this time period and suggested that increased attention be given to housing arrangements and campus engagement as potential means to improving retention rates (Hartshorne, 1943).

More recent studies have examined the impact of on-campus housing, with mixed results. In his book on dropout prevention, Astin (1975) asserted that “living in a dormitory as a freshman is associated with reduced dropout probabilities” (p. 91), but the author added that the magnitude of such an association varied from institution to institution (Astin, 1975). Conversely, a 1989 study on housing asserted that studies have shown that the type of housing a student chose did not have a significant effect of academic performance. However, this specific study found that, contrary to the previous findings, on-campus housing did have a significant impact on GPA among black students across all years of study (Blemling, 1989).

Schudde (2016) studied the relationship between income, campus residency, and retention and reported that students from low-income backgrounds, regardless of race, completed their degrees less often than their middle class and wealthy classmates, and were not likely to benefit from living on campus, even though the statistics in her study clearly indicated that on-campus students generally persisted at higher rates than off-campus students. In explaining this phenomenon, the author stated, “Students from low-income families ... struggle to navigate the middle-class culture of higher education, learn the ‘rules of the game,’ and take advantage of

college resources” (Schudde, 2016, p. 12), thus making assimilation into the middle-class-dominated campus culture problematic for this population. The author referred to the notion of colleges and universities increasingly catering to affluent students, creating what amounts to a country club atmosphere. This change in atmosphere in university environments, combined with increased numbers of first-generation, lower-income students, presents “... two interwoven challenges: cultural differences between their background and the norms of other students on campus, and structural obstacles due to financial restraints” (p. 13). As asserted by the author, this inherent mismatch tends to cause students from low-income families to feel that they do not belong on campus (Schudde, 2016).

Schudde (2016) also found in her study that living on campus increased the probability of persisting into the second year of college by an average of 3.1%. However, her research further indicated that students residing on campus have higher family incomes, stronger academic achievement upon entering college, and greater participation in extracurricular activities at the high school level. As stated by the author, and echoed in myriad other retention studies, the relationship between any particular variable and retention tends to be complex and multi-faceted (Angell, 1930; Astin, 1975; Bishop, 2016; D’Arcangelo, 2013; Farmer et al., 2016; Flanagan, 1991; Gray & Swinton, 2017; Hall, 2017; Harrell & Reglin, 2018; Hurford et al., 2017; Kemp, 2016; Kim-Lee, 2017; Lambdin, 2014; Ligouri & Lobaken, 2015; Miller, 2017; Schuude, 2016; Tinto, 1975; 1982; 1993; 1994; 2006; Travers, 2016; Xu, 2017).

In a recent study, Hall (2017) asserted that traditional students persisted at higher rates than non-traditional students due to their engagement in on-campus activities. Thus, according to the author, data indicating this association “highlights the importance of building inclusive

campus communities to increase student retention” (p. 41), whether or not this inclusiveness necessitates the act of actually living on campus.

A Focus on Psychology

Durkheim (1951) laid a psychological foundation for retention studies with his major work on suicide theory. Used as a basis for retention theories through the years, this work examined multiple reasons for a person’s decision to essentially quit life and described the thought process toward making such a decision to be a psychological one. As described by the author, “Since suicide is an individual action affecting the individual only, it must seemingly depend exclusively on individual factors, thus belonging to psychology alone” (p. 46). Many of the early college retention theories centered on Durkheim’s theory that “suicide varies inversely with the degree of integration of the social groups of which the individual forms a part” (p. 209). Thus, as will be seen later in this review of literature, much of the focus on retention efforts over the last half-century has been centered on social integration (Astin, 1975; Spady, 1970; Tinto, 1975, 1982, 1993, 1994, 2006).

Another oft-cited work in the foundational retention literature is Freedman’s (1956) paper designed to look at each of the college classes separately. It was this brief but seminal study that gave rise to the term sophomore slump — a moniker that arose from a simple comparison between motivational differences in the first and second years of college. As asserted by the author, most freshmen arrive on the college campus full of anticipation about the life changes they expect to experience during the freshman year. In contrast, however, sophomores are sustained through the second year of study primarily by their own “intrinsic ability, interest, and motivation” (Freedman, 1956, p. 21). As is discussed extensively in this present study, this positive anticipation on the part of freshmen students is augmented by myriad student support

services, which tend to drop off precipitously, if not entirely, during the sophomore year (D’Arcangelo, 2013; Flanagan, 1991; Hall, 2017; Lambdin, 2014; Ligouri & Lonbaken, 2015).

Sanford (1956) examined the role of personality during the college years, and specifically focused on the changes which may occur as a student passes through the freshman, sophomore, junior, and senior years of study. As stated by the author, “personality does develop during the college years, and ... this development is to some extent dependent upon the stimuli which the college provides” (p. 74). This study was one of the first to articulate the challenges inherent in designing research methods that accurately report on what measures may or may not be helpful in mitigating retention issues among college students, and advocated for longitudinal “projects on a vaster scale” (p. 79) than single-year, single-institution studies — a theme repeated frequently in the literature (Angell, 1930; Bishop, 2016; Furr & Gannaway, 1982).

A Focus on Prevention

Much of the work done today in the area of retention is grounded in the dropout prevention studies conducted beginning in the 1970s, and the resultant theories that began to develop during this time period. Using the Durkheim suicide theory as a framework, Spady (1970) conducted a thorough review of potential causes of college dropout and focused on coupling social factors with academic performance. As asserted by the author, “Before we attempt to deal explicitly with the vast literature on college dropouts ... it is necessary to acknowledge its inseparable relationship with the equally prodigious and troublesome body of empirical work on academic performance” (p. 64). Taking a cue from this early work, several modern retention studies, including this present study, focus on a combination of social and academic performance factors when examining both correlation and causation (Hall, 2017; Schudde, 2016; Shapiro et al., 2017).

Spady's (1970) resultant Sociological Model of the Dropout Process took into account several factors as potential contributors to the decision on the part of a college student to persist or withdraw. These included family background, normative congruence, academic potential, grade performance, intellectual development, friendship support, social integration, satisfaction, and institutional commitment. In introducing this theory, the author presented it as "a worthwhile conceptual framework for guiding further research" (p. 79).

A case for administration. Astin's (1975) book, entitled "Preventing Students from Dropping Out", appeared to be geared toward university administrators, and made the case for increased attention to attrition, whether or not administrators saw attrition at the time as problematic. As stated by the author,

While administrators and faculty have traditionally seen recruitment as the principal means to keeping enrollments up, an equally promising approach is to reduce dropout rates. Note that, in four-year institutions, any change that deters students from dropping out can affect three classes of students at once, whereas any change in recruiting practices can affect only one class in a given year. From this viewpoint, investing resources to prevent dropping out may be more 'cost effective' than applying the same resources to more vigorous recruitment. (p. 2)

In addition to making the case to administrators regarding the importance of placing emphasis on retention efforts, Astin (1975) also concluded that several key factors are likely to contribute to the decision on the part of a student to remain or depart before graduation. Among the factors cited as positively correlated with persistence was the decision on the part of students to attend a private university, or a public university located in the southeast or northeast United States (highest dropout rates were seen in the western states); the decision to attend a Christian

university (either Roman Catholic or Protestant); or attendance at a moderately selective college or university. Interestingly, in this early research, size and cost of the institution had no bearing on retention (Astin, 1975).

A 2017 report on the variables that predict freshman retention indicated that colleges and universities should continue the practice of investing in well-established academic success workshops and add to them “enhancements to the freshman experience course, establishment of learning communities, peer mentoring, a[n] ... early alert system, and support for high-risk students” (Hurford et al., 2017, p. 302). The authors further indicated that such measures would be especially important in community colleges and regional four-year institutions. Additionally, the National Student Clearinghouse indicated that colleges and universities should consider crafting programs based upon the different entrance ages for college students, along with specific programs for those students who transfer between multiple institutions (Shapiro et al., 2017). Regarding adult learners, Miller (2017) indicated that research is lacking when it comes to finding ways to solve the retention issue among these non-traditional learners, and further stated that there was a “lack of solid models for addressing the problem” (p. 104). As asserted by the author, “adult learners are the largest and most rapidly growing demographic group of students in many colleges. Therefore, colleges should focus a great deal of their resources on the academic success of the adult learner” (Miller, 2017, p. 113).

As was the case in the 1975 study mentioned above, the most recent figures from the National Student Clearinghouse indicated that the highest completion rate among undergraduate students was from four-year private nonprofit institutions (Shapiro et al., 2017). Unlike the 1975 study, the present data do not differentiate between faith-based and non-faith-based private institutions (Shapiro et al., 2017).

Astin's early work during the 1970s gave way to a full-blown theory of student involvement, emerging during the 1980s, crafted around the idea that increased engagement on the part of college students would contribute to higher rates of persistence (Astin, 1984). As asserted by the author when introducing this new theory,

A major impetus for the development of the student involvement theory was my exasperation at the tendency of many academicians to treat the student as a kind of 'black box.' On the input end of this black box are the various policies and programs of a college or university; on the output end are various types of achievement measures such as the GPA or scores on standardized tests. It seemed that something was missing: some mediating mechanism that would explain how these educational programs and policies are translated into student achievement and development. (p. 519)

Astin's involvement theory consisted of five components:

1. Involvement as the investment of physical and psychological energy in various objects.
2. Involvement as occurring along a continuum, despite its object.
3. Involvement as having both quantitative and qualitative features.
4. The amount of student learning and personal development associated with any educational program as being directly proportional to the quality and quantity of student involvement in that program.
5. The effectiveness of any educational policy or practice as being directly related to the capacity of that policy or practice to increase student involvement (Astin, 1984).

It was suggested in this work that the theory of involvement would provide a conceptual alternative to the black box mentioned above, and that it would encourage faculty to focus less

on what they do, and instead increase attention on the activities of the student. As explained by the author,

The theory assumes that student learning and development will not be impressive if educators focus most of their attention on course content, teaching techniques, laboratories, books, and other resources. With this approach, student involvement – rather than the resources or techniques typically used by educators – becomes the focus of concern. (p. 522)

Astin (1975) further theorized that the following criteria had an impact on student involvement and, thus, student retention: place of residence, participation in honors programs, academic involvement, student-faculty interaction, athletic involvement, and involvement with student government. When expanding on the importance of student-faculty interaction, the author stated that “Frequent interaction with faculty is more strongly related to satisfaction with college than any other type of involvement or, indeed, any other student or institutional characteristic” (p. 525). This idea came to light again and again as this review of literature focused on the effectiveness of mentoring in the higher education environment (Beattie, 2013; Evans, 2009; Golden, 2011; Lee, 2014; Peden, 2016; Walsh, 2013).

The Tinto model. Perhaps the name most widely associated with research on retention in American higher education is that of Vincent Tinto. His seminal book, *Leaving College: Rethinking the Causes and Cures of Student Attrition*, continues to be widely cited in the literature (Bishop, 2016; D’Arcangelo, 2013; Farmer et al., 2016; Flanagan, 1991; Hall, 2017; Kim-Lee, 2017; Tinto, 1987). It was in this work that Tinto cited several major causes for college departure, to include lack of intention to graduate, a lack of commitment, difficulty adjusting to the college environment, difficulty dealing with increased academic rigor at the

college level, congruence, and isolation. In remarking on the impact of isolation on departure, Tinto stated that, “frequent contact with the faculty appears to be a particularly important element in student persistence. This is especially true when that contact extends beyond the formal boundaries of the classroom to the various informal settings which characterize college life” (Tinto, 1987, p. 65).

In an important article on retention that appeared in the early 1980s, Tinto (1982) emphasized the point that some retention issues at the college level are the result of colleges and universities accepting students into the institution who may be ill-prepared for college, or who may be better suited to a career choice for which a college education is not necessary. The case was made that institutions should accept only those students whom they believe are truly capable of seeing a degree program through to completion, thus placing extra emphasis on admission requirements and the onboarding process. Expanding on this view, the author stated the following:

It is not elitist to recognize that not all those who enter [college] are equally equipped either in skills (academic, social, or otherwise) and/or intellectual capacities to finish a given course of study. Nor are all students with given abilities and skills equally interested in, committed to, and/or motivated to finish a course of study once begun.

Some students simply do not care enough to finish their college degree programs. (Tinto, 1982, p. 696).

Additionally, the case was made that universities should be careful not to become overly involved in attempting to convince high school students that a college education is the proper path to pursue. As bluntly summarized by the author, “The simple fact is that higher education of any form is not for everyone” (p. 696).

With the above thought in mind, Tinto suggested that efforts be made to improve the overall educational experience for students who best fit the university environment, and then develop programs specifically geared toward those students. As asserted by the author, “The proper question is not whether we can or should strive to reduce dropout; rather, one should ask for which types of students should specific policies be developed?” (p. 697).

Tinto’s later works have tended to re-emphasize the importance of student involvement, while also shifting much of the blame for retention issues from students toward institutions (Tinto, 2006). However, the author, while promoting the idea of improved university student services as a means of increasing retention rates, seemed to remain focused on the freshman year of study. This was stated several times in this work alone, with no mention made of any type of intervention beyond the first year of study. As asserted by the author when discussing the evolution of retention theories, “Throughout these changes and the putting forth of alternative models, one fact has remained clear. Involvement, or what is increasingly being referred to as engagement, matters and it matters most during the critical first year of college” (Tinto, 2006, p. 4). As will be seen below, the above-stated views regarding stemming the retention issue have come under criticism from several sources in recent years.

Criticism of the Tinto model. In addition to identifying appropriate variables for study in determining causes of and potential solutions to the retention issues in colleges and universities, Xu (2017) took aim at Tinto’s 1994 model. As stated by the author,

Tinto’s model has been tested in numerous studies, but it has gained only moderate empirical support. Major drawbacks limit the explanatory power of this theoretical framework. One such drawback is the model’s failure to address the role of finance and other factors external to the institution’s immediate environment. Another is the

insufficient consideration of differences in the educational experiences of students of varied social and academic backgrounds. (p. 51)

With these thoughts in mind, Xu (2017) looked at specific factors influencing college retention in a specific institution and compared those factors with those identified in much of the literature on the subject. Further, the author examined whether these influential factors were different in different colleges and universities, as well as those factors that could potentially be managed through interventions that are designed to increase student engagement and, ultimately, retention. Results of the study indicated that financial difficulties had a far greater impact on retention than did gender, first-generation status, or socio-economic status upon entering college (Xu, 2017). Other factors leading to dropout included GPA, the perception of the institution's commitment to academic quality, and whether the student reported a positive evaluation of the learning environment and overall commitment to intellectual development at the university (Xu, 2017).

Social Behaviors and Retention

Ligouri and Lonbaken (2015) set about to study the effect of alcohol consumption on second year retention at the college level. As they conducted their study, they became aware of the lack of research on alcohol consumption and abuse as it relates to persistence to the second year of study, which is indicative of research on second year retention issues in general. As stated by the authors, "Despite the fact that the majority of first-year students on college campuses engage in some type of drinking behavior, little is known about retention rates into the second year" (p. 70). While their study indicated that drinking may be associated with lower retention rates among male students at the sophomore level, the authors asserted that "a goal of (the) study was to address the lack of research on this topic and ... fill a void in the literature" (p. 74).

Ethnicity and Retention

Farmer et al. (2016) conducted a study designed to look specifically at variables that lead to retention issues among black females in the United States. This study proved an excellent example of methods for determining a variety of variables that may contribute to retention issues in any college population. In describing the need for research focused on this specific sub-population, the authors stated that, “historical and societal inequities related to race, class, and gender” (p. 135) created specific and unique conditions that may lead to retention issues among these groups. Research within this specific population, according to the authors, could potentially yield results that would be beneficial for educational institutions as they grapple with retention issues. Using Tinto’s 1994 model, the authors discovered that first semester GPA is a greater predictor of persistence into the junior year than SAT and ACT scores, even though these have often been considered to be excellent gauges of success at the college level (Farmer et al., 2016). Further, the authors asserted that future researchers would do well to consider other environmental factors, to include student employment, among other variables, when designing research studies on retention.

Brooks et al. (2013) evaluated an undergraduate African-American male retention program due to the high rate of departure for this ethnic group. The study was designed to determine if retention programs specifically geared toward these students were successful. Results indicated that, “retention programs have a positive impact on African-American male academics, with specificity to increased grade point averages” (p. 206).

A key factor outlined in this study was the need for colleges and universities to recruit African-American faculty and administrators (Brooks et al., 2013). As stated by the authors, “The relative absence of African-American men on college campuses lessens the opportunities

for non-African-Americans to engage in face-to-face interactions that provide experiential learning about the true nature of other people” (p. 209). A further assertion of the authors was that students of color tend to be encouraged by seeing people like themselves in professional roles on campus and not exclusively in support roles. Another problem revealed in this study was the indication that African-American females outnumber African-American males on college campuses by roughly two-to-one (Brooks et al., 2013).

Many historically black colleges and universities (HBCUs) are implementing retention programs to address these issues. Some of the most noteworthy of these include:

- Black Man’s Think Tank – University of Cincinnati;
- Student African-American Brotherhood – Georgia Southwestern University;
- Black Male Initiative – Texas Southern University;
- Meyerhoff Program – University of Maryland Baltimore County (Brooks et al., 2013).

Mentoring was listed in this study as a critical component of an effective retention program for this ethnic group. While the specific mentoring program implemented in the study did not have a statistically significant effect, it did have a measurable effect (Brooks et al., 2013).

Federal TRIO Programs and Retention

The federal government funds over 2,800 TRIO programs throughout the country, with the sole purpose of such programs being to “retain, transfer, and/or graduate students” (Canty, 2016, p. 1). Project directors implementing such programs must produce measurable outcomes based upon specific expectations in order to receive subsequent grants (United States Department of Education, 2014).

Canty (2016) conducted a content analysis of three separate TRIO programs at two-year institutions in South Carolina. Findings of this study indicated that TRIO programs are generally

successful, meeting or exceeding expectations set forth by program administrators. Data suggest that TRIO programs tend to be more effective in small, rural, two-year institutions (Canty, 2016).

TRIO programs are presently in danger of being defunded by the government due to mixed results from national evaluations of TRIO program effectiveness. Thus, grants for TRIO programs are more competitive than ever (Canty, 2016).

TRIO programs are authorized through Title IV of the Higher Education Act of 1965. Amendments to this Act were added in 1968, 1971, 1972, 1976, 1980, 1986, 1992, 1998, and 2008 (Council for Educational Opportunity, 2012; McElroy & Arnesto, 1999). The program changed significantly when it was expanded to serve first-generation college students in 1980 (Canty, 2016).

Several individual programs exist under the TRIO umbrella, as described below:

- *Upward Bound* assists high school students with preparation for college.
- *Talent Search* is geared toward middle school and high school students that show the potential to complete college education.
- *Student Support Services* are designed to assist college students through tutoring, mentoring, and financial aid counseling. The specific goal of this program is to retain student and increase graduation rates.
- *Educational Opportunity Centers* serve displaced and underemployed adults who desire to attend college.
- *Veterans Upward Bound* is designed to assist U. S. military veterans as they transition from active duty to college.
- *Upward Bound Math* seeks to improve the math and science skills of those who participate in the program. Students specifically targeted for this program are those who

show promise in science, technology, engineering, and mathematics (STEM) subjects.

These students are then encouraged to pursue higher education and STEM-related career fields.

- *Ronald E. McNair Post Baccalaureate Achievement Program* is a mentoring and internship program designed to prepare students for study at the doctoral level (United States Department of Education, 2014).

Best practices for the TRIO student services component include:

- Academic tutoring;
- Academic advising and mentoring;
- Financial aid information and assistance;
- Financial literacy education and counseling;
- Transfer assistance (Canty, 2016).

Most research on TRIO program effectiveness has been limited to sporadic journal articles dealing only with program services. This has led to frustration on the part of program administrators, especially with the prospect of lost funding and increasing competitiveness for TRIO grant dollars (Canty, 2016).

Mentor-Specific College Scholarship Programs

The Sloan Foundation provided a scholarship specifically designed to mentor students through to completion of the baccalaureate degree and then on to graduate work, ultimately culminating with the PhD. Students for this program were recruited during the junior year of undergraduate study and were mentored through the remainder of the undergraduate experience (Colucci-Rios & Briano, 2001).

The primary component of the Sloan Foundation scholarship program was mentoring within the context of academic advising, with the goal being completion of the undergraduate degree and then admission to graduate school. In discussing the success of this scholarship program, the authors stated that, “The Sloan Scholarship Program has been instrumental in developing an atmosphere where graduate education is considered a competitive option for ... undergraduates” (Colucci-Rios & Brio, 2001, p. 298).

The Washington State Achievers Program, funded by the Bill and Melinda Gates Foundation, was designed to provide select students from the state of Washington with money to attend college (Hu & Ma, 2010). In order to qualify for this scholarship, students had to come from one of sixteen specific high schools in the state of Washington, and also have a family income of less than 35% of the median income for the state. When discussing the specifics of the program, the authors stated, “The unique aspects of the program include the intention to give awards to students with high potential and to provide mentors while they are in college” (p. 330).

Findings of this study indicated that the desire to pursue a graduate education has a positive impact on the effectiveness of a mentoring program at the undergraduate level. This study also suggested that initiative on the part of the student is a critical component of the success of a formal mentoring program. As stated by the authors, “the extent of turning to mentors for support and encouragement appears to be the most important mentoring factor in promoting desirable outcome for WSA recipients” (Hu & Ma, 2010).

The Catalyst Scholarship Program at Hunter College is a four-year scholarship funded by the National Science Foundation awarded to forty academically disadvantaged students majoring in STEM subjects. The program included a formal mentoring program, to include faculty and peer mentoring, and resulted in “increased retention rates relative to institutional averages”

(Salmun & Buomaluto, 2016, p. 42). Students in the program were required to develop and implement an Academic Success Plan (ASP) designed to promote research and increase GPA. As a part of the program, students met as a cohort designed for accountability and community and to reinforce the cross-disciplinary nature of many STEM careers (Salmun & Buomaluto, 2016).

Satisfaction with this the mentoring component of this scholarship program was high, ranging between 88% and 100% among various groups. This was true even though satisfaction with the other components of the scholarship program was low. As the mentoring program progressed, students began to meet more informally with mentors, often visiting with them outside scheduled times set according to scholarship criteria (Salmun & Buomaluto, 2016).

A similar mentoring program, also funded by the National Science Foundation, was the Canon Scholar Program at Wesley College (D'Souza et al., 2018). This scholarship, designed to provide access to “robust STEM programs” (p. 31), included what was termed a high-impact, multi-tiered mentoring program. Scholarships provided were renewable, one-year awards initially offered to freshmen with an interest in STEM careers. Students receiving awards were required to re-apply each year, as well as participate consistently in the mentoring component of the program (D'Souza et al., 2018). Specific requirements of this scholarship program included:

- A one-page essay outlining specific STEM career goals;
- Demonstrated financial need;
- United States citizenship;
- High school GPA of 3.0 (2.7 for Wesley College students);
- Minimum SAT score of 1006;

- Completion in high school of three years of English, three units of mathematics, and three years of laboratory sciences;
- Demonstrated interest in STEM through participation in high school programs such as Science Olympiad;
- Full-time enrollment in Wesley College STEM programs (D'Souza et al., 2018).

At the conclusion of the study, this mentoring scholarship program had retention rates as follows:

- 2014–15 academic year: 93.3%;
- 2015–16 academic year: 78.9%;
- 2016–17 academic year: 100% (D'Souza et al., 2018).

In summarizing this program, the authors stated that, “The annual scholarships provided by S-STEM, when coupled with the collaborative efforts of the various participating academic entities, has fostered proven practices for nurturing a multi-tiered mentoring environment that helps support, retain, and graduate our Scholars” (D'Souza et al., 2018, p. 37).

Counseling Services and Retention

Bishop (2016) sought to examine the relationship between college counseling programs and retention for students in high-risk populations. Part of the premise of the study was the belief that few at-risk students seek services from the university when they get into trouble academically (Bishop, 2016). Interestingly, while the study found a significant difference in retention between high- and low-risk students who made use of available college counseling services, there was no significant difference in retention between high-risk students who either did or did not make use of such services (Bishop, 2016). Additionally, “there was not a significant difference in retention rates or timing of dropout for high-risk or low-risk students

based on the number of counseling sessions attended” (p. 213). As noted by the author, studies such as this indicate the need for further research on the intricacies of high-risk populations at a variety of institutions of higher learning (Bishop, 2016).

A 2017 study by Hurford et al. set about to examine the variables predicting freshman retention. Variables examined in this study were influential in the design of the study discussed in this paper, and included such variables as ACT/SAT score, high school cumulative GPA, high school rank, gender, ethnicity, first generation status, living arrangements, proximity of permanent address to campus, whether the student was domestic or international, whether the student received an academic scholarship of some sort, whether the student had declared a major by the 20th day of class, number of credit hours transferred, family income, and level of education of the students’ parents, among others (Hurford et al., 2017). In discussing the results of the study, the authors stated,

The impetus of the present study was to determine if variables that were contained within the university’s database and therefore easily attainable, could be utilized to predict the probability of student success with regard to retention. The answer to that question was clearly yes. (p. 309)

Unlike the study undertaken and reported upon in this paper, Hurford et al. (2017) did not compare retention rates of students participating in any university-sponsored intervention program.

Incentives and Retention

Gray and Swinton (2017) indicated that although there has been a general increase in college enrollment in recent years, there has not been a similar or corresponding increase in graduation rates. Indeed, according to the authors, and as evidenced earlier in this review of

literature, student college attendance is at historically high rates, while retention percentages remain flat (Gray & Swinton, 2017). To address this issue, a study was conducted to test the effect of grade incentives on retention at Benedict College. The incentives came through a policy designed to reward effort, particularly in the freshman and sophomore years of study. Results were mixed, indicating that certain demographic variables have an innate impact on retention regardless of incentives for effort. These variables included ACT or SAT score upon entering college, high school GPA, and parental contribution to the education of individual students. For students with higher college GPAs at the end of the study, retention rates were actually worse, indicating that the GPAs inflated by college-mandated incentives surrounding effort led many to apply for and gain admission to other institutions for the junior and senior years of study (Gray & Swinton, 2017).

Retention in Adult Learners

According to Miller (2017), “adult learners in the four-year school environment in both non-accelerated and accelerated programs graduate at lower rates than that of traditional-age students” (p. 104). Further, given this statistic, there have been few attempts to create models for addressing this problem, especially within specialized, accelerated learning programs. The author asserted that demographics among 21st-century college students have changed to the extent that universities need to be focused on developing new strategies that take into account the unique needs of adult learners – including those actively engaged in the workforce upon commencing their college program of study (Miller, 2017). Indeed, the author was as bold as to state that “lack of retention and degree completion was the result of the failure of public post-secondary systems, and, more specifically, the community college, to meet the needs of the adult student” (p. 105). Further, the author stated that colleges and universities need to recognize the

diversity of learning styles among adult learners, and craft programs and delivery methods designed to “reach as many (learning) preferences as possible” (p. 105).

To address this situation, Miller (2017) proposed a research-based model for improving student retention among the specific student population of adult learners. This model included faculty professional development, administrative staff professional development, student orientation programs designed specifically for adult learners, and an ongoing assessment of adult learning program effectiveness. As stated by the author at the conclusion of the study,

Today, adult learners are initially highly motivated to obtain certifications and degrees, are self-directed, and possess years of work and life experiences to draw upon as they enter each course, bringing a unique perspective to the learning environment. Moreover, adult learners are the largest and most rapidly growing demographic group of students in many colleges. Therefore, colleges should focus a great deal of their resources on the academic success of the adult learner (p. 113).

Adult learners present unique challenges when it comes to determining how to increase persistence (Hadfield, 2003). Nontraditional students may pause their education, but may return to complete a degree program at a later date. As stated by the author,

Nontraditional students interrupt or delay their completion of a course of study for many reasons. They stop to have a baby, change jobs, close on a house, care for an ailing or dying parent, get a divorce, get married, have bypass surgery, start a business, or simply catch their breath. During any term, we can expect that up to 40 percent of our active students will not enroll for a course. Their absence does not mean they are not retained. It only means that they are not enrolled at that moment in time. If we do our job correctly, they will be back. (p. 19)

Focusing on college administrators, the author suggested that the concept of exceptional customer service is a key component of increasing retention rates among adult learners (Hadfield, 2003). Speaking of these nontraditional college students, the author stated that, “They are savvy, demanding customers who know how to shop. When they do not find what they want at one school, they transfer to another (p. 19).

While traditional college students have access to a wide variety of student services, adult students often arrive for evening classes only to find that the offices operating these services are closed for the day. To this end, the author suggested that colleges and universities with classes designed to attract adult learners should accommodate as many needs as possible while those students are on campus (Hadfield, 2003).

Suggestions for increasing retention among adult learners included making the students feel as much a part of the school as traditional students, inquiring of the student as to their educational needs, delivering exceptional customer service, providing quality professors, delivering meaningful learning experiences, listening to complaints and suggestions, and continuously measuring the performance of the total academic experience (Hadfield, 2003).

Referring to the importance of leadership when it comes to nontraditional students, the author stated that, “College administrators, who have the least contact with students, have the greatest responsibility for establishing an organizational culture that breeds customer service, a culture that manifests itself in the interaction between the staff and the front line ((Hadfield, 2003, p. 24).

Retention Issues at the Sophomore Level

There is a noticeable gap in the research when it comes to sophomore retention issues, but especially so when it comes to the study of the effect of advising, mentoring, and other one-

on-one interventions at this point in the college experience (D’Arcangelo, 2013; Flanagan, 1991; Hall, 2017; Kim-Lee, 2017; Lambdin, 2014; Ligouri & Lonbaken, 2015). Harrell and Reglin (2018), however, addressed the impact of an advising program for nursing students, with particular emphasis placed upon issues specific to the sophomore year. As stated by the authors, “Although there were many variables that impacted student retention, an effective advising program was critical to student success” (Harrell & Reglin, 2018, p. 33). In asserting the need for specific advising interventions, and the importance of funding such interventions, the authors stated the following:

The institution’s commitment to the students affected the expectational climate which housed the levels of support, feedback and involvement that students received within that climate. Therefore, the first condition of student success that an institution influenced was its commitment to the welfare of its students.... Focusing monetary support to student support services that encouraged students to stay can be evaluated against the cost of attrition. (p. 35)

Further, the authors asserted that an advising program “is the only mechanism that links students to a caring adult who can help them navigate the necessary transitions and complexities of the college environment” (p. 35).

While many, if not most, intervention and student success initiatives at the college level are focused on the freshman year, the authors of this study were adamant that educators and administrators focus more attention on the second, or sophomore, year of study “as the critical transition when students are making extremely important decisions” (Harrell & Reglin, 2018, p. 37). The authors outlined three myths that have kept researchers from adequately studying and addressing the unique needs of sophomores:

1. Retention in higher education is a first-year problem.
2. If retention efforts are focused on the first year, the institution's retention problems will be solved.
3. Once a student makes it to the second year, graduation is almost universally guaranteed (Harrell & Reglin, 2018).

Findings from this study indicated that “opportunities for ongoing student interaction with faculty ... was critical to student persistence and retention rates (Harrell & Reglin, 2018, p. 45). The remainder of this paper will address this interaction, with specific emphasis on the sophomore year.

Sophomore Retention

The Sophomore Slump

As was stated earlier in this review of literature, the idea of a sophomore slump has been historically present in the retention literature (D’Arcangelo, 2013; Flanagan, 1991; Freedman, 1956; Hall, 2017; Harrell & Reglin, 2018; Jimenez, 2017; Kim-Lee, 2017; Lambdin, 2014). To make matters more complicated, there is some ambiguity regarding the term sophomore slump and just what actually constitutes classification as a sophomore. As stated by Kim-Lee (2017), the sophomore year may be defined in a variety of ways, with some of the descriptions limiting sophomores to full-time undergraduate students who are of the traditional age for students in the second year of college. Conversely, some universities consider only the number of academic credits attained by students, to include pre-college transfer credits, without respect for age and with no consideration given as to whether a student is traditional or non-traditional. With that definition in play, a student from an advanced high school could technically achieve sophomore status during the freshman year (perhaps even at the beginning of the freshman year), while

others may not gain sophomore status for quite some time due to their part-time, non-traditional status (Kim-Lee, 2017).

With the myriad difficulties surrounding the sophomore year in mind it is important to remember that, while Tinto (1975, 1982, 1993, 1994, 2006) developed the model that is most commonly associated with freshman retention efforts and all manner of students services designed for first year students, and while there are no detailed studies or theories under his authorship that directly address retention beyond the freshman year, Tinto's work has revealed that "student persistence may be improved further by efforts to increase academic and social integration during the remaining years of undergraduate education" (Flanagan, 1991, p. viii). Even with this admonition, few institutions heeded this advice and implemented student services aimed at retention, and ultimate persistence to graduation, beyond the freshman year (Flanagan, 1991). The sophomore year has been identified as a year of particular interest, especially due to the fact that most student services, robust in the freshman year, all but disappear in year two (D'Arcangelo, 2013; Flanagan, 1991; Hall, 2017; Harrell & Reglin, 2018; Kim-Lee, 2017; Lambdin, 2014). This has led to what has already been referred to as the sophomore slump, and is further defined by Flanagan (1991) as "a period of developmental confusion ... (resulting) from a student's struggles with achieving competence, desiring autonomy, establishing identity, and developing purpose" (p. 5).

A brief, early article on the sophomore slump phenomenon posited that, "sophomores are usually at a level of development that makes it difficult for them to cope with the multiple alternatives presented by a college community" (Furr & Gannaway, 1982, p. 340). The authors suggested that sophomores be provided with developmental interventions "within a support-challenge framework" (p. 340) as well as assistance in helping them to identify the many choices

available to them and choose wisely from among the many choices facing them, including the selection of a major, during the sophomore year (Furr & Gannaway, 1982).

By 1991, Flanagan was sounding the call to colleges and universities about the importance of focusing on the sophomore year when designing and implementing retention strategies. In making the case for these efforts, the author stated that

An unplanned decline in ... enrollment could have serious implications for every aspect of campus life including academic programs, jobs, student life, operating expenses, etc., not to mention the impact it would have on institutional morale and the future of the college.... Once students have been recruited and admitted, it is far more economical to retain them than to recruit new students from a shrinking pool. (p. 87)

Concerned by the longstanding statistic indicating that 85% of those who fail to persist in college end up departing during the first two years, Wilder (1993) set about to understand why sophomore students specifically may not remain in college. For this study, two subpopulations of college students were studied: decliners and maintainers. Students were classified as decliners if they achieved a GPA within the range of 2.75–4.0 during the freshman year, but then experienced a 20% or greater decline in GPA during the sophomore year. Conversely, maintainers also achieved a GPA within the range of 2.75–4.0 during the freshman year, but managed to either maintain this range or increase it during the sophomore year. A variety of factors potentially contributing to the decision to leave were analyzed, to include the intentions, goals, and commitment of students; the level of faculty and staff interactions with students; the involvement in extra-curricular activities; level of peer-group interactions; the proneness to anxiety, and self-perceived academic motivation – all comparing decliners to maintainers (Wilder, 1993). When reporting on the results, the author stated, “During the sophomore year,

variables such as lack of commitment to school, absenteeism, educational goals, extra-curricular activities, and perceptions of faculty-staff interactions contributed most to the ability to discriminate between decliners and maintainers” (Wilder, 1993, p. 23).

In discussing the potentially critical role of faculty-student interactions, to include a more mentor-like role for the advisor, the author asserted that

Faculty-staff interactions, specifically individual contacts with advisors, emerged as a significant variable for this select population of students.... Advising contacts should provide the student with more than just an opportunity for information acquisition. In contacting their advisors, more students are seeking friendship as well as expert advice. (p. 24)

As referenced earlier, Kim-Lee (2017) reiterated the findings from 1991 and 1993 indicating a dearth in research centered on the sophomore year. In fleshing out the difficulties inherent to students in the second year of study, the author again stated difficulty in selecting a major, but also indicated that self-efficacy, motivation for attending college, alignment of personal values to the selection of a major, social involvement, and general satisfaction with the institution, along with financial difficulties, were potential contributing factors to a student’s decision to withdraw before or during the sophomore year (Kim-Lee, 2017). Setting out to discover the key issues identified by sophomores as challenges unique to the second year, Kim-Lee (2017) also sought to discover perceptions among students in the second year as to the effectiveness of an organized advising program. The author identified several potential triggers that could explain the causes of the sophomore slump. These triggers were described as “observable behaviors and patterns such as undecided, underprepared, and major-changing” as demonstrated during advising sessions (Kim-Lee, 2017, p. 6).

Kim-Lee pointed out some of the limitations of traditional advising protocols as they are typically organized on traditional college campuses. As stated by the author, "... with pressure for faculty to conduct research and perform administrative duties, their roles as advisors have decreased in priority; this can greatly affect their availability to students and the overall advising experience" (p. 10). Conversely, the author asserted that, "with the rise in tuition, students at four-year public institutions had higher and increased expectations for quality services, including academic advising" (p. 11). While the building of positive relationships is of importance in dealing with the sophomore slump, alternatives to traditional advising may have to be explored. One of these alternatives could be a formal mentoring program. As stated by the author, "Although students who preferred a prescriptive approach tended to focus on course selection and procedures in their advising sessions, some studies found that they continued to want developmental interactions with their advisor; someone who could mentor them and have broader and more substantive discussions" (Kim-Lee, 2017, p. 13). The author's study (a qualitative dissertation) concluded that "most students expressed a desire to work with an advisor who held both developmental and prescriptive approaches to advising" (p. 64), and that students interviewed had a desire to build a relationship with their academic advisor that transcended the traditional advising relationship and "did not require them to re-introduce themselves or repeat their story again" (p. 64).

Sophomore-Specific Retention Strategies

In 2008, the National Resource Center published the National Survey of Sophomore Year Initiatives (2008 National Survey of Sophomore Year Initiatives, 2008). Three hundred fifteen (315) surveys were completed out of a total of 2,641 distributed to colleges and universities throughout the United States. Of these, 115 institutions reported implementation of at least one

sophomore student services initiative. In those surveys, institutions indicated that the five most common student initiatives at the sophomore level were career planning, leadership development, academic advising, class events, and online resources (2008 National Survey of Sophomore Year Initiatives, 2008). As may be seen by the numbers reported, the majority of institutions did not respond to the survey. Of those that did, many reported not having any student success initiatives beyond the freshman year. In explaining this drop-off in the second year, the authors stated that many institutions were considering adding such initiatives in future years. Of those who reported not having such success initiatives during the second year of study, over half indicated that the primary inhibiting factor was lack of funding (2008 National Survey of Sophomore Year Initiatives, 2008).

Hall (2017) indicated that universities should implement retention strategies specific to sophomore students, much as those that have been implemented for decades at the freshman level. The author's study on this topic revealed that a combination of enhanced student services, to include more intentional, mentor-like advising relationships between student and faculty, combined with the creation of sophomore-specific residential communities on campus and a greater emphasis on intentional integration of career elements into the academic curriculum, have an impact on retention at the sophomore level. As asserted plainly by the author, "institutions with sophomore success initiatives have higher retention rates than those without them" (Hall, 2017, p. 3).

Particular attention was placed by this author upon the selection of appropriate data for study when testing the effective of sophomore retention initiatives. These ideas were influential in the development of the study outlined in this paper, and are discussed in part below:

Existing research suggests that individual institutions may be able to gain valuable insights into the experiences of second year students by carefully examining connections between entering student characteristics (such as high school GPAs), and early performance indicators such as first-quarter grades during the freshman year or student engagement data, as these relate to persistence and retention trends. (Hall, 2017, p. 8)

Results from Hall's (2017) study indicated that students found consistent engagement with a freshman success coach to be "extremely helpful" (p. 100) as having assisted students in establishing relationships as well as academic and social engagement and was indicated as a contributor to persistence. Data collected in this qualitative study indicated that a "culture of strong advising" (p. 101), combined with career integration into the curriculum and programs designed to encourage greater involvement in campus activities, had a measurable impact on persistence to the junior year (Hall, 2017).

Mentoring

Benefits of Mentoring

Literature revealed some studies regarding specific, rather than general, benefits of mentoring, although it was surprising that there was not more research of this variety available. Dawson, Bernstein, and Bekki (2015) specifically examined the psychosocial benefits of mentoring women in the area of engineering training and offered a program as an online solution to the mentoring process. The premise of this study was based upon the notion of effective mentoring practice as an "important component in the academic and professional development of women and minorities" (p. 53). Fundamental to this program was the notion that mentoring should be coupled with advising within university engineering programs, especially with respect to providing psychosocial support to counter the high levels of stress experienced by women in

engineering fields of study. A primary thesis for this study was the notion that psychosocial support, even if offered in an online format, contributes to increased resilience and empowerment among women and minorities in the engineering field, thus leading to increased program retention (Dawson et al., 2015). The online program offered is free, and includes modules dealing with self-talk, stereotype threat, sexism, and family-friendly policies. Three studies were offered as evidence of the effectiveness of this program, but the small sample sizes demand replication before one can assume that an online program can take the place of face-to-face mentoring.

A separate study investigated the perceptions of both mentor and mentee regarding the quality and specific benefits of a mentoring program in medical school. Cheah et al. (2015) drafted the study to reveal benefits of mentoring apart from simply providing positive role models for medical students. As most mentor programs do not include a formal process for evaluating program effectiveness, the authors sought to determine the extent to which the program being studied promoted and assisted students in overall academic and professional development. The study was both quantitative and qualitative, thus allowing for interview feedback from mentors and mentees. The result was a plethora of suggestions for program improvement, with the bulk being centered on the need to “break the ice” and allow for better mentor-mentee relationships at program outset (Cheah et al., 2015). This study, with its revealing responses to interview questions, highlights the need for further mixed methods, or outright qualitative studies of the effectiveness of formal mentoring programs in higher education.

Mentor Matching

Noticeably lacking in the literature were studies pertaining to effective matching of mentors to mentees in higher education. Lozinak (2016) presented research culminating in a pairing procedure for new hires in a K–12 public school district. The study was undertaken because of research that indicated that effective matching of mentors and mentees significantly impacted the success of beginning teachers. Although not directly pertaining to higher education, this particular study was included in this review because of the rich inclusion of placement questionnaires for mentors and mentees, which could be of use to program designers in higher education.

Within the scope of higher education specifically, Bell and Trelaven (2011) indicated that, “there is conflicting evidence about the best ways to support the pairing process” (p. 545) in a mentoring scheme, and thus endeavored to uncover what might work best within a structured higher education environment. Adequately researching and refining the pairing process required consecutive research studies, conducted in 2006, 2007, and 2008. Each study was refined based upon results from the preceding study in an effort to produce a pairing process that was thoughtful, while not being over laborious and time consuming. The ultimate result was the creation of what the authors deemed a mentoring culture within the university. The key finding of the study was that pairing of mentor to mentee was more effective when it was not attempted at the beginning of a term but, rather, enough into an academic term to allow for a level of comfort not normally found in brand new situations (Bell & Trelaven, 2011). After three years of study, the authors indicated that the improved pairing process resulted in increasing satisfaction with the overall mentoring program.

Sophomore-Specific Mentoring Programs

In conducting this review of literature, there was very little discovered regarding studies dealing specifically with the impact of mentoring programs on sophomore retention. One such study (Lee, 2014) proved to be a valuable resource in the initial concept development of the study outlined and discussed in this paper. Even though the small sample size called into question the reliability of the results, the methods and general scope of the study are worthy of discussion in this review. The author addressed this issue thusly: “Attempts to evaluate the impact of mentoring programs, particularly in the area of student retention, have been characterized by poor methodological quality, making conclusions about their effectiveness difficult” (Lee, 2014, p. 24).

In general, Lee (2014) found that mentoring had an overall positive effect on the academic success of the sophomore students studied, as measured by GPA. There was no statistically significant difference in retention of sophomores in this specific study (Lee, 2014). However, due to the small sample size used for this study, (due primarily to the reliance upon a survey in addition to readily available ex post facto data) it is difficult to say whether the results are in any way definitive. To that end, the study presented in this paper attempts to answer similar questions using research methods designed to produce more reliable and valid results.

Peden (2016) studied a computer-assisted model for mentoring Latino sophomore college students. Through this study, the author discussed the potential benefits of technology in facilitating mentoring: “With new technology comes new avenues which allows mentors to be accessible for guidance and support anytime the protégé needs” (p. 2). In advocating for this 21st century form of mentoring, the author pointed out that, while many colleges and universities are beginning to craft student services initiatives geared specifically at sophomores, very few are

including a formal mentoring component. Through the study, Peden (2016) posited that universities will begin to move toward an e-mentoring concept, noting that such a concept “challenges the conventional wisdom that a mentoring relationship must be built on a face-to-face relationship” (p. 17).

Advising practices, some of which are quite mentor-like, were examined by Walsh (2013) with specific attention geared toward students in the second year of study. The author noted that, while advising has been long associated with increased retention, this phenomenon has not been studied much at the sophomore level. An integral component of this study was the description of four factors that “relate directly to a students’ experience with advising and faculty relationships” (Walsh, 2013, p. 11). These included:

1. Formal and informal interactions with faculty.
2. Involvement in learning communities outside the classroom.
3. Validating experiences including encouragement and support from faculty and staff.
4. Mentoring experiences with faculty and staff (Walsh, 2013).

In presenting thorough, ongoing academic advising as a form of mentoring likely to lead to increased retention, the author stated, “Advising is an important place to look for ways to increase second year retention because faculty and staff are responsible for advising, and the mentoring that occurs is an important by-product of advising” (p. 65).

One small study examined for this review indicated that students who participated in mentoring programs as a part of university retention efforts reported that they felt supported by their mentors. Additionally, these students frequently went to their mentors for advice, and spent time with mentors to the point that many reported forming friendships with those who served as their mentors (Beattie, 2013).

Summary

Retention has been an area of concern at colleges and universities for decades (Angell, 1930; Astin, 1975; Bishop, 2016; D’Arcangelo, 2013; Farmer et al., 2016; Flanagan, 1991; Gray & Swinton, 2017; Hall, 2017; Harrell & Reglin, 2018; Hurford et al., 2017; Kemp, 2016; Kim-Lee, 2017; Lambdin, 2014; Ligouri & Lobaken, 2015; Miller, 2017; Schudde, 2016; Tinto, 1975; 1982; 1993; 1994; 2006; Travers, 2016; Xu, 2017). Indeed, the earliest study examined in this review of the literature dates back to 1930. After that we find a steady stream of studies and initiatives, theories and programs, appearing over the decades (Astin, 1975; Tinto, 1975; 1982; 1993; 1994; 2006). Various retention theories began to emerge during the 1970s and 1980s, the vast majority of which have focused on the freshman year (Astin, 1975; Tinto, 1975; 1982; 1993; 1994; 2006). Sophomore issues have been mentioned in the literature dating back to the original 1930 study addressed at the outset of this review (Angell, 1930; Freedman, 1956). And, while a term for these issues emerged as early as 1956, little has been done to address the specific, but highly problematic issue of students choosing to abandon their studies just before entering the junior year of study. Instead, tremendous resources have gone to the freshman year, to the point that freshman year initiatives are now a mainstay of the higher education landscape in the United States (D’Arcangelo, 2013; Flanagan, 1991; Hall, 2017; Harrell & Reglin, 2018; Kim-Lee, 2017; Lambdin, 2014).

While there is considerable literature on the concept of mentoring, this review indicated that much of it is focused on the medical field and in the workplace (Bell & Trelaven, 2011; Cheah et al., 2015; Dawson et al., 2015; Lozinak, 2016). Only recently have we begun to see an increase in studies on the sophomore year, with only a handful looking at the potential impact of mentoring on academic achievement and retention in the second year. Of those studies that did

look at this potential relationship, some were replete with serious research method flaws that called into question the reliability of the results (Beattie, 2013; Evans, 2009; Golden, 2011; Lee, 2014; Peden, 2016; Walsh, 2013). Throughout the literature, one notes an emphasis on the importance of addressing the issue of retention at the college level, with many researchers pointing out the need to fill the gaps that are evident in issues regarding the critical sophomore year.

CHAPTER 3. METHODS

Introduction

This chapter provides a description of the methods used to determine whether participation in a formal mentoring program had a significant impact on academic performance as measured by cumulative grade point average (GPA), as well as persistence to the junior year of study. Specifically discussed are the selection of the treatment group, the selection of a matched control group, identification of covariates for inclusion in the multiple and binary logistic regression models, as well as the steps taken to conduct this procedure. Results of these methods are presented in Chapter 4.

Purpose of the Study

The purpose of this study was to examine the relationship between participation in a formal academic mentoring program on college sophomores. Specifically examined was the impact of mentor program placement on academic achievement as measured by GPA, as well as persistence to the junior year.

Research Questions

The following research questions were used in this study:

1. Does participation in a formal mentoring program improve academic performance of sophomore students as measured by cumulative GPA?
2. Does participation in a formal mentoring program affect persistence of students from sophomore to junior standing?

Research Design

This study employed a quantitative, quasi-experimental, non-randomized research design with matched-control groups to respond to each of the research questions. The non-randomized method showed that the treatment and control groups were not randomly selected but were created based upon the interaction of a student, or lack thereof, with a formal academic mentoring program at the university in which the study took place. Students participating in the Leadership Scholar mentoring program were placed in the treatment group, while the control group consisted of a selection of students who did not participate in the mentoring program. The data set provided by the university did not include adequate data to analyze more than a single mentoring program.

A matched control group was crafted for the research questions in response to the confounding variables produced by the non-randomized design. The control group provided strength to the research design by imitating random placement. The treatment and control groups were matched on similar attributes as determined by the variables displayed in Table 1. Additional detail on the matching process is provided below.

Table 1

Description of Matched Factors

Covariate	Description	Coding
ACT Composite Score	Score on the ACT college admission examination. Scores range from 0–36,	0 = 20 or below 1 = Above 20
Age	Years since birth at the beginning of the freshman year	0 = Below age 20 1 = Above age 20
GPA	Cumulative grade point average as measured at the conclusion of the first semester of study during the freshman year.	0 = 0–2.49 1 = 2.50–4.00
Housing	Indication as to whether the student resided on or off the main campus during the period of study.	0 = Off campus 1 = On campus

A quasi-experimental research method allows the researcher to control some confounding variables but cannot account for every potential variable that could impact the outcome (Stuart & Rubin, 2008). Thus, alternative explanations are possible for any results obtained. However, a quasi-experimental design is widely accepted as rigorous, and is further enhanced by the creation of the matched control group, mimicking a true experimental design (Stuart & Rubin, 2008). Research Question 1 was analyzed using multiple regression, and Research Question 2 was analyzed using binary logistic regression.

Matching Method

In order to explore the potential association between placement in the treatment group and an increase in GPA and persistence to the junior year, covariates were comprehensively included in propensity score matching using binary logistic regression analysis in SPSS Version 25. Covariates included ACT composite score, age, GPA, and housing. Regression with selected variables was used to generate continuous propensity scores from 0 to 1, with actual scores in the sample ranging from .615 to 1.0. A 1:1 greedy method (Stuart & Rubin, 2008) nearest-neighbor match was conducted between students placed in the Leadership Scholar mentoring program and those not placed in the program. This was performed to decrease confounders in the selection and to screen out students for subsequent analysis.

As stated by Stuart & Rubin (2008), “Nearest neighbor matching generally selects matched controls for each treated unit. The simplest nearest neighbor matching uses a ‘greedy’ algorithm, which cycles through treated units one at a time, selecting for each the available control unit with the smallest distance to the treated unit” (p. 163). Propensity scores, first introduced by Rosenbaum and Rubin (1983), are a key component of matching methods for quasi-experimental research designs. Often estimated using logistic regression, as in this case, much discussion in the literature has centered around the effects of estimation on matching techniques. As stated by Stuart & Rubin (2008), “Theoretical and analytic work has shown that, although more bias reduction can be obtained using true propensity scores, matching on estimated propensity scores can control variance orthogonal to the discriminant and thus can lead to more precise estimates of the treatment effect” (p. 160). In the case of this study, propensity scores were measured on the covariates mentioned above, and then cases were matched by hand using the estimation technique described herein.

Setting

This study was conducted using data procured from the Academic Records Office at a four-year university at which the study was conducted. The Academic Records Office collected data from each of the university's multiple campuses. For the purposes of this study, students were selected from three southeastern in-state campuses at which students had the opportunity to participate in the mentoring programs studied, as well as a single campus in Asia.

The formal mentoring programs administered by the university are outlined below:

1. TRIO Program: Federal TRIO programs are educational opportunity outreach programs designed to motivate and support students from disadvantaged backgrounds. These programs assist low-income college students, first-generation college students, and college students with disabilities (H. Fulmer, personal communication, April 19, 2018).
2. 101 ELITE Men: Formal mentoring program for male African-American students at the university participating in this study. This program includes support for the transition to college as well as basic study habits and community services. Students in this program meet formally with their mentors every two weeks (H. Fulmer, personal communication, April 19, 2018).
3. Leadership Scholar Program: The Leadership Scholar Program is a formal mentoring program for emerging leaders created by and implemented at the university participating in this study. Students are required to have a 3.0 GPA and a minimum 22 ACT (although examination of the data revealed that these requirements are not firm) and must submit a resume and leadership essay in order to receive this scholarship and be admitted to the mentoring program. Freshmen and sophomore

Leadership Scholars are assigned a university mentor and are required to give at least three hours of service to the university per week. Mentoring is mandatory during the freshman and sophomore years. Students may continue the mentor relationship through the senior year if so desired. Meetings with mentors in this program occur every two weeks (H. Fulmer, personal communication, April 19, 2018).

Human Subjects Review and Data Collection Procedures

The Institutional Review Board (IRB), Human Subjects Review Committee, granted approval for the implementation of this study, as is required of all studies involving human subjects (see Appendix A). Data provided were existing, and were de-identified, allowing the researcher to submit an application requesting exemption. Per the university's IRB requirements, the researcher presented certificates demonstrating satisfactory completion of the Collaborative Institutional Training Initiative (CITI) program. Approval letters from both institutions (the one at which the study was conducted, as well as the institution sponsoring this research) may be found in Appendix A.

After receiving approval, data were requested in June 2018, and were provided by the Academic Records Office in August 2018. The university's established data request process was used to obtain these data. As stated previously, the data set provided included ex post facto data collected by the university. The Academic Records Office removed all student names and assigned a unique identifier to maintain student confidentiality. All data provided were received in a secure, password-protected Microsoft Excel file. The password had an expiration date of August 31, 2018. Once collected, variables were coded to facilitate analysis.

Participants

The population for this study consisted of 1,760 students who enrolled in the university as freshmen during the fall semester of 2015. Students included were those pursuing a baccalaureate degree or an associate's degree, and who could be followed through to the beginning of the junior year of study, even if a student transferred or departed for other reasons. Students without such an indicator, or dual-enrolled high school students, were not included in this study to avoid examining students who were intentionally enrolled for a short time without a long-term academic goal.

Upon receipt of data from the university, it was discovered that no students representing the ELITE 101 program were included due to recordkeeping errors associated with that program. Additionally, less than ten students were included from the TRIO program. Reasons for this shortage were not explained. Remaining were just over 200 students participating in the Leadership Scholar program. The detrimental impact of this turn of events on power will be discussed in the limitations section in Chapter 5. However, the researcher decided to move forward with the original analysis plan due to the potential importance of adding to the literature relative to scholarship programs including some type of mentoring program, as discussed extensively in Chapter 2 (Colucci-Rios & Briano, 2001; D'Souza, et al., 2018; Hu & Ma, 2010; Salmun & Buomaluto, 2016). To that end, the matched control group was configured, and analyses were conducted as described in this chapter.

Variables

Within the context of this study, the impact of participation in a formal mentoring program on academic achievement and persistence was examined. The independent and dependent variables within the two research questions are detailed below.

Independent and Dependent Variables

The independent variable in each research question was participation in the Leadership Scholar mentoring program, as described above. The dependent variable for each research question was academic performance as measured by GPA, and persistence to the junior year of study.

Student GPAs were measured at the end of the fall semester of the freshman year, and then again at the end of the spring semester of the sophomore year. The fall semester GPA was entered as a covariate, and the sophomore spring semester GPA was entered as the dependent variable in the multiple regression analysis for Research Question 1. For Research Question 2: If students enrolled for the fall semester of the junior year at the university where the study took place, or transferred to another institution of higher education, or graduated with an associate's degree, they were coded as having persisted. University records indicated whether students were enrolled for the fall semester of the junior year of study or graduated with an associate's degree. The cooperating university obtained data from the National Student Clearinghouse to indicate whether transfer students were enrolled at other universities for the fall semester of the junior year. If students failed to meet one of the conditions outlined above, they were considered not to have persisted.

Data Analysis

After receiving data from the Academic Records Office, each variable was coded for analysis. Data were organized, coded, and analyzed using IBM SPSS Statistics 25. Descriptive statistics were captured on demographics, GPA, and retention, and regression analysis was run on each research question (multiple regression for Research Question 1 and binary logistic

regression for Research Question 2). The total number of cases in the matched control and treatment groups is provided in Table 2.

Table 2

Leadership Scholar Treatment Group and Matched Control Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Leadership Scholar	206	49.5	49.5	49.5
	Control	210	50.5	50.5	100.0
	Total	416	100.0	100.0	

The data set was analyzed for descriptive statistics, along with additional demographic information, including race, gender, and semester GPA. These descriptive statistics are provided in Chapter 4.

Matched Control Groups

Control groups mimicking random assignment using the matched factors described in Table 1 enhanced the validity of the study. There were four matched factors, which were collected from the Academic Records Office. Each student was identified with a binary indicator for ACT score, age, GPA, and housing in order to more easily facilitate the matching of groups. A description of each covariate appears in Table 3.

Table 3

Description of Covariates

Covariate	Description	Coding
Gender	Whether a student identifies as a male or as a female.	0 = Male 1 = Female
ACT Composite Score	Score on the ACT college admission examination. Scores range from 0-36.	0 = 25 or below 1 = Above 25
Transfer Credits	Indication as to whether the student transferred credits to the university where the study took place.	0 = No transfer credits 1 = Credits transferred
Millennium Scholar	Indication as to whether a student received the university's highest academic scholarship.	0 = No scholarship awarded 1 = Scholarship awarded
Chancellor's Award	Indication as to whether a student received the university's second highest academic scholarship.	0 = No scholarship awarded 1 = Scholarship awarded
Age	Years since birth at the beginning of the freshman year.	0 = Below age 20 1 = Above age 20
Home Campus	Indication as to whether the student attended the university's main campus, or one of its many satellite campuses.	0 = Main campus 1 = Satellite campus
Housing	Indication as to whether the student resided on or off the main campus during the period of study.	0 = Off campus 1 = On campus
Full/Part Time Status	Indication as to whether the student was considered full time according to the policies of the university.	0 = Part time 1 = Full time
Math Remediation	Indication as to whether the student was placed in a mathematics remediation course during the freshman year.	0 = No remediation 1 = Remediation
English Remediation	Indication as to whether the student was placed in an English remediation course during the freshman year.	0 = No remediation 1 = Remediation
Freshman Semester GPA	Cumulative grade point average as measured at the conclusion of the first semester of the freshman year of study.	0 = 0-2.49 1 = 2.50-4.00

Once appropriate covariates for each research question were selected, regression analysis was run on each of the research questions separately. Results of these analyses are outlined in Chapter 4.

Summary

The purpose of this study was to examine the relationship between participation in a formal academic mentoring program and academic achievement as measured by GPA, as well as persistence to the junior year of study for students in the sophomore year of college. A quasi-experimental, non-randomized design was employed, and a matched control group was used to reduce selection bias and enhance the validity of the results. Further, multiple regression analysis and binary logistic regression analysis was carried out in order to respond to each of the two research questions. A detailed description of the results is provided in Chapter 4. Additionally, whenever possible, data have been reported in tables, graphs, figures, and narrative form to most effectively communicate the findings.

CHAPTER 4. FINDINGS

Introduction

This chapter provides a description of the findings of this study to determine whether participation in a formal mentoring program had a significant impact on academic performance as measured by cumulative grade point average (GPA), as well as persistence to the junior year of study. Specifically discussed are descriptive as well as regression analysis results on both research questions. Chapter 5 will discuss these findings in greater detail, address limitations of the study, and provide recommendations for further study.

Purpose of the Study

The purpose of this study was to examine the relationship between participation in a formal academic mentoring program on college sophomores. Specifically examined was the impact of mentor program placement on academic achievement as measured by GPA, as well as persistence to the junior year.

Research Questions

The following research questions were used in this study:

1. Does participation in a formal mentoring program improve academic performance of sophomore students as measured by cumulative GPA?
2. Does participation in a formal mentoring program affect persistence of students from sophomore to junior standing?

Demographic Results

A secure data set was presented to the researcher consisting of information pertaining to 1,760 undergraduate students at the university where the study took place. Of these students, 206 were enrolled in the Leadership Scholar mentor program. There were too few students enrolled in the ELITE 101 and TRIO programs to attempt analysis on their effectiveness with respect to the research questions in this study. Therefore, the researcher selected a matched control group from the original population for the purposes of comparison to those students in the Leadership Scholar mentor program relative to the research questions stated in this paper.

Matching Method

In order to explore the potential association between placement in the treatment group and an increase in GPA and persistence to the junior year, covariates were comprehensively included in propensity score matching using binary logistic regression analysis in SPSS Version 25. Covariates included ACT composite score, age, GPA, and housing. Regression with selected variables was used to generate continuous propensity scores from 0 to 1, with actual scores in the sample ranging from .615 to 1.0. A 1:1 greedy method (Stuart & Rubin, 2008) nearest-neighbor match was conducted between students placed in the Leadership Scholar mentoring program and those not placed in the program. This was performed to decrease confounders in the selection and to screen out students for subsequent analysis. Propensity scores were measured on the covariates mentioned above, and then cases were matched by hand using the estimation technique described in Chapter 3.

A combined total of 416 students were selected from the original data set for comparison and study. Within this group, 143 students were male (34.4%) and 273 were female (65.6%). With respect to age, 396 of the students were under the age of 20 (95.2%) and 20 were age 20 or

above (4.8%). Similarly, 396 students attended class on the university's main campus (95.2%), while 20 students attended on one of the university's satellite campuses (4.8%). Three hundred ten students resided on campus (74.5%), while 106 resided off campus (25.5%). The vast majority (407, or 97.8%) of these students were full time undergraduates. White students accounted for 283 of those studied (68%), and Black students accounted for 86 of those participants studied (20.7%). The remainder of race indications were distributed among American-Alaskan Native (1.2%), Asian (3.1%), Hawaiian-Pacific Islander (0.2%), Mixed Race (1.2%), and no race given (5.5%).

Of interest in this study were any remediation programs in which students may have been placed. Forty-seven students received remediation in English (11.3%), and 132 students received remediation in mathematics (31.7%). Conversely, three students received the Millennium Scholarship (0.7%), which is a full tuition, room and board scholarship based upon academic achievement. Thirty-three students received the Chancellor's Award (7.9%), which is a full tuition scholarship based upon academic achievement.

The treatment group consisted of 206 students who participated in the Leadership Scholar Mentoring Program during the freshman and sophomore years of study. The matched control group consisted of 210 students selected based upon factors discussed in Chapter 3. To the researcher's knowledge, these students did not participate in any formal mentoring program during the freshman and sophomore years of study.

Table 4

Demographic Information by Group

Demographic Information	Control Group	Treatment Group
Persisted to Junior Year	Did Not Persist – 50 Persisted – 160	Did Not Persist – 36 Persisted – 170
GPA Increase	Did not increase – 181 Increased – 29	Did Not Increase – 174 Increased – 32
Transfer Credits	No Transfer Credits – 157 Transfer Credits – 53	No Transfer Credits – 106 Transfer Credits – 100
Millennium Scholars Award	No – 207 Yes – 3	No – 206 Yes - 0
Chancellor’s Award	No – 182 Yes – 28	No – 201 Yes - 5
Age	Under 20 – 192 20 or Above – 18	Under 20 – 204 20 or Above - 2
Home Campus	Main Campus – 200 Satellite Campus – 10	Main Campus – 196 Satellite Campus - 10
Full or Part Time Status	Part Time – 8 Full Time – 202	Part Time – 1 Full Time - 205
Housing	Off Campus – 54 On Campus – 156	Off Campus – 52 On Campus - 154
English Remediation	No Remediation – 164 Remediation – 46	No Remediation – 205 Remediation - 1
Math Remediation	No Remediation – 130 Remediation – 80	No Remediation – 154 Remediation - 52
Race	American-Alaskan – 2 Asian – 8 Black – 70 White – 112 Mixed Race – 1 No Race Given - 17	American Alaskan – 3 Asian – 5 Black – 16 White – 171 Mixed Race – 5 No Race Given – 6
Gender	Male – 83 Female – 127	Male – 60 Female – 146
Propensity Scores	Minimum – 0.615 Maximum – 1.0 Mean – 0.816	Minimum – 0.668 Maximum – 1.0 Mean – 0.812

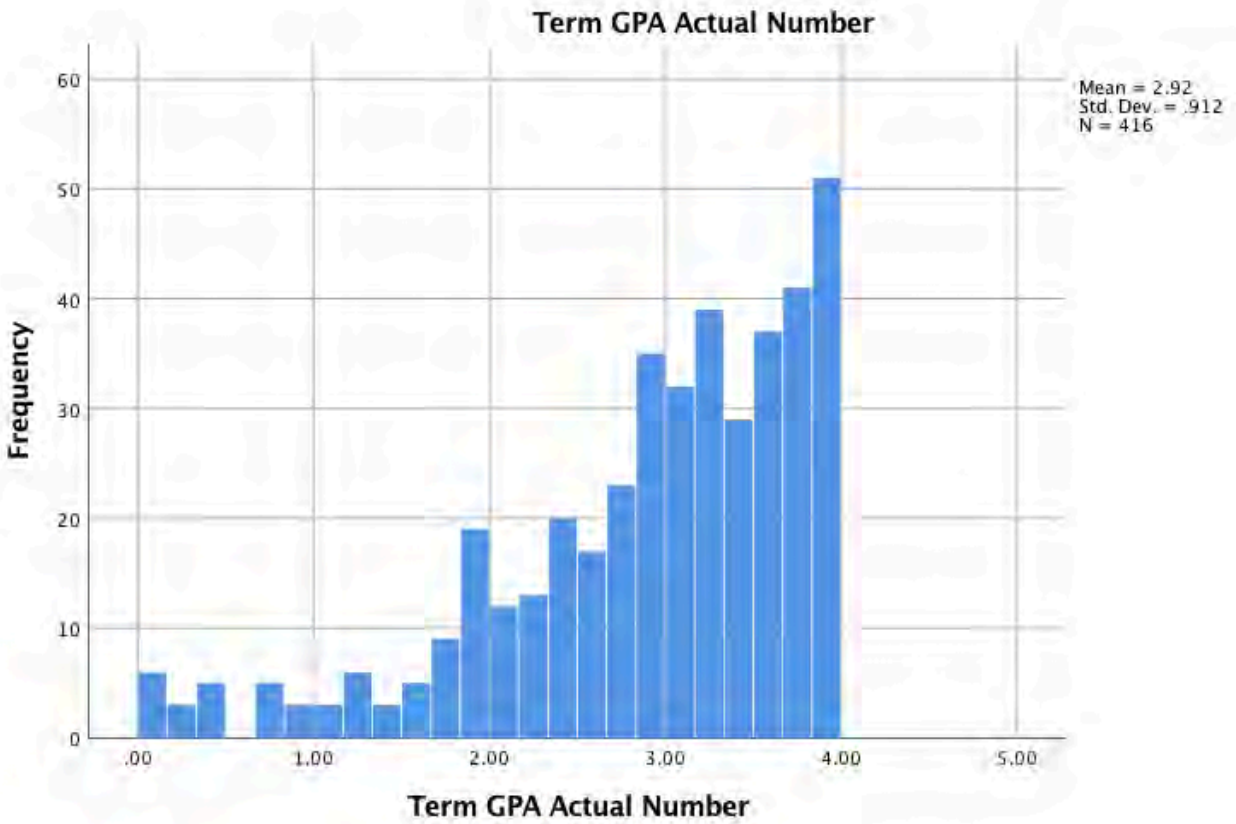


Figure 1. GPA of Students at the End of the First Term of the Freshman Year.

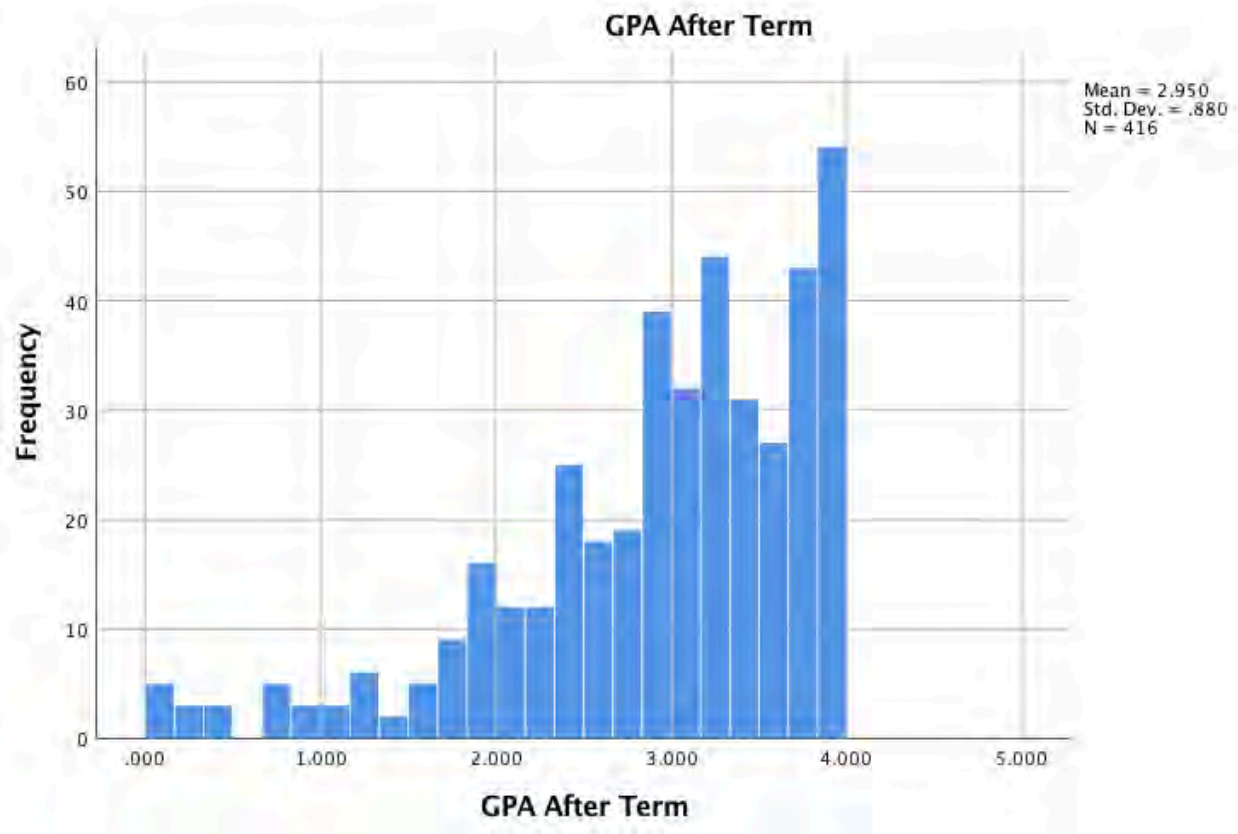


Figure 2. GPA of Students at the End of the Second Term of the Sophomore Year.

Analysis

Research Question 1 was addressed using multiple regression and Research Question 2 was addressed using binary logistic regression. The following seven assumptions were tested for each research question as part of the regression analysis:

1. The dependent variable must be discrete and mostly dichotomous;
2. Output should be coded to reflect the probability of an event occurring;
3. The model should be appropriately fitted, with meaningful variables included and meaningless variables not included;
4. Each observation should be independent;

5. The model should have little or no multicollinearity;
6. Independent variables should be related to the log odd of an event;
7. The sample size should be sufficiently large (Park, 2013).

Each of the above assumptions were met as outlined below.

The dependent variable was dichotomous, and output was appropriately coded to reflect the probability of an event occurring. The model was appropriately fitted, and meaningful variables were included, with meaningless variables not included. Additionally, each observation was independent.

Tests to see if the data met the assumption of collinearity indicated that multicollinearity was not a concern (Leadership Scholar Mentor Program, Tolerance = .56, VIF = 1.79; Gender, Tolerance = .92, VIF = 1.09; ACT, Tolerance = .63, VIF = 1.61; Transfer Credits, Tolerance = .87, VIF = 1.15; Millennium Scholar, Tolerance = .92, VIF = 1.09; Chancellor's Award, Tolerance = .62, VIF = 1.62; Age, Tolerance = .89, VIF = 1.13; Home Campus, Tolerance = .95, VIF = 1.06; Housing, Tolerance = .96, VIF = 1.05; Full/Part Time Status, Tolerance = .94, VIF = 1.06; Math Remediation, Tolerance = .86, VIF = 1.16; GPA, Tolerance = .67, VIF = 1.50; English Remediation, Tolerance = .82, VIF = 1.22) as indicated in Table 5.

Table 5

Coefficients^a (GPA Increase Freshman to Sophomore)

Model		Collinearity Tolerance	Statistics VIF
1	Leadership Scholar Mentoring Program	.559	1.788
	Gender	.917	1.091
	ACT – RE-CODED	.623	1.606
	Transfer Credit	.873	1.145
	Millennium Scholars Award	.918	1.090
	Chancellor’s Award	.616	1.624
	AGE RE-CODED	.888	1.126
	HOME CAMPUS RE-CODE	.945	1.058
	Housing	.955	1.047
	Full/Part-Time	.942	1.062
	Math Remediation	.860	1.163
	Term GPA	.665	1.503
	English Remediation	.818	1.222

^a Dependent Variable: GPA Increase Freshman to Sophomore

Independent variables were related to the log odd of an event as indicated by the odds ratio (OR) and confidence intervals listed in Table 6.

Table 6

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP (B)	
								Lower	Upper
Step 1^a	Leadership Scholar Mentoring Program (1)	-.606	.566	1.148	1	.284	.545	.180	1.653
	Gender (1)	.279	.267	1.093	1	.296	1.321	.784	2.228
	ACT – RE-CODED (1)	-.558	.359	2.425	1	.119	.572	.283	1.155
	Transfer Credit (1)	.583	.293	3.958	1	.047	1.792	1.009	3.184
	Millennium Scholars Award (1)	-.238	1.307	.033	1	.856	.788	.061	10.206
	Chancellor’s Award (1)	-.037	.548	.005	1	.946	.963	.329	2.823
	AGE RE-CODED (1)	-1.277	.512	6.212	1	.013	279	.102	.761
	HOME CAMPUS RE-CODE (1)	.081	.603	.018	1	.893	1.084	.333	3.534
	Housing (1)	-.063	.298	.044	2	.834	.939	.524	1.685
	Full/Part-Time (1)	.320	.848	.142	1	.706	1.377	.261	7.261
	Math Remediation (1)	-.326	.288	1.277	1	.258	.722	.4110	1.270
	Term GPA			1.982	3	.576			
	Term GPA (1)	.901	.683	1.739	1	.187	2.462	.645	9.394
	Term GPA (2)	.297	.553	.289	1	.591	1.346	.455	3.983
	Term GPA (3)	.165	.567	.084	1	.772	1.178	.388	3.583
	English Remediation (1)	-.013	.417	.001	1	.975	.987	.435	2.237
	Constant	.757	.962	.618	1	.432	2.131		

^a Variable(s) entered on step 1: Leadership Scholar Mentoring Program, Gender, ACT – RE-CODED, Transfer Credits, Millennium Scholars Award, Chancellor’s Award, AGE RE-CODED, HOME CAMPUS RE-COE, Housing, Full/Part-Time, Math Remediation, Term Gpa, English Remediation

The sample size of 416 was sufficient for binary logistic regression analysis. The literature has not provided specific rules regarding sufficiency of sample size for binary logistic regression. However, multiple authors “have recommended a minimum ratio of 10 to 1, with a minimum sample size of 100 or 50, plus a variable number that is a function of the number of predictors” (Peng, et al., 2002, p. 10).

Additional assumptions for multiple regression analysis for Research Question 1 included the assessment of standardized predicted values versus standardized residuals, as well as a determination as to whether the residuals were approximately normally distributed. While there were some outliers, the scatterplot of standardized predicted values versus standardized residuals showed that the data met the assumptions of homogeneity of variance and linearity. The histogram represented below indicated that the data, while not necessarily normally distributed, were not radically skewed (see Figures 3 and 4).

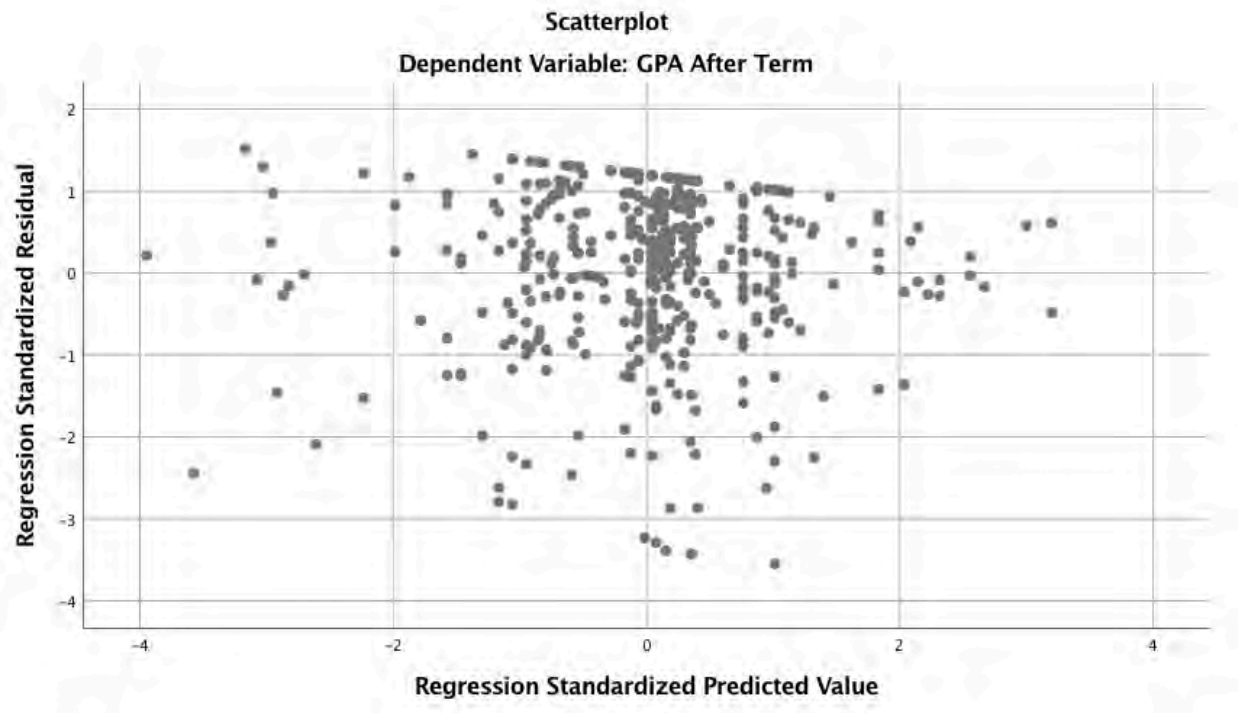


Figure 3. Scatterplot – Standardized Residuals and Standardized Predicted Values.

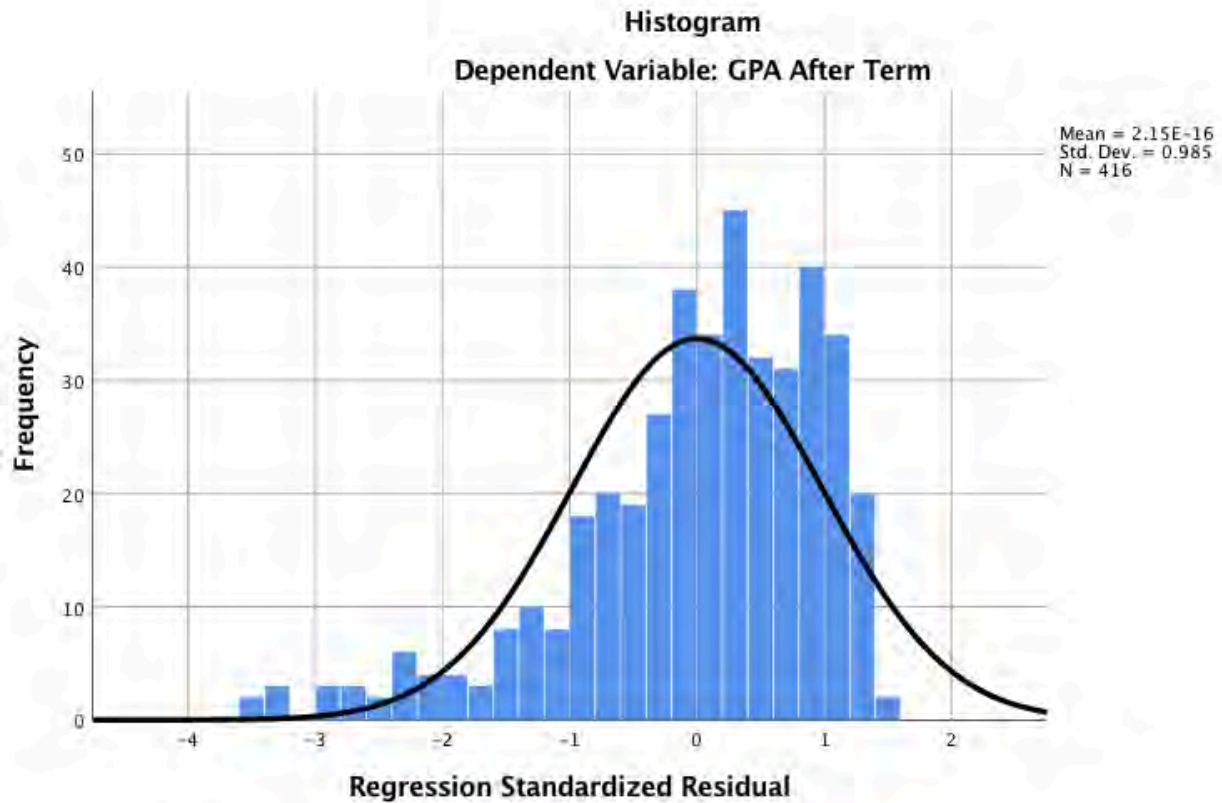


Figure 4. GPA Distribution

Research Question Results

After appropriate covariates were determined, regression analysis was performed on data collected for each research question. Results of the analyses appear below.

Research Question 1

1. Does participation in a formal mentoring program improve academic performance of sophomore students as measured by cumulative GPA?

Multiple linear regression was carried out to investigate the relationship between membership in the Leadership Scholar mentoring program and academic performance as measured by GPA at the end of the sophomore year. There was not a significant relationship

between membership in the Leadership Scholar mentoring program and academic performance as measured by GPA ($p = 0.19$), nor was there a significant relationship with gender ($p = 0.13$), age ($p = 0.41$), transfer credits ($p = 0.85$), receipt of the Millennium Scholar Award ($p = 0.14$), receipt of the Chancellor's Award ($p = 0.17$), housing ($p = 0.75$), full or part time status ($p = 0.24$), math remediation ($p = 0.68$), English remediation ($p = 0.48$), or first term GPA ($p = 0.78$). However, there was a significant relationship between home campus and academic performance as measured by GPA ($p = 0.02$).

The R^2 value was 0.034, so 3% of the variation in GPA can be explained by the model containing participation in the Leadership Scholar mentoring program, gender, age, transfer credits, Millennium Scholar, Chancellor's Award, home campus, housing, full or part time status, math remediation, English remediation, and first term GPA (See Tables 7 and 8).

Table 7

Coefficients^a – GPA

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.04	.396		7.581	.000		
	Leadership Scholar Mentoring Program	.151	.115	.086	1.309	.191	.560	1.786
	Gender	.143	.095	.077	1.510	.132	.919	1.088
	ACT – RE-CODED	.172	.209	.042	.824	.410	.924	1.083
	Transfer Credits	.018	.095	.010	.185	.853	.873	1.145
	Millennium Scholars Award	.432	.518	.042	.833	.405	.963	1.039
	Chancellor’s Award	-.233	.171	-.072	-1.365	.173	.867	1.154
	HOME CAMPUS RE-CODE	-.482	.207	-.117	-2.332	.020	.945	1.058
	Housing	-.032	.101	-.016	-.320	.748	.955	1.047
	Full/Part-Time	-.360	.305	-.060	-1.182	.238	.942	1.062
	Math Remediation	.040	.099	.021	.408	.684	.874	1.144
	English Remediation	-.107	.150	-.039	-.715	.475	.819	1.221
	Term GPA	.017	.062	.017	.279	.780	.669	1.494

^a Dependent Variable: GPA After Term

Table 8

Model Summary^b – GPA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.183 ^a	.034	.005	.877575

^a Predictors: (Constant), Term Gpa, Housing, Millennium Scholars Award, Chancellor’s Award, HOME CAMPUS RE-CODE, Full/Part-time, AGE RE-CODED, Gender, English Remediation, Transfer Credits, Math Remediation, Leadership Scholar Mentoring Program

^b Dependent Variable: GPA After Term

Research Question 2

2. Does participation in a formal mentoring program affect persistence of students from sophomore to junior standing?

Binary logistic regression indicated that participation in the Leadership Scholar mentoring program was not a significant predictor of persistence to the junior year [Chi-Square = 17.569, $df = 12$ and $p = 0.129 (>0.05)$]. All of the predictors explain 7% of the variability of participation in the Leadership Scholar mentoring program for persistence to the junior year. Age and transfer credits were significant at the 5% level [Age: Wald = 8.854, $p = .003 (<0.05)$; Transfer Credits: Wald = 4.202, $i = .040 (<0.05)$]. The odds ratio (OR) for the Leadership Scholar mentoring program was 0.949 (95% CI .493 – 1.825). The model correctly predicted 9.3% of cases where the student did not persist to the junior year and 98.5% of cases where students did persist, giving an overall percentage correct prediction rate of 80% (See Tables 9, 10, 11, and 12).

Table 9

Omnibus Test of Model Coefficients – Persistence

		Chi-square	df	Sig.
Step 1	Step	17.569	12	.129
	Block	17.569	12	.129
	Model	17.569	12	.129

Table 10

Model Summary – Persistence

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	406.412 ^a	.041	.065

^a Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 11

Variables in the Equation – Persistence

		B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP (B)	
								Lower	Upper
Step 1^a	Leadership Scholar Mentoring Program	-.053	.334	.025	1	.865	.949	.43	1.825
	Gender	.266	.264	1.011	1	.315	1.304	.777	2.190
	ACT – RE-CODED	-1.484	.499	8.854	1	.003	.227	.085	.603
	Transfer Credits	.597	.291	4.202	1	.040	1.816	1.027	3.214
	Millennium Scholars Award	-.695	1.272	.298	1	.585	.499	.041	6.044
	Chancellor’s Award	-.486	.470	1.068	1	.301	.615	.245	1.545
	HOME CAMPUS RE-CODE	.080	.603	.018	1	.895	1.083	.332	3.530
	Housing	-.042	.295	.020	2	.887	.959	.537	1.711
	Full/Part-Time	.278	.845	.108	1	.742	1.320	.252	6.914
	Math Remediation	-.267	.282	.897	1	.344	.765	.440	1.331
	English Remediation	.037	.414	.008	1	.929	1.037	.461	2.334
	Term GPA	-.057	.185	.095	1	.759	.945	.657	1.359
	Constant	1.129	1.116	1.023	1	.312	3.093		

^a Variable(s) entered on step 1: Leadership Scholar Mentoring Program, Gender, ACT – RE-CODED, Transfer Credits, Millennium Scholars Award, Chancellor’s Award, AGE RE-CODED, HOME CAMPUS RE-COE, Housing, Full/Part-Time, Math Remediation, English Remediation, Term Gpa.

Table 12

Classification Table^a – Persistence

Observed		Predicted Persisted to			
		Junior Year		Percentage Correct	
		Did not persist	Persisted		
Step 1	Persisted to Junior Year	Did not persist	8	78	9.3
		Persisted	5	325	98.5
Overall Percentage					80.0

^a The cut value is .500

Before completing the analysis, the retention rate was calculated separately for both the control and treatment groups (see Tables 13 and 14). The results demonstrated that the control group had a retention rate of 76.2% and the treatment group had a retention rate of 82.5%

Table 13

Control Group Persistence Percentages

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Did not persist	50	23.8	23.8	23.8
	Persisted	160	76.2	76.2	100.0
Total		210	100.0	100.0	

Table 14

Treatment Group Persistence Percentages

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Did not persist	36	17.5	17.5	17.5
	Persisted	170	82.5	82.5	100.0
	Total	206	100.0	100.0	

Before completing the analysis, GPA was coded to facilitate a simple analysis as to whether GPA increased from the fall semester of the freshman year to the spring semester of the sophomore year. This analysis was calculated separately for both the control and treatment groups (see Tables 15 and 16). The results demonstrated that 13.8% of the control group students experienced an increase in GPA and that 15.5% of the treatment group students experienced an increase in GPA.

Table 15

Control Group GPA Increase Percentages

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	GPA Did Not Increase	181	86.2	86.2	86.2
	GPA Increased	29	13.8	13.8	100.0
	Total	210	100.0	100.0	

Table 16

Treatment Group GPA Increase Percentages (GPA Increase Freshman to Sophomore)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	GPA Did Not Increase	174	84.5	84.5	84.5
	GPA Increased	32	15.5	15.5	100.0
	Total	206	100.0	100.0	

Summary

This chapter presented the research findings of this study in terms of data analysis. Research Question 1 was answered using multiple regression and Research Question 2 was answered using binary logistic regression. Both indicated that, at least with the sample studied herein, there was not a statistically significant relationship between placement in a formal mentoring program and improvement of GPA or persistence to the junior year of study. Even so, examination of raw data indicated that students in the treatment group entered the junior year at a higher rate, and with a higher percentage of GPA increase, than those in the control group.

CHAPTER 5. SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

Retention has been an issue in higher education for decades (Freedman, 1956; Noel et al., 1986; Tinto, 1987). Through the years, attempts have been made to address this issue, with most research focusing on the freshman year. Recently, there has been increasing focus on issues pertaining to sophomore students and what may cause them to leave college before the junior year. However, even after identification of the sophomore slump as an issue as far back as 1956 (Freedman, 1956), universities have only sporadically addressed retention at this critical juncture.

Mentoring has been implemented in a variety of areas in an effort to increase retention and improve morale. Most notably, mentoring has become a hallmark of the medical professions (Cheah et al., 2015). While mentoring programs are conducted to some extent in the university setting, the impact of mentoring has not been studied to the same extent as freshman retention initiatives. As a result, little is known about the impact of robust advising and mentoring programs on academic performance and persistence among sophomore students. Even though university administrators acknowledge the issues surrounding low academic performance and high dropout among sophomore students, the majority of resources geared toward retention initiatives are still aimed at the freshman year (Freedman, 1956; Tinto, 1987, 2012; Noel et al., 1986).

Purpose of the Study

The purpose of this study was to examine the relationship between participation in a formal academic mentoring program on college sophomores. Specifically examined was the impact of mentor program placement on academic achievement as measured by GPA, as well as persistence to the junior year.

Research Questions

The following research questions were used in this study:

1. Does participation in a formal mentoring program improve academic performance of sophomore students as measured by cumulative GPA?
2. Does participation in a formal mentoring program affect persistence of students from sophomore to junior standing?

Summary

Using a quasi-experimental research design with matched control groups, this study attempted to determine whether a relationship exists between specific, formal mentoring programs and retention at a mid-sized, liberal arts university in the southeastern United States. Chapter 4 presented findings, with detailed data analysis, relative to the research questions posed. The quasi-experimental research design was created and carried out with a treatment group and a matched-control group. Each group contained more than 200 students, and data collected included information regarding mentor program participation, GPA increase or decrease at the end of the sophomore year, and persistence to the junior year of study. Research questions were answered using multiple regression and binary logistic regression, and indicated that, at least with the sample studied herein, there was not a statistically significant relationship between placement in a formal mentoring program and improvement of GPA or persistence to

the junior year of study. Even so, examination of raw data indicated that students in the treatment group entered the junior year at a higher rate, and with a higher percentage of GPA increase, than those in the control group. Of the three operational mentoring programs at the university where the study took place, only one provided sufficient data for inclusion in this study.

While this study did not determine the existence of a statically significant relationship between formal mentoring programs and academic performance and persistence, perhaps the way was paved for future studies that can determine the potential worth of such programs in colleges and universities as they grapple with this challenging issue.

Limitations of the Study

Every effort was made to craft a study that would be robust in nature and provide ample power to infer results back to the general population. However, a smaller than anticipated sample size complicated this endeavor. As this study was being designed, the prospect of analyzing three vibrant mentoring programs was paramount from a conceptual standpoint. Had adequate data been available, the sample size of the treatment group would likely have exceeded 600 participants. This would have been coupled with a matched control group of similar size – something that could have easily been accomplished considering the data set of 1,760 students provided. However, due to recordkeeping inaccuracies and other challenges as yet unknown, data were only available on one formal mentoring program. These data consisted of just over 200 students. While larger than many randomized survey samples, the data set was not large enough for a quasi-experimental design to provide the power originally desired for this study. Additionally, some critical covariates requested were not provided. Two of particular note were Pell Grant recipient status and first-generation college student status. It was hoped that analysis

of these two variables would provide information regarding socioeconomic condition and potential home support for college study. However, due to rules constraints, these critical covariates were not available for inclusion in the statistical model.

Other limitations to this study include the fact that it was conducted at a single university in only the southeastern region of the country. This particular limitation tends to be systematic in studies of this type. Indeed, noticeably missing in the literature were large-scale studies involving multiple institutions. Also missing are studies along this line that are longitudinal in nature. Further, most studies of this type are quantitative in nature. Those that are qualitative have such small sample sizes, or are conducted on such a small scale, as to render their conclusions largely unusable by most institutions.

Conclusions

Despite the limitations mentioned above, much valuable information was gleaned from this study. As an example, the review of literature revealed that the notion of a sophomore slump has been recognized as an issue among university administrators for decades (D’Arcangelo, 2013; Flanagan, 1991; Freedman, 1956; Hall, 2017; Harrell & Reglin, 2018; Jimenez, 2017; Kim-Lee, 2017; Lambdin, 2014). Yet, money and programs have continually been geared toward freshman programs almost exclusively. Why? Regardless of the results of this particular study, it is evident that institutions of higher learning would be well served to experiment with ways to keep sophomore students engaged and enrolled, as studies clearly indicate that persistence to the junior year greatly increases the likelihood of graduation (Lambdin, 2014; Schreiner & Pattengale, 2000). Also, because this study focused almost exclusively on students with a GPAs in the 3.0 range, along with respectable ACT scores, one wonders whether Tinto’s admonition to focus less on retention and more on admitting truly

college-ready students is worth a more intensive look. It could be that colleges and universities need to determine the characteristics of students who are most likely to succeed at a given institution, and then gear their resources more toward recruitment and onboarding rather than retention (Tinto, 1982). Most of the students evaluated in this study persisted to the junior year, and did so with respectable GPAs. Indeed, the 416 students in this survey had a higher persistence rate than the national average for freshmen or sophomores (Shapiro et al., 2017). Perhaps we have been asking the wrong question for the last several decades.

Several mentor-specific college scholarship programs were examined in the review of literature (Colucci-Rios & Brino, 2001; D'Souza et al., 2018; Hu & Ma, 2010; Salmun & Buomaluto, 2016). Each had entry requirements and mentoring programs similar to the Leadership Scholar program examined for this study. These studies indicated that students generally performed and persisted at better rates than students not enrolled in such programs. Further, these studies indicated a high level of satisfaction with the mentoring component of such scholarship programs, even if students were not as satisfied with other aspects of the programs (Colucci-Rios & Brino, 2001; D'Souza et al., 2018; Hu & Ma, 2010; Salmun & Buomaluto, 2016). These facts, taken together, suggest that ongoing research with a goal toward programmatic change is warranted.

Recommendations for Future Research

With the above in mind, the following recommendations are made for further study in this important area:

1. A study similar to this one should be conducted with a large enough sample size and with appropriate covariates to ensure adequate statistical power.

2. Mixed methods studies on sophomore retention should be designed and implemented.

The combination of quantitative and qualitative components will allow for more thorough discovery of the why of departure, rather than simply gathering data about how many students departed an institution.

3. Studies on sophomore retention should be designed to include multiple colleges and universities. Even if exclusively quantitative, such studies would provide more accurate information as to the types of initiatives that are effective when it comes to sophomore retention.

4. Studies should be conducted to determine the characteristics of students that are more likely to persist all the way to graduation with a baccalaureate degree. Studies of this type would help determine how colleges and universities could better attract students who are truly college-ready, and who are predisposed to persistence and high academic achievement in the college environment.

Implications

The highly competitive landscape of higher education will keep the issue of retention at the forefront in the coming years. This issue is likely to be exacerbated when students born in the lower birth rate years surrounding the Great Recession reach college age. Most universities are likely to see a decline in enrollment when these students arrive as freshmen. With this in mind, now is the time to strategize about ways to mitigate these issues.

University administrators would be well advised to examine mentoring programs that have a proven track record of success. Specific to this study is the indication that an attainable scholarship program with required mentoring may prove successful with respect to both improved academic performance and persistence to the junior year. While not statistically

significant, the results obtained through this study indicated that students who participated in the Leadership Scholar mentoring program had overall better academic performance and persisted at a higher rate than students in the control group. These data also suggest that, due to the various requirements for admission to the Leadership Scholar program, admissions administrators may wish to consider examining academic and other traits commensurate with persistence relative to these requirements. Admissions incentives, to include scholarships like the one studied herein, could potentially attract students to colleges and universities who are more likely to perform at a high level and persist at higher rates than students who are not yet ready for the rigors of the traditional college experience. Similarly, two-year college admissions administrators could potentially target students who are not quite at the Leadership Scholar academic level, but who show promise with appropriate support. These students could be provided with a nurturing student services experience for the critical freshman and sophomore experience. The ultimate goal could be that of assisting students in transferring to a four-year institution at which they could experience academic success culminating with graduation with a baccalaureate degree.

The review of literature stated herein, along with data collected in this paper, indicate that further study in the area of retention, particularly at the sophomore level, is warranted. Additionally, colleges and universities would be well served by better identifying and attracting students with characteristics commensurate with completion of a college baccalaureate program. As the costs of higher education continue to rise, the notion of attracting and retaining quality students will take on increasing importance.

REFERENCES

- 50th Anniversary - Federal TRIO Programs Fact Sheet* (Rep.). (2014). Washington, DC: United States Department of Education.
- 2008 National Survey of Sophomore Year Initiatives* (Rep.). (2008). Columbia, SC: National Resource Center, University of South Carolina.
- Angell, R. C. (1930). *A study in undergraduate adjustment*. Chicago: University of Chicago Press.
- Astin, A. W. (1975). *Preventing students from dropping out*. San Francisco: Jossey-Bass.
- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 25(4), 297–308.
- Astin, A. W. (1996). Involvement in learning revisited: Lessons we have learned. *Journal of College Student Development*, 37(2), 123–134.
- Beattie, J. W. (2013). *A case study of college persistence for the dean's future scholars program* (Order No. 3595626). Available from ProQuest Dissertations & Theses Full Text. (1443853228). Retrieved from <http://spot.lib.auburn.edu/login?url=https://search.proquest.com/docview/1443853228?accountid=8421>
- Bell, A., & Treleaven, L. (2011). Looking for Professor Right: mentee selection of mentors in a formal mentoring program. *Higher Education*, 61(5), 545–561. doi:10.1007/s10734-010-9348-0

- Bierema, L. L., & Merriam, S. B. (2002). E-mentoring: Using computer mediated communication to enhance the mentoring process. *Innovative Higher Education, 20*(3).
- Bishop, K. K. (2016). The relationship between retention and college counseling for high-risk students. *Journal of College Counseling, 19*, 205–217.
- Blemling, G. S. (1989). A meta-analysis of the influence of college residence halls on academic performance. *Journal of College Student Development, 40*(5), 551–561. Retrieved June 15, 2018.
- Brooks, M., Jones, C., & Burt, I. (2013). Are African-American male undergraduate retention programs successful? An evaluation of an undergraduate African-American male retention program. *Journal of African American Studies, 17*(2), 206–221.
- Canty, C. W. (2016). *An analysis of three TRIO student support services projects at public two-year institutions in South Carolina* (Doctoral dissertation, Clemson University). Ann Arbor, MI: ProQuest.
- Cheah, W. L., Hazmi, H., Kiu, L. H., Lee, S. E., Lee, W. N., & Wong, H. S. (2015). Perceptions on mentoring concept and mentoring practices among medical mentors: A mixed-methods study. *Education in Medicine Journal, 7*(2). doi:10.5959/eimj.v7i2.343
- Colucci-Rios, J. A., & Briano, J. (2001). Sloan Foundation scholarship program: Mentoring undergraduates toward doctoral degrees. *Journal of Engineering Education, 90*(3), 295–298.
- Cope, R. G., & Hannah, W. (1975). *Revolving college doors: The causes and consequences of dropping out, stopping out, and transferring*. New York: John Wiley & Sons.
- Council for Educational Opportunity. (2012). TRIO.

- Daloz, L. P. (2004). Mentorship. In M. W. Galbraith (Eds.), *Adult learning methods: A guide for effective instruction* (3rd ed., pp. 451–471). Malabar, FL: Krieger Publishing Company.
- D'Arcangelo, M. T. (2013). *Understanding student development tasks related to sophomores and their academic success* (Doctoral dissertation, The University of Buffalo, State University of New York, 2013). Ann Arbor, MI: ProQuest.
- D'Souza, M. J., Shuman, K. E., Wentziem, D. E., & Roeske, K. P. (2018). Working with the Wesley College Cannon Scholar Program: Improving retention, persistence, and success. *Journal of STEM Education: Innovations & Research*, 19(1), 31–40.
- Dawson, A. E., Bernstein, B. L., & Bekki, J. M. (2015). Providing the psychosocial benefits of mentoring to women in STEM: CareerWISE as an online solution. *New Directions for Higher Education*, 2015(171), 53–62. doi:10.1002/he.20142
- Durkheim, E. (1951). *Suicide: A study in sociology* (J. A. Spaulding & G. Simpson, Trans.; G. Simpson, Ed.). Glencoe, IL: The Free Press.
- Farmer, E., Hilton, A. A., & Reneau, F. H. (2016). Variables that contribute to retention and graduation of Black American females at an historically black university. *Negro Educational Review*, 67(1–4), 133–148.
- Flanagan, W. J. (1991). *Sophomore retention: The missing strategy in small college retention efforts* (Doctoral dissertation, The University of Wisconsin). Ann Arbor, MI: UMI.
- Freedman, M. B. (1956). The passage through college. *Journal of Social Issues*, 12, 13–27.
- Furr, S. R., & Gannaway, L. (1982). Easing the sophomore slump: A student development approach. *Journal of College Student Development*, 23(4), 340–341.
- Graunke, S. S., & Woosley, S. A. (2005). An exploration of the factors that affect the academic success of college sophomores. *College Student Journal*, 39(2), 367–376.

- Gray, J., & Swinton, O. H. (2017). Non-cognitive ability, college learning, and student retention. *The Journal of Negro Education, 86*(1), 65–76.
- Hadfield, J. (2003). Recruiting and retaining adult students. *New Directions for Student Services, 2003*(102), 17.
- Hall, D. L. (2017). *Overcoming barriers to college graduation: The sophomore student experience with academic integration, retention and persistence* (Doctoral dissertation, Hampton University, 2017). Ann Arbor, MI: ProQuest.
- Haring, M. J., & Freeman, K. (1999). Mentoring underrepresented students in higher education. *Peabody Journal of Education, 74*, 5–162.
- Harrell, J. C., & Reglin, G. (2018). Evaluation of a community college's nursing faculty advising program relative to students' satisfaction and retention. *College Student Journal, 52*(1), 33–48.
- Harris, R. E. (2012). *The role of e-mentoring in helping college sophomores persist and stay enrolled* (Doctoral dissertation, Northcentral University).
- Hartshorne, E. Y. (1943). Undergraduate society and the college culture. *American Sociological Review, 8*, 321–332.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Hurford, D. P., Ivy, W. A., Winters, B., & Eckstein, H. (2017). Examination of the variables that predict freshman retention. *Midwest Quarterly, 58*(3), 302–317.
- Hu, S., & Ma, Y. (2010). Mentoring and student persistence in college: A study of the Washington State Achievers Program. *Innovative Higher Education, 35*(5), 329–341.

- Jimenez, J. R. (2017). *The influence of internet usage, social support, life satisfaction and depression in the second year on student's intention to continue enrollment* (Doctoral dissertation, St. John's University, 2017). Ann Arbor, MI: ProQuest.
- Kim-Lee, J. M. (2017). *Students' perceptions of the second year and the role of advising* (Doctoral dissertation, Rutgers, The State University of New Jersey, 2017). Ann Arbor, MI: ProQuest.
- Klinge, C. M. (2015). A conceptual framework for mentoring in a learning organization. *Adult Learning, 26*(4), 160–166. doi:10.1177/1045159515594154
- Lambdin, M. W. (2014). *The relationship of sophomore student debt on retention in a private university* (Doctoral dissertation, Bowling Green State University, 2014). Ann Arbor, MI: ProQuest.
- Lee, J. C. (2014). *The effect of mentoring on the academic success of college sophomores* (Doctoral dissertation, Old Dominion University).
- Lemons, L. J., & Richmond, D. R. (1987). A developmental perspective of sophomore slump. *NASPA Journal, 24*(3), 15–19.
- Ligouri, G., & Lonbaken, B. (2015). Alcohol consumption and academic retention in first-year college students. *College Student Journal, 49*(1), 69–77.
- Lozinak, K. (2016). Mentor matching does matter. *Delta Kappa Gamma Bulletin, 83*(1), 12–24.
- McElroy, E. J., & Arnesto, M. (1998). TRIO and Upward Bound: History, programs, and issues - past, present, and future. *Journal of Negro Education, 67*(4), 373–380.
- McNeely, J. H. (1937). *College student mortality*. U. S. Office of Education, Bulletin 1937, no. 11. Washington, DC: US Government Printing Office.

- Mijares, L., Baxley, S. M., & Bond, M. L. (2013). Mentoring: A concept analysis. *Journal of Theory Construction & Testing, 17*(1), 23–28.
- Miller, N. (2017). A model for improving student retention in adult accelerated education programs. *Education, 138*(1), 104–114.
- Morgan, J., & Davis, D. (1981). Sophomore students: They are special, too. *Journal of College Student Personnel, 22*(2), 170–171.
- Pagano, R. R. (2007). *Understanding statistics in the behavioral sciences* (8th ed.). Belmont, CA: Thomson.
- Pantages, T. J., & Creedon, C. F. (1978). Studies of college attrition: 1950–1975. *Review of Education Research, 48*, 49–101.
- Park, H. (2013). An introduction to logistic regression: From basic concepts to interpretation with particular attention to nursing domain. *Journal of Korean Academy of Nursing, 43*(2), 154–164.
- Pascarella, E. T. (1980). Student-faculty informal contact and college outcomes. *Review of Educational Research, 50*(4), 545–595.
- Pearl, J. (2009). *Causality: Models, reasoning, and inference* (2nd ed.). New York, NY: Cambridge University Press.
- Peden, C. C. (2016). *Using computer-mediated communication as a tool for mentoring to Latina/sophomore college students* (Master's thesis). The University of Texas, Rio Grande Valley.
- Peng, C. J., Lee, K. L., & Ingersoll, G. M. (2002). An introduction to logistic regression analysis and reporting. *The Journal of Educational Research, 96*(1), 3–14.

- Privitera, G. J. (2015). *Statistics for the behavioral sciences* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Rashid, P., Narra, M., & Woo, H. (2015). Mentoring in surgical training. *ANZ Journal of Surgery*, 85(4), 225–229. doi:10.1111/ans.13004
- Salmun, H., & Buonainto, F. (2016). The Catalyst Scholarship Program at Hunter college: A partnership among earth science, physics, computer science and mathematics. *Journal of STEM Education: Innovations & Research*, 17(2), 42–50.
- Sanchez-Leguelinel, C. (2008). Supporting ‘slumping’ sophomores: Programmatic peer initiatives designed to enhance retention in the crucial second year of college. *College Student Journal*, 42(2), 637–646.
- Sanford, N. (1956b). Personality development during the college years. *Personnel and Guidance Journal*, 35, 74–80.
- Shapiro, D., Dundar, A., Huie, F., Wakhungu, P. K., Yuan, X., Nathan, A., & Bhimdiwali, A. (2017). *Completing college: A national view of student completion rates – Fall 2011 cohort* (Rep. No. 14). Herndon, VA: National Student Clearinghouse Research Center.
- Schreiner, L. A., & Pattengale, J. (2000). *Visible solutions for invisible students: Helping sophomores succeed*. Columbia, SC: National Resource Center for the First-Year Experience & Students in Transition.
- Schudde, L. (2016). The interplay of family income, campus residency, and student retention (What practitioners should know about cultural mismatch). *The Journal of College and University Student Housing*, 43(1), 10–27.
- Spady, W. G. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange*, 1, 64–85.

- Stuart, E. A., & Rubin, D. B. (2008). Best practices in quasi-experimental designs. In J. Osborne (Ed.), *Best practices in quantitative methods* (pp. 156–176). Thousand Oaks, CA: Sage Publications.
- Tabolowsky, B. F. (2008). Sophomores in transition: The forgotten year. *New Directions for Higher Education*, (144).
- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45, 89–125.
- Tinto, V. (1982). Limits of theory and practice in student attrition. *Journal of Higher Education*, 53, 687–700.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL and London, England: University of Chicago Press.
- Tinto, V. (1994). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago: University of Chicago Press.
- Tinto, V. (2006). Research and practice of student retention: What next? *Journal of College Student Retention*, 8, 1–19.
- Tinto, V. (2012). *Leaving college: rethinking the causes and cures of student attrition*. Chicago, IL: University of Chicago Press.
- Tower, M., Blacklock, E., Watson, B., Heffernan, C., & Tronoff, G. (2015). Using social media as a strategy to address ‘sophomore slump’ in second year nursing students: A qualitative study. *Nurse Education Today*, 35, 1130–1134.
- Walsh, M. E. (2013). *The retention puzzle reconsidered: Second year student attitudes and experiences with advising* (Order No. 3594993). Available from ProQuest Dissertations

& Theses Full Text. (1443872761). Retrieved from <http://spot.lib.auburn.edu/login?url=https://search.proquest.com/docview/1443872761?accountid=8421>

Wilder, J. S. (1993). The sophomore slump: A complex developmental period that contributes to attrition. *College Student Affairs Journal*, 12(2), 18–27.

Xu, Y. (2017). Localizing college retention efforts: The distance between theoretical orientation and institution-specific needs. *Innovative Higher Education*, 42(1), 49–63.

Yaghjian, L. B. (2013). Hidden treasures in theological education: The writing tutor, the spiritual director, and practices of academic and spiritual mentoring. *Teaching Theology & Religion*, 16(3), 221–245. doi:10.1111/teth.12044

APPENDIX A
IRB Approval Documents

Dear Mr. Palmer,

Your protocol entitled " The Effect of Formal Mentoring Programs on Persistence of College Sophomores" has received approval as "Exempt" under federal regulation 45 CFR 46.101(b)(4). Attached is a scan of your approved protocol.

Official notice:

This e-mail serves as official notice that your protocol has been approved. A formal approval letter will not be sent unless you notify us that you need one. By accepting this approval, you also accept your responsibilities associated with this approval. Details of your responsibilities are attached.

Consent documents:

Since you do not have to wait to for the return of any consent documents, please conduct your study at your convenience.

When you have completed all research activities, have no plans to collect additional data and have destroyed all identifiable information as approved by the IRB, please notify this office via e-mail. A final report is no longer required for Exempt protocols.

If you have any questions, please let us know.

Best wishes for success with your research!

IRB Admin
Office of Research Compliance
115 Ramsay Hall
Auburn University, AL 36849
334-844-5966

**AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS
REQUEST FOR EXEMPT CATEGORY RESEARCH**

For information or help completing this form, contact: THE OFFICE OF RESEARCH COMPLIANCE, 115 Ramsay Hall
Phone: 334-844-5966 e-mail: IRBAdmin@auburn.edu Web Address: <http://www.auburn.edu/research/vpr/ohs/index.htm>

Revised 2/1/2014 Submit completed form to IRBsubmit@auburn.edu or 115 Ramsay Hall, Auburn University 36849.

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

Project activities may not begin until you have received approval from the Auburn University IRB.

1. PROJECT PERSONNEL & TRAINING

PRINCIPAL INVESTIGATOR (PI):

Name Kerry Palmer Title PhD Candidate Dept./School _____ Education _____
 Address 205 S. Charleson, Pike Road, AL 36064 AU Email kjp0029@auburn.edu
 Phone 334-202-2746 Dept. Head Dr. Sherida Downer

FACULTY ADVISOR (if applicable):

Name Dr. James Witte Title Professor Dept./School _____ Adult Education _____
 Address 4036 Haley Center, Auburn University, AL
 Phone 334-844-3054 AU Email witteje@auburn.edu

KEY PERSONNEL: List Key Personnel (other than PI and FA). Additional personnel may be listed in an attachment.

Name	Title	Institution	Responsibilities
<u>Kerry Palmer</u>	<u>PhD Candidate</u>	<u>Auburn University</u>	<u>Researcher</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

KEY PERSONNEL TRAINING: Have all Key Personnel completed CITI Human Research Training (including elective modules related to this research) within the last 3 years? YES NO

TRAINING CERTIFICATES: Please attach CITI completion certificates for all Key Personnel.

2. PROJECT INFORMATION

Title: The Effect of Formal Mentoring Programs on Persistence of College Sophomores

Source of Funding: Investigator Internal External

List External Agency & Grant Number: _____

List any contractors, sub-contractors, or other entities associate with this project.

N/A

List any other IRBs associated with this project (including those involved with reviewing, deferring, or determinations).
Troy University (IRB approval letter attached)

FOR ORC OFFICE USE ONLY			
DATE RECEIVED IN ORC:	_____	by _____	APPROVAL _____
DATE OF IRB REVIEW:	_____	by _____	APPROVAL C _____
DATE OF ORC REVIEW:	_____	by _____	INTERVAL FC _____
DATE OF APPROVAL:	_____	by _____	
COMMENTS:			

The Auburn University Institutional Review Board has approved this Document for use from
07/13/2018 to ---
 Protocol # 18-247 EX 1807

3. **PROJECT SUMMARY**

a. Does the research involve any special populations?

- YES NO Minors (under age 19)
 YES NO Pregnant women, fetuses, or any products of conception
 YES NO Prisoners or Wards
 YES NO Individuals with compromised autonomy and/or decisional capacity

b. Does the research pose more than minimal risk to participants? YES NO

Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. 42 CFR 46.102(i)

c. Does the study involve any of the following?

- YES NO Procedures subject to FDA Regulation Ex. Drugs, biological products, medical devices, etc.
 YES NO Use of school records of identifiable students or information from instructors about specific students
 YES NO Protected health or medical information when there is a direct or indirect link that could identify the participant
 YES NO Collection of sensitive aspects of the participant's own behavior, such as illegal conduct, drug use, sexual behavior or use of alcohol
 YES NO Deception of participants

*If you checked "YES" to any response in Question #3 STOP. It is likely that your study does not meet the "EXEMPT" requirements. Please complete a **PROTOCOL FORM** for Expedited or Full Board Review.*

You may contact IRB Administration for more information. (Phone: 334-844-5966 or Email: IRBAdmin@auburn.edu)

4. **PROJECT DESCRIPTION**

a. **Subject Population** (Describe, include age, special population characteristics, etc.)

The subject population for this study would be students at the conclusion of the sophomore year of college study, eligible for advancement to the junior year of study. Data have been requested from Troy University with the strict directive that it must come from Troy University students aged 19 and over. Further, permission letters from Troy University indicated that data will be de-identified, and will only be released from students aged 19 and over.

This study is being conducted at the request of Troy University Chancellor, Jack Hawkins, Jr., PhD (see attached letter).

b. Describe, step by step, all procedures and methods that will be used to consent participants.

- N/A (Existing data will be used)

- c. **Brief summary of project.** (Include the research question(s) and a brief description of the methodology, including recruitment and how data will be collected and protected.)

The research questions for this study are as follows:

1. Does participation in a formal mentoring program improve academic performance of sophomore students as measured by cumulative GPA?
2. Does participation in a formal mentoring program affect persistence of students from sophomore to junior standing?

The purpose of this quantitative study is to examine the relationship between a formal mentoring program and retention among college students at the sophomore level. All data will be existing and will be provided by the university in question. A quasi-experimental, non-randomized research design with matched-control groups will be used to evaluate the impact on student persistence to the junior year. Data analysis will be conducted using logistic regression and ANCOVA.

Existing demographics data, along with mentor group participation, course enrollments, Pell-eligibility, and other variables will be de-identified by the university and provided to the researcher.

- d. **Waivers.** Check any waivers that apply and describe how the project meets the criteria for the waiver.

- Waiver of Consent (Including existing de-identified data)
 Waiver of Documentation of Consent (Use of Information Letter)
 Waiver of Parental Permission (for college students)

All data for this study are existing, de-identified data collected by the university.

- e. **Attachments.** Please attach Informed Consents, Information Letters, data collection instrument(s), advertisements/recruiting materials, or permission letters/site authorizations as appropriate.

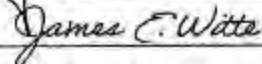
Signature of Investigator



Date

6-6-18

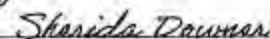
Signature of Faculty Advisor



Date

June 7, 2018

Signature of Department Head



Date

6/7/2018

3 of 3

210 ASMS
Administration
Building
Troy, Alabama
36062

(334-670-3201
334-670-5773 FAX



June 26, 2018

Auburn University IRB Committee:

This letter is to certify that Dr. Jack Hawkins, Jr., Chancellor of Troy University, has requested that Mr. Kerry Palmer, a PhD Candidate at Auburn University, study the impact of Troy University's mentoring programs on sophomore academic success and persistence. This letter further certifies that Troy University is prepared to cooperate fully with Mr. Palmer as he conducts his research.

Sincerely,

A handwritten signature in black ink, appearing to read "Hank Dasinger".

Hank Dasinger, Ph.D.
Senior Vice Chancellor
Student Services and Administration



216 Adams
Administration
Building
Troy, Alabama
36082

334-670-3201
334-670-3774 FAX



June 26, 2018

Auburn University IRB Committee:

This letter is to certify that Troy University intends to provide Kerry Palmer with the following data for his doctoral project at Auburn University. Troy University further certifies that the IRB protocol approved by Troy for this project includes permission to access de-identified data on students aged 19 and over.

De-identified data set to be accessed:

ACT composite score
High school GPA
AP credits
IB credits
Remedial math placement
Remedial English placement
Gender
Ethnicity
First generation status
Living arrangements (on or off campus)
Domestic or international status
Academic scholarship status
Selection of major during freshman year
Selection of major during sophomore year
Freshman GPA (end of year)
Sophomore GPA (end of year)
Credit hours transferred from another institution
Retained after freshman year
Retained after sophomore year
Qualified admission code (full admission or provisional)
Age
Full or part time status
Pell-eligibility
Student dependency status as determined by FASFA
Marital status
Legacy status

Sincerely,

A handwritten signature in black ink, appearing to read "Hank Dasinger".

Hank Dasinger, Ph.D.
Senior Vice Chancellor
Student Services and Administration



Institutional Review
Board

Adams Administration
LL Rm 11 A
Troy, AL 36082

334-808-6294 Office
334-670-3912 Fax

<http://www.troy.edu/institutionalreview>



June 25, 2018

Kerry Palmer
Ph. D. Candidate
Auburn University

Dear Researchers,

The Institutional Review Board has reviewed your project The Effect of Formal Mentoring Programs on Persistence of College Sophomores, and has determined it falls into the exempt category, meaning your research does not require IRB approval. However, if there are changes with your protocol placing participants at risk, you are responsible for immediately informing the IRB of these changes.

Please let me know if you have questions or if I can be of additional assistance.

Sincerely,

A handwritten signature in black ink that reads "Thomas W. Reiner".

Thomas W. Reiner, Ph.D., Chair



**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS***

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- Name: Kerry Palmer (ID: 6470896)
- Institution Affiliation: Auburn University (ID: 964)
- Institution Email: kjp0029
- Institution Unit: Adult Education
- Phone: 334-213-2154

- Curriculum Group: Essentials of Research Administration
- Course Learner Group: Same as Curriculum Group
- Stage: Stage 1 - Basic Course

- Record ID: 23972576
- Completion Date: 27-Jul-2017
- Expiration Date: N/A
- Minimum Passing: 80
- Reported Score*: 84

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Elements of Research Administration (ID: 16967)	25-Jul-2017	4/5 (80%)
Elements of Research Development (ID: 16968)	25-Jul-2017	4/5 (80%)
Elements of Pre-Award (ID: 16969)	26-Jul-2017	4/5 (80%)
Elements of Award Negotiation and Acceptance (ID: 16970)	26-Jul-2017	4/5 (80%)
Elements of Post-Award (ID: 16971)	27-Jul-2017	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?kc58419a6-fid3-48e4-a0c9-887944d4bb6e2-23972576

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: <http://www.citiprogram.org>

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 2 OF 2
COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Kerry Palmer (ID: 6470696)
- **Institution Affiliation:** Auburn University (ID: 964)
- **Institution Email:** kjp0029
- **Institution Unit:** Adult Education
- **Phone:** 334-213-2154

- **Curriculum Group:** Essentials of Research Administration
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 1 - Basic Course

- **Record ID:** 23972576
- **Report Date:** 27-Jul-2017
- **Current Score**:** 84

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Elements of Research Administration (ID: 16967)	25-Jul-2017	4/5 (80%)
Elements of Research Development (ID: 16968)	25-Jul-2017	4/5 (80%)
Elements of Pre-Award (ID: 16969)	26-Jul-2017	4/5 (80%)
Elements of Award Negotiation and Acceptance (ID: 16970)	26-Jul-2017	4/5 (80%)
Elements of Post-Award (ID: 16971)	27-Jul-2017	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing Institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?kc58419a6-ffd3-48e4-a0c9-887944d6bb6e2-23972576

Collaborative Institutional Training Initiative (CITI Program)
 Email: support@citiprogram.org
 Phone: 888-529-5929
 Web: <https://www.citiprogram.org>

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS***

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Kerry Palmer (ID: 6470696)
- **Institution Affiliation:** Auburn University (ID: 984)
- **Institution Email:** kjo0029
- **Institution Unit:** Adult Education
- **Phone:** 334-213-2154

- **Curriculum Group:** IRB Additional Modules
- **Course Learner Group:** Students in Research
- **Stage:** Stage 1 - Basic Course

- **Record ID:** 23972573
- **Completion Date:** 27-Jul-2017
- **Expiration Date:** 26-Jul-2020
- **Minimum Passing:** 80
- **Reported Score*:** 80

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Students in Research (ID: 1321)	27-Jul-2017	4/5 (80%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the Citi Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/7k52826f94-e182-45e6-b561-b27c68d1601a-23972573

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: <https://www.citiprogram.org>

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
 COMPLETION REPORT - PART 2 OF 2
 COURSEWORK TRANSCRIPT****

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Kerry Palmer (ID: 6470696)
- **Institution Affiliation:** Auburn University (ID: 964)
- **Institution Email:** kjp0029
- **Institution Unit:** Adult Education
- **Phone:** 334-213-2154

- **Curriculum Group:** IRB Additional Modules
- **Course Learner Group:** Students in Research
- **Stage:** Stage 1 - Basic Course

- **Record ID:** 23972573
- **Report Date:** 27-Jul-2017
- **Current Score**:** 80

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Students in Research (ID: 1321)	27-Jul-2017	4/5 (80%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing Institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/7k52826f94-e182-45e6-b561-b27c68d1691a-23972573

Collaborative Institutional Training Initiative (CITI Program)
 Email: support@citiprogram.org
 Phone: 888-529-5929
 Web: <https://www.citiprogram.org>

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Kerry Palmer (ID: 6470696)
- **Institution Affiliation:** Auburn University (ID: 984)
- **Institution Email:** kjp0029
- **Institution Unit:** Adult Education
- **Phone:** 334-213-2154

- **Curriculum Group:** Responsible Conduct of Research for Social and Behavioral
- **Course Learner Group:** Social, Behavioral and Education Sciences RCR
- **Stage:** Stage 1 - RCR
- **Description:** This course is for investigators, staff and students with an interest or focus in Social and Behavioral research. This course contains text, embedded case studies AND quizzes.

- **Record ID:** 23972574
- **Completion Date:** 27-Jul-2017
- **Expiration Date:** 26-Jul-2022
- **Minimum Passing:** 80
- **Reported Score*:** 99

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Authorship (RCR-Basic) (ID: 16597)	27-Jul-2017	5/5 (100%)
Collaborative Research (RCR-Basic) (ID: 16598)	27-Jul-2017	5/5 (100%)
Conflicts of Interest (RCR-Basic) (ID: 16599)	27-Jul-2017	4/5 (80%)
Data Management (RCR-Basic) (ID: 16600)	27-Jul-2017	5/5 (100%)
Mentoring (RCR-Basic) (ID: 16602)	27-Jul-2017	5/5 (100%)
Peer Review (RCR-Basic) (ID: 16603)	27-Jul-2017	5/5 (100%)
Research Misconduct (RCR-Basic) (ID: 16604)	27-Jul-2017	5/5 (100%)
Plagiarism (RCR-Basic) (ID: 16156)	27-Jul-2017	5/5 (100%)
Research Involving Human Subjects (RCR-Basic) (ID: 13568)	27-Jul-2017	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing Institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?kd876f764-8d89-4796-9556-19695269717-23972574.

Collaborative Institutional Training Initiative (CITI Program)
 Email: support@citiprogram.org
 Phone: 888-529-5929
 Web: <https://www.citiprogram.org>

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 2 OF 2
COURSEWORK TRANSCRIPT****

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Kerry Palmer (ID: 6470696)
- **Institution Affiliation:** Auburn University (ID: 964)
- **Institution Email:** kjo0029
- **Institution Unit:** Adult Education
- **Phone:** 334-213-2154

- **Curriculum Group:** Responsible Conduct of Research for Social and Behavioral
- **Course Learner Group:** Social, Behavioral and Education Sciences RCR
- **Stage:** Stage 1 - RCR
- **Description:** This course is for investigators, staff and students with an interest or focus in Social and Behavioral research. This course contains text, embedded case studies AND quizzes.

- **Record ID:** 23972574
- **Report Date:** 27-Jul-2017
- **Current Score**:** 98

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Research Involving Human Subjects (RCR-Basic) (ID: 13566)	27-Jul-2017	5/5 (100%)
Plagiarism (RCR-Basic) (ID: 15156)	27-Jul-2017	5/5 (100%)
Authorship (RCR-Basic) (ID: 16597)	27-Jul-2017	5/5 (100%)
Collaborative Research (RCR-Basic) (ID: 16588)	27-Jul-2017	5/5 (100%)
Conflicts of Interest (RCR-Basic) (ID: 16599)	27-Jul-2017	4/5 (80%)
Data Management (RCR-Basic) (ID: 16600)	27-Jul-2017	5/5 (100%)
Mentoring (RCR-Basic) (ID: 16602)	27-Jul-2017	5/5 (100%)
Peer Review (RCR-Basic) (ID: 16603)	27-Jul-2017	5/5 (100%)
Research Misconduct (RCR-Basic) (ID: 16604)	27-Jul-2017	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/Verify/7kd876f764-8d89-4799-9596-1966526f97f7-23972574

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: <https://www.citiprogram.org>

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS***

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Kerry Palmer (ID: 6470696)
- **Institution Affiliation:** Auburn University (ID: 984)
- **Institution Email:** kjp0029
- **Institution Unit:** Adult Education
- **Phone:** 334-213-2154

- **Curriculum Group:** IRB # 2 Social and Behavioral Emphasis - Non-AU Personnel
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 1 - Basic Course
- **Description:** Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily in Social/Behavioral Research with human subjects.

- **Record ID:** 23972575
- **Completion Date:** 27-Jul-2017
- **Expiration Date:** 26-Jul-2020
- **Minimum Passing:** 80
- **Reported Score*:** 85

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Belmont Report and CITI Course Introduction (ID: 1127)	27-Jul-2017	3/3 (100%)
Informed Consent - SBE (ID: 504)	27-Jul-2017	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	27-Jul-2017	3/5 (60%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing Institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/76d0220e02-f2d9-4ac7-bf3e-21070bb088d4-23972575

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: <https://www.citiprogram.org>

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 2 OF 2
COURSEWORK TRANSCRIPT****

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- Name: Kerry Palmer (ID: 6470596)
- Institution Affiliation: Auburn University (ID: 964)
- Institution Email: kjp0029
- Institution Unit: Adult Education
- Phone: 334-213-2154

- Curriculum Group: IRB # 2 Social and Behavioral Emphasis - Non-AU Personnel
- Course Learner Group: Same as Curriculum Group
- Stage: Stage 1 - Basic Course
- Description: Choose this group to satisfy CITI training requirements for investigators and staff involved primarily in Social/Behavioral Research with human subjects.

- Record ID: 23972575
- Report Date: 27-Jul-2017
- Current Score**: 85

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Belmont Report and CITI Course Introduction (ID: 1127)	27-Jul-2017	3/3 (100%)
Informed Consent - SBE (ID: 504)	27-Jul-2017	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	27-Jul-2017	3/5 (60%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing Institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify?k80220e02-f2d9-4ac7-bf3e-21070bb088d4-23972575

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: <https://www.citiprogram.org>



Completion Date 20-Nov-2017
Expiration Date 19-Nov-2020
Record ID 21103971

This is to certify that:

James Witte

Has completed the following CITI Program course:

IRB Additional Modules (Curriculum Group)
Social, Behavioral and Education Sciences (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Auburn University



Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w46942bf8-2dde-4352-8f9f-999eda36c5ae-21103971

INITIAL PERMISSION TO COLLECT DATA AT TROY UNIVERSITY FOR KERRY PALMER

From: Kerry Palmer [mailto:kjp0029@tigermail.auburn.edu]
Sent: Thursday, June 07, 2018 1:54 PM
To: Maria Witte <wittemm@auburn.edu>
Subject: Re: IRB Exempt Form

Dr. Witte:

Here is the copy of an email Dr. Mary Anne Templeton, Dean of the Graduate School at Troy, sent to me yesterday. I have also received tremendous support from Dr. Jack Hawkins, Chancellor, as he would like for me to complete this study for the university (it was his initial idea). If needed, I could likely get an email or letter directly from him.

From Dr. Templeton (yesterday afternoon):

Kerry,

The first step will be for you to complete a Troy University IRB application as an outside reviewer. Since I'm sure you've already completed the AU IRB process, go ahead and include that approval and any other documents from that application to speed up the process. You can send that all to me. It will have to be looked at by the IRB chair to determine type of review. If approved, the access to the data will be up to the offices that control that data because IRB approval doesn't mean automatic access to the data. It will be the Records office/Registrar that will then look and make sure there aren't any FERPA violations before the data is released. I hope that all makes sense. So the first step is the IRB application. Please call me at 334-670-3189 if you have any questions. Happy to help during the process.

MAT

Kerry Palmer
PhD Candidate
Auburn University

From: Maria Witte <wittemm@auburn.edu>
Sent: Thursday, June 7, 2018 1:29:59 PM
To: Kerry Palmer
Subject: RE: IRB Exempt Form

Ok – great! Do you have the permission letter or email from Troy? Anything that would document that this would be favorably considered. When you do submit the IRB via email, please indicate that Troy University will issue an approval once the Auburn Univ IRB is approved.

Thanks,
Maria

AUBURN UNIVERSITY IRB RESPONSE

11 JUNE 2018

Dear Kerry,

Your protocol entitled "The Effect of Formal Mentoring Programs on Persistence of College Sophomores" was reviewed by the IRB. Before your protocol can be approved, additional information and revisions are requested.

The IRB's comments are as follows:

"Additional information and revisions are required before the project can receive the Exemption determination.

Revise the application form as follows:

- 1. Revise item 4.a to indicate the age of participants (including how you will determine all are greater than or equal to 19 years) and not enroll any minors and indicate the potential participants are students at Troy State University.*
- 2. In item 4.a, describe your relationship to Troy State University (employee?) and your access to data required to complete the project.*
- 3. Submit one copy of the signed approval from the appropriate official at Troy State University for your access to the study data. (This is separate from IRB approval for the study).*
- 4. Submit one copy of any data collection form(s) that will be used.*

Review will resume when the following items are submitted.

- 1) A memorandum addressing the items numbered above.*
- 2) The revised Exemption application form.*
- 3) Approval from the appropriate TSU administrator.*
- 4) A copy of the data collection form(s).*

WHEN RECEIVED, SUBMIT A COPY OF THE TSU IRB APPROVAL (via modification).

Thank you,

Sally Blake Headley, CIP

Manager, Human Research Protection Program

Office of Research Compliance"

Send revisions to IRBsubmit@auburn.edu, with a note in the subject line "Revisions for protocol #18-247, Palmer.

Instructions: Combine all of the following into one pdf (before applying electronic signatures):

1. A memo that outlines the changes you make - including the IRB's comments. This should be the first page of the pdf
 2. Note your protocol title and number.
 3. One complete copy of your revised request, highlighting any and all changes and including all documents even if previously submitted.
 4. Please include in your submission a copy of your revised protocol and consent forms, and/or information letter **without** highlights.
- If you make any changes to the documents other than those already approved by the IRB, please bring them to the reviewer's attention in the memo.

Please note: You are not authorized to initiate any part of your protocol involving human subjects until you receive final IRB approval.

If you have any questions or concerns, please let us know.

** IRB policy is that if revisions have not been received in 3 months, the protocol will be administratively withdrawn.

Best wishes,

IRB Admin
Office of Research Compliance
115 Ramsay Hall
Auburn University, AL 36849
334-844-5966

TROY Data

3 messages

Kerry Palmer <kpalmer@trinitywildcats.com>

Wed, Jun 6, 2018 at 2:11 PM

To: Mary Ann Templeton <mtempleton@troy.edu>

Bcc: Kerry Palmer <kpalmer@trinitywildcats.com>, Evernote Upload <kpalmer71.91d5c@m.evernote.com>

Dr. Templeton:

As Dr. Hank Dasinger may have mentioned to you yesterday, I am in the writing stage of my dissertation for a PhD at Auburn. As I began my doctoral journey, Dr. Hawkins asked me to study sophomore retention issues at TROY. Thus, I have made that a focus of my study, and have visited with Dr. Hal Fulmer a few times to discuss potential approaches. My committee and I hope to be able to use data provided by the university, as outlined below. My question for you is how much of this data are available, and what process must I use to access it? Also, what would the potential timeline be for accessing it?

Below is the text of an email message I sent to Dr. Dasinger yesterday. I think it explains in a nutshell what I am doing and what kind of data I would need. If you like, I can forward you a more detailed research proposal.

Thanks so much!

Kerry Palmer

Hank:

Looking forward to speaking with you this morning

I have been cleared by my committee to look at the impact of TROY's mentoring programs (TRIO, 101 ELITE Men, Leadership Scholar Program) on academic achievement and persistence to the junior year of study. We will be conducting a quantitative, quasi-experimental study using logistic regression and ANCOVA to analyze the results. For this to work I will need a good many covariates.

Below is a list of potential variables to be analyzed. I just need to know how to go about getting my hands on this data, as well as how quickly I can access it. I have submitted Ch. 1, will be submitting Ch 2 this week, and will likely get Ch 3 in next week (I have been working on all three for the last couple of months). Ideally, I would like to use the bulk of the summer to analyze the results and compose Ch 4 & 5. Those chapters need to be submitted by 20 Aug for me to defend in the fall and graduate on 15 Dec.

Here are the variables I am considering. These would need to be from a sample of students eligible to persist to the junior year, and can be from any and all TROY campuses. It can be data from a couple of years ago, as long as students had the opportunity to participate in one of the mentor programs listed above. I would have a sample of students enrolled in one of the three mentoring programs, as well as a matched control group of students who did not participate in these programs.

Of course, I am happy to follow whatever protocol the university requires. However, I just wanted you and the Chancellor to be aware of the tight timeframe per our previous conversations. Auburn is expediting my IRB approval because this type of non-identified, institutional data is exempt. My committee is very supportive, and is on board with trying to get me out in Dec.

Potential Variables (will be used as covariates to add power to the study):

- ACT composite score
- HS GPA
- AP credits
- IB credits
- Remedial math placement
- Remedial English placement
- Gender
- Ethnicity
- First generation status

Living arrangements (on-campus or off-campus)
Domestic or international status
Academic scholarship or not
Selection of a major freshman year
Selection of a major by sophomore year
Freshman GPA (end of year)
Sophomore GPA (end of year)
Credit hours transferred from another institution
Retained after freshman year
Retained after sophomore year
Qualified admission code (full admission or provisional)
Age
Full or part-time status
PELL-eligible
Student dependency status as determined by FASFA
Marital status
Legacy

There may end up being others depending upon what info the university collects.

Thanks!

--

Kerry Palmer
Head of School
Trinity Presbyterian School
(334) 213-2154



Confidentiality Disclosure: This message is intended for the use of the individual or entity to which it is addressed and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this email in error, please reply immediately and delete the message. Thank you.

Mary Anne Templeton <mtempleton@troy.edu>
To: Kerry Palmer <kpalmer@trinitywildcats.com>

Wed, Jun 6, 2018 at 2:22 PM

Kerry,

The first step will be for you to complete a Troy University IRB application as an outside reviewer. Since I'm sure you've already completed the AU IRB process, go ahead and include that approval and any other documents from that application to speed up the process. You can send that all to me. It will have to be looked at by the IRB chair to

determine type of review. If approved, the access to the data will be up to the offices that control that data because IRB approval doesn't mean automatic access to the data. It will be the Records office/Registrar that will then look and make sure there aren't any FERPA violations before the data is released, I hope that all makes sense. So the first step is the IRB application. Please call me at 334-670-3189 if you have any questions. Happy to help during the process.

MAT

From: Kerry Palmer [mailto:kpalmer@trinitywildcats.com]
Sent: Wednesday, June 6, 2018 2:11 PM
To: Mary Anne Templeton <mtempleton@troy.edu>
Subject: TROY Data

[Quoted text hidden]

Kerry Palmer <kpalmer@trinitywildcats.com>
To: Mary Anne Templeton <mtempleton@troy.edu>

Wed, Jun 6, 2018 at 3:04 PM

Sounds great. I will get everything to you.

Thank you for your help!
[Quoted text hidden]

Kerry J. Palmer
Head of School
Trinity Presbyterian School
1700 E. Trinity Blvd.
Montgomery, AL 36106

MEMO

Date: June 28, 2018
To: Auburn University IRB Committee
From: Kerry Palmer, Auburn University PhD Candidate
Subject: Revisions for Protocol #18-247, Palmer



Please find attached to this memorandum the requested revisions to my IRB application for research at Troy University. Each IRB review comment is addressed below:

1. IRB Comment: "Revise item 4.a to indicate the age of participants (including how you will determine all are greater than or equal to 19 years) and not enroll any minors and indicated the potential participants are students at Troy University."
 - a. Response: The requested revision to item 4.a has been made and highlighted on the IRB form.
2. IRB Comment: "In item 4.a, describe your relationship to Troy University (employee?) and your access to data required to complete the project."
 - a. Response: A description of my relationship to Troy University has been added to item 4.a. Additionally, a letter from the Senior Vice Chancellor for Student Support and Administration describing this relationship has been attached.
3. IRB Comment: "Submit one copy of the signed approval from the appropriate official at Troy University for your access to the study data. (This is separate from IRB approval for the study)."
 - a. Response: The requested approval letter is attached.
4. IRB Comment: Submit one copy of any data collection form(s) that will be used.
 - a. Response: A data collection form is not required. Rather, as secure Excel file will be made available to the researcher. Attached is a letter from the Senior Vice Chancellor indicating that the researcher will have full access to the requested data.

Please let me know if you require anything further

Copy: James E. Witte, PhD