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Supportive Measures: An Analysis of the TRIO Program - Student Support Services
at East Tennessee State University from 2001 – 2004

A dissertation
presented to
the faculty of the Department of Educational Leadership and Policy Analysis
East Tennessee State University

In partial fulfillment
of the requirements for the degree
Doctor of Education in Educational Leadership

by
Christopher N. Strode
December 2013

Dr. Catherine Glascock, Chair
Dr. Paul Kamolnick
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Dr. Jasmine Renner

Keywords: Student Support Services, Retention, Graduation, First-generation, Low-income

ABSTRACT

Supportive Measures: An Analysis of the TRIO Program - Student Support Services
at East Tennessee State University from 2001 – 2004

by

Christopher N. Strode

The purpose of this study was to examine the academic performance of the first-time, full-time, traditional-aged students in the Student Support Services program at East Tennessee State University. This was accomplished by comparing their academic performance with the academic performance of first-time, full-time, traditional-aged non-SSS participants, including students in both the SSS eligible and SSS ineligible study groups. Incoming freshman cohorts from 2001, 2002, 2003, and 2004 were used to create the 3 distinct study groups. Demographic and performance outcome variables were used for comparison among the 3 groups. The cumulative college GPA, fall-to-fall retention, and 6-year graduation status of the 3 study groups were of primary interest in this study. Prediction models for these 3 variables were a secondary consideration. Thirteen research questions guided this study and were analyzed using one-way analysis of variance, two-way contingency tables, multivariate linear regressions, and binary logistic regressions. Results indicated that there were significant differences in demographic and performance outcomes among the 3 study groups. SSS participants were found to have a significantly lower cumulative GPA at graduation than their peers, but exceeded them in fall-to-fall retention status and 6-year graduation status. The prediction models showed that the first-year cumulative college GPA was a powerful predictor of fall-to-fall retention status and 6-year graduation status for first-time, full-time traditional-aged freshman students.

DEDICATION

This work is dedicated to my grandparents and my three beautiful children. To my grandparents, thank you for showing me who I am and who I could be! Through your eyes I've seen myself and the promise of a new day. Your hard work provided me the opportunity to sit in many classrooms and follow my intellectual whims without any concern for what was going on in the "real" world. Each of you valued education and wanted this opportunity available for your children and grandchildren. I am here today as a result of your perseverance, benevolence, and inspiration. You spent a lifetime learning that which can't be taught in school and secured the promise of a future. My hope is that I have made good on that promise.

To my children, may my effort here inspire you, a new generation, to never ignore your inquisitive spirits, to stay open to all of life's mysteries, and to work hard to discover your passions in life. Know that I cherish each of you more than anything in this world and that I look forward to all the learning that we'll share together in the years ahead.

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CHAPTER 1

INTRODUCTION

Background of the Problem

During the mid 1960s President Lyndon Johnson and his administration initiated new government-sponsored and taxpayer-funded programs designed to set the United States on course toward what President Johnson referred to as the “Great Society”. The Economic Opportunity Act of 1964 and the Higher Education Act of 1965 were key pieces of legislation that addressed Johnson’s stated goals of eliminating poverty and racial injustice. Out of those two legislative acts grew targeted programs that were designed to address the needs of certain niche groupings of individuals in American society. Those programs focused on creating equal opportunity for individuals in employment, education, housing, and other targeted areas considered instrumental in bringing about the “Great Society” (Johnson, 1964; Murray, 1984).

The TRIO Programs

Three niche-oriented programs that developed out of the Economic Opportunity Act of 1964 and the Higher Education Act of 1965 were the Upward Bound (UB) program (Economic Opportunity Act of 1964), the Educational Talent Search (ETS) program (Higher Education Act of 1965), and the Student Support Services (SSS) program (1968 amendment to the Higher Education Act of 1965). The Student Support Services program was first known as the Special Services for Disadvantaged Students program and later became known as Student Support Services (U. S. Department of Education, 2009a). All three programs collectively became known as the TRIO Programs.

These three programs were specifically developed to assist first generation college and low-income students in gaining equal opportunities to attain all levels of higher education. The Upward Bound and Educational Talent Search programs were designed to work primarily with

first generation and low-income students in secondary education, with the ultimate goals of improving student academic performance and steering students into higher education (Mitchem, 1997). The SSS program was created to work solely with first generation and low-income college students in postsecondary education with the program goals of improved academic performance, retention in higher education, and degree completion (Mitchem, 1997). Nationally, the “TRIO” programs have endured and in 2009 there were 946 Upward Bound programs serving 65,179 students, 466 Talent Search programs serving 363,300 students, and 946 SSS programs serving 198,940 students, with combined budgets of \$740,202,585.00 (U. S. Department of Education, 2009a). Clearly, the TRIO programs have served a significant number of first generation and low-income students since they were implemented in 1968. Yet, the needs of this niche student population have remained a consistent challenge to institutions of higher learning.

First-Generation and Low-Income College Students

First-generation and low-income students make up more than one third of the student population at many state-level colleges and universities. The needs of this niche student population have been documented extensively throughout higher education research. Many higher education experts agree that first-generation and low-income college students arrive at higher education institutions with additional problems other than those related to underdeveloped academic skills (American Council on Education (ACE), 2003; Thayer, 2000; Tinto, 2004). These include the need to work in addition to fulfilling college responsibilities, lack of appropriate role models, lack of support from family to attend college, family pressure to remain at home, and a sense of alienation from other students on campus (American Council on Education (ACE), 2003; Bowman & York-Anderson, 1991; Braunstein & McGrath, 1997;

Hopkins & Ishiyama, 2001; Kennedy, 2003; London, 1989; Riehl, 1994; Ting, 1998, Tinto, 2004). As Ting (1998) noted in his research on first-generation and low-income college students, “Admissions counselors and other counselors, and university personnel cannot affect the support or lack of support received by students from the home, but they can address the approaches to working with these students on their campuses.” (p. 22).

The nonacademic obstacles faced by first-generation and low-income college students can inhibit their academic performance and their matriculation through college toward degree completion. First-generation and low-income college students made up a significant number of the college student population. This unique student population showed lower performance outcomes, lower graduation rates, and a significant need for support-oriented student services. This was especially true when placed within the context of an overall decline in student performance and graduation rates for all students at America’s colleges and universities.

The Decline in Higher Education Persistence and Graduation Rates

The American College Testing Program (ACT) reported that both college retention and graduation rates have declined over the last decade. Their most recent higher education policy publication showed that nationally the first-to-second-year-retention rate in 1989 was 74.7% and by 2009 it had dropped to 65.9% (ACT, 2009). The publication also noted that the 5-year graduation rate during the same period had dropped from 55.1% to 52.7% (ACT, 2009). Although there is no 10-year comparison of 6-year graduation rates, ACT did report that in the 2008 the 6-year graduation rate was 55.6%, which is only several tenths of one percentage point higher than the 5-year graduation rate in 1989 (55.1%). These data points supported the assumption that the length of time to complete a baccalaureate degree has increased for most American college students. These declines were specifically related to first-generation and low-

income college students as well as to the universities themselves. This trend was particularly problematic for colleges and universities because their funding allocations were tied to specific student outcomes.

Changes in Higher Education Funding Allocations

State level higher education administrators have signaled the rise of significant changes in the way funding is allocated to college and universities. Future higher education funding allocations will more than likely be tied to the retention and graduation rates of colleges and universities (Locker, 2009). This trend grew out of an increased emphasis being placed on institutional accountability by governors, state legislatures, and state-level higher education governance. Their view was that focusing on retention and graduation rates as the key element in funding allocations would directly lead to increased student academic performance and graduation rates. This was also in their view a direct approach at holding colleges and universities more accountable for the academic outcomes of their students.

On Nov. 16th, 2009, Tennessee Governor Phil Bredesen reiterated his support for higher education funding based on such performance measures as retention and graduation rates when he said, “The emphasis more than anything else is on college completion... We've got too many kids who come in and start college and don't finish.” Governor Bredesen continued his speech by outlining a plan that reduced emphasis on raw enrollment numbers for funding allocations and increased focus on the retention and graduation rates of higher education institutions as the basis for their funding allocations (Locker, 2009). So, the quandary for higher education institutions became how to increase the retention and graduation rates of students at a time when both have seen significant declines. The Student Support Services program offered a student services

model that directly addressed the academic performance outcomes of first generation and low-income college students that could be applied to the overall student population.

Student Support Services at East Tennessee State University

Many state-level colleges and universities became focused on the significant needs of high-risk college students. This student population included first generation college and low-income students as well as many other niche oriented student populations. This was part of an institution's broader strategy to improve the overall retention and graduation rates at their institutions (Franklin & Streeter, 1991; London, 1989; Riehl, 1994; Santa Rita & Bacote, 1997; Ting, 1998). The federal government created the Student Support Services program to serve first-generation and low-income students at America's institutions of higher learning. The intent was for this program to serve as a model for colleges and universities regarding the appropriate means by which to engage this challenging demographic of students (Mitchem, 1997).

In 1976 East Tennessee State University (ETSU) received a grant to develop a Student Support Services program on its campus. The university has maintained continuous funding for the program since that time. The program was slated to serve 225 first-generation and low-income college students. The main goal of the program was to support the advancement of individual college students through higher education and toward the completion of their first baccalaureate degree (ETSU, 2010). The ETSU SSS program staff implemented services that included academic advising, personal and career counseling, academic support services, freshman-year and college transition support, and other services related to the specific needs of first-generation and low-income college students (ETSU, 2010). The ETSU SSS program has maintained an excellent record of student support for first-generation and low-income college students. This was shown in the program's continued high student retention and graduation rates.

However, the SSS program at ETSU has not completed any formal comparative analysis of how their student participants perform when compared to the overall student population at ETSU, particularly the SSS eligible nonparticipants and the students who are ineligible to participate in the SSS program.

Statement of the Problem

The purpose of this study was to examine the academic performance of the first-time, full-time, traditional-aged students in the Student Support Services program at East Tennessee State University by comparing their academic performance with the academic performance of first-time, full-time, traditional-aged non-SSS participants, including students in both the SSS eligible and SSS ineligible participant groups.

Research Questions

In order to appropriately compare the first-time, traditional-aged students who comprise each of the three study groups for this study (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), the following demographic characteristics and performance outcome variables from each of the target years 2001, 2002, 2003, and 2004 were generated for this study:

- age
- gender
- educational levels of mothers
- ACT score
- cumulative GPA after the first year
- first-year fall-to-fall retention status
- ethnicity
- Federal Pell-grant eligibility
- educational levels of fathers
- high school GPA
- cumulative college graduation GPA
- 6-year college graduation status

The research questions for the study were based on the variables contained in the aforementioned demographic characteristics and performance outcomes. Therefore, the following research questions guided this study:

1. Are there significant differences in age for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
2. Are there significant differences in ethnicity for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
3. Are there significant differences in gender for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
4. Are there significant differences in Federal Pell Grant eligibility for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
5. Are there significant differences in the educational levels of the mothers for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

6. Are there significant differences in the educational levels of the fathers for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
7. Are there significant differences in the cumulative college graduation GPA for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
8. Are there significant differences in the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
9. Are there significant differences in the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
10. Which of the variables high school GPA or ACT score better predicts the cumulative GPA after the first year for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
11. Which of the variables high school GPA, ACT score, or cumulative GPA after the first year best predicts the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS

- eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
12. Which of the variables high school GPA, ACT score, or cumulative college GPA after the first year best predicts the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?
13. Which of the variables high school GPA, ACT score, or cumulative college GPA after the first year, best predicts the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Significance of the Study

There were two key motivations for addressing this research problem that related directly to the purpose and significance of this study:

1. Public policy motivation – Postsecondary education should be based upon research and evaluation. Policies designed to increase the retention and graduation rates of first-generation and low-income college students in postsecondary education are no exception. Public policies designed to address alleged problems of underrepresentation and/or underperformance of first-generation and low-income college students in higher education may be revised beneficially by considering such research and evaluation.

2. Scientific motivation - To discover the relationship between students' success and their participation, or nonparticipation, in a support-oriented, niche educational program.

These motivations for research were important considerations. Both of the identified motivations were directly related to the importance of the information that was generated from such a study.

Public Policy Motivation

Higher education literature showed that many state-level higher education governing bodies have sought to allocate funding for higher education based in part upon the persistence and graduations rates of students at their state institutions (Gold & Albert, 2006; Locker, 2009). The transition from the traditional funding model that relied upon raw enrollment numbers as the basis for determining higher education funding allocations will create new challenges for both students and institutions. Clearly, more focus will be placed on the academic skills and performance outcomes of college students as well as on the special needs that certain niche populations bring to colleges and universities. Such an emphasis may require institutions to identify and correct student issues in a more specific and direct manner with programs like Student Support Services.

Student Support Services programs were designed to serve as a model for how to address the needs of first-generation and low-income college students. If a positive association between participation in the program and student success can be shown, then other departments or programs at ETSU may benefit from modeling their programs or policies after the SSS model. The information generated by this study will be important to all the stakeholders who have invested their time, talents, and efforts to develop policies and programs that support first-

generation and low-income students at institutions of higher learning. The needs of this student population have been thoroughly documented in the research literature. This research study will help to inform future stakeholders about the possibilities niche-oriented programs and policies can make in the lives of these students.

Scientific Motivation

Since the creation of the Student Support Services program in 1968, very little research has been completed regarding the performance of individual programs in meeting the needs of their first-generation and low-income college student populations. Higher education institutions needed appropriate and reliable models to implement successful strategies to assist students in their persistence toward graduation. The reliability of SSS programs could only have been determined through research, therefore signaling the need for studies such as the one conducted here. If the SSS program at East Tennessee State University was shown to be positively associated with the persistence and graduation rates for first-generation and low-income college students at the institution, it may be appropriate to apply similar strategies to other niche populations on campus.

Over the 36-year span of the Student Support Services program at East Tennessee State University no extensive research was completed on the program. This was particularly true when one compared the retention and graduation rates of SSS students with different student populations at the institution. The U.S. Department of Education required only annual performance reports on the students served by the ETSU SSS program. They did not require the program to complete comparative research between the students served in the SSS program with students not served by the program. This study addressed the need to compare the ETSU SSS participants' academic performance and retention status with SSS nonparticipants at the

institution. It also compared the rate at which first-time, full-time, traditional-aged SSS participants and nonparticipants from the 2001, 2002, 2003, and 2004 cohort years graduated within 6 years.

The Student Support Services programs were designed to operate on a 5-year funding cycle and were awarded funds through a specific grant-proposal competition that occurs once every 5 years. The information generated through this study may be used in future grant proposals to justify the need for the program at East Tennessee State University. Furthermore, the SSS program was funded solely by taxpayer dollars and a thorough evaluation of the program was needed to generate a general understanding of how successful the SSS program has been in meeting its stated objectives at the host institution.

Limitations and Delimitations

One of the primary limitations of this study was related to the potential for my own researcher bias. As the current researcher for the study, I acknowledge that the Student Support Services program at East Tennessee State University has employed me since January of 1999. I have served the program as a graduate assistant, then as a counselor, and I currently hold the position of Assistant Director for the Student Support Service's NEXUS Freshman Program. Given my almost 12 years of experience with the SSS program, there existed the potential for decreased objectivity and the infusion of anecdotal subjective elements into the assessment of outcomes of SSS participants. Therefore, it was my duty to adhere to the principle of objectivity and ensure that my own personal biases and desires were not reflected in the outcomes of the study.

With the permission of ETSU Provost Bert C. Bach and Ronnie Gross, Executive Director, TRIO at ETSU, this study was delimited to the cohorts of first-time, full-time,

traditional-aged freshman students who enrolled at East Tennessee State University in the fall semester during the years of 2001, 2002, 2003, and 2004. For the sake of consistency, the study only included fall semester entrants. The ETSU Office of Institutional Research and Outcomes Assessment used fall-only entrants when generating persistence or retention data. This population made up the three distinct groups of SSS participants, SSS eligible nonparticipants, and SSS ineligible students. The SSS eligible nonparticipants and SSS ineligible students were randomly selected from the cohort years. Also, the Student Support Services program enrolled only 225 students each year into the program, which comprises an additional delimitation to the study.

Another delimitation of this study was related to the collection of certain data elements for determining the SSS-eligible nonparticipants and SSS-ineligible student groups. The Free Application for Federal Student Aid (FAFSA) was used to determine the first-generation college and low-income student status of each student in the target population who was not an SSS participant. This allowed for the appropriate groupings of SSS eligible nonparticipants and SSS ineligible students for sampling. There was the possibility that some students on campus did not file the FAFSA and were thereby placed in the SSS ineligible population by default when they might have been more accurately placed in the SSS eligible group. Furthermore, there was a lack of data for both the SSS eligible nonparticipants and SSS ineligible students with regard to their participation in other academic and student services on campus. ETSU maintains several academic support units that are unrelated to the Student Support Services program and any enrolled ETSU student may participate in those services.

To conclude, the students who participated in Student Support Services were self-selected for the program. The Student Support Services program actively attempted to recruit first-time,

traditional-aged freshman students into its NEXUS program, but completion of the program application was completely voluntary. This resulted in the possibility that the students who sought out services through Student Support Services may have had a higher level of motivation to do well in college than their peers in the SSS-eligible non-participant and SSS-ineligible student groups.

Definitions of Terms

At-Risk (high-risk) College Student – An individual who participated in postsecondary education that for some reason(s) lacked the academic skills, financial and familial support, experienced cultural barriers, etc. who historically had a low level of academic success in higher education (Horn & Chen, 1998).

Cumulative Grade Point Average (CGPA) – The sum of total grade points for all semesters enrolled at the institution divided by the sum of all credit hours attempted at the institution (ETSU Admissions Office, 2009).

Federal Pell Grant Program – formerly called the Basic Educational Opportunity Grants Program (BEOGs), is a federal grant program for needy students who have not completed an undergraduate baccalaureate degree. Students in an eligible postbaccalaureate teaching certification or licensing programs may also receive Pell Grant funds (National Association of Student Financial Aid Administrators, 2002).

First-time full-time traditional-aged freshman – For the purposes of this dissertation it was an individual, aged 19 or younger who was enrolled in college for the first time (excluding dual-enrollment courses, AP courses, etc.) immediately following high school graduation and was enrolled in 12 or more credit hours of coursework for his or her first semester (ETSU Admissions Office, 2009).

Grade Point Average (GPA) – Total grade points divided by all credit hours attempted within a single semester (ETSU Admissions Office, 2009).

Graduation Rate – For the purposes of this dissertation it was the rate or percentage of students who complete their first baccalaureate degrees within a specified period, most often 4, 5, or 6 years (ETSU Fact Book, 2011).

Postsecondary Education – Education that occurred after the completion of a high school diploma (ETSU Admissions Office, 2009).

Retention Rate – For the purposes of this dissertation it was the rate or percentage of student persistence from one fall semester to the subsequent fall semester (Tennessee Higher Education Commission, 2007).

SSS Eligible Nonparticipant – an individual who met the eligibility requirements for participation in the Student Support Services program but was not enrolled in the program (U.S. Department of Education, 2009b).

SSS Ineligible Student – an individual who did not meet the eligibility requirements for participation in the Student Support Services program (U.S. Department of Education, 2009b).

SSS Participant (program participant) – an individual who participated in the Student Support Services program and met one or both of the following defined criteria: (U.S. Department of Education, 2009a).

1. First-Generation College Student – Defined by the United States Department of Education (2009b) as:

An individual, both of whose parents did not complete a baccalaureate degree; and in the case of any individual who regularly resided with and received support from only one parent, an individual - who's only such parent, did not complete a baccalaureate degree (pp. 10-11).

2. Low-Income College Student – Defined by the United States Department of Education (2009b) as:

An individual from a family whose taxable income for the preceding year did not exceed 150% of an amount equal to the poverty level determined by using criteria of poverty established by the Bureau of the Census (p. 11).

TRIO programs – Seven grant-funded programs created by the United States Department of Education to focus on equal opportunity in education for at-risk and underrepresented populations. These programs include the Educational Opportunity Program, the Ronald E. McNair Post-Baccalaureate Achievement Program, the Student Support Services, Talent Search, Upward Bound, Upward Bound Math/Science, and Veterans Upward Bound programs (Mitchem, 1997).

Summary

Chapter 1 contains an introduction that includes the background of the problem, the statement of the problem, the research questions, the significance of the study, the limitations and delimitations contained in the study, and the definition of key terms used throughout the dissertation. Chapter 2 provides a review of the relevant literature that includes topics such as: the history of the Student Support Services program and related research studies and research related to first-generation and low-income college students and broader relevant higher education research. Chapter 3 provides a description of the research methodology that includes the population, research design, data collection methods, data analysis procedures, and the research questions with null hypotheses. Chapter 4 offers an analysis of the data for each of the research questions that include the demographic variables, performance outcome variables, and prediction variables. Chapter 5 provides the study summary, findings, conclusions, and the implications for practice and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

The analysis of student support programs specifically designed to impact the success of college students was well documented in the higher education research literature. These resources were replete with research studies that were designed to assess the value of targeted student interventions for success. After reviewing the subsequent literature related to student success in higher education, one single fact appeared most evident. There was simply no overwhelming consensus among higher education researchers regarding the nature of what contributed significantly to student success in higher education. In fact, the thought that appeared most evident was that no single variable could be identified or controlled that directly contributed to positive outcomes for students in postsecondary education. From the vantage point of an outsider looking-in, this question seemed at face value far too complex to spend any meaningful amount of intellectual energy to answer. Yet, many hours of intensive research have been conducted to identify the key variable, or variables, that contributed to student success in higher education. Whether one reviewed the work of Pascarella and Terenzini (1991, 1996, 2004, 2005) with their focus on the dimensions of student development, or Tinto (1975, 1987, 1999, 2004) and Astin (1972, 1993), with their many studies related to student success and attrition, the question of student success began to take on a whole new level of complexity. This level of complexity was even more apparent when one looked at specific niche populations of students at America's institutes of higher learning.

This literature review was specifically oriented toward first-generation and low-income college students and strategies to address academic success at the college level. This was both necessary and appropriate given the focus of study for the dissertation. The scope of this literature reviewed was a direct result of the desire to develop a thorough knowledge of the

higher education research related to student issues, specifically research directly related to first-generation and low-income college students. It was necessary to focus on research related to both general and niche student populations. This broad focus established a firm foundation from which to appropriately compare and contrast the student groups involved in this study. This was a particularly important aspect given the framework of the overall dissertation. By design, this dissertation analyzed the Student Support Services program at a single institution of higher learning in the Southern Appalachian highlands.

Student Support Services Research Literature

The Student Support Services program was designed to contribute to the success of first-generation-college and low-income students in higher education. This dissertation involved the analysis of the SSS program at East Tennessee State University by comparing the demographics and performance outcomes of the program's first-generation and low-income college students with the general population of students at the university. It was necessary to begin the review of Student Support Services literature with the history of the Student Support Services Program, formerly the Special Program for Disadvantaged Students, and its development at East Tennessee State University. This history was followed by a review of specific research related to the analysis of the Student Support Services program from both formal institutional investigators, like the United States Department of Education and its contracted researchers, to independent researchers in educational research publications. This approach was necessary and appropriate and helped orient oneself to the nature of student issues on America's college campuses as well as the development of programs and policies that addressed students like those served by the SSS program. From here the literature review proceeded out to broader research sources with a focus on a specific niche population of students like those served by the SSS program.

First-Generation and Low-Income College Students Research Literature

The next level of focus for the literature review involved research related to first-generation and low-income college students. The intent of such a specific focus on this population served two important functions. First, this was the niche population of students served by the Student Support Services program at colleges and universities in the United States. Second, it served to fully highlight the “at-risk” nature of first-generation and low-income college students. This niche population of students was not unlike typical college students in many ways, but they did have unique issues related to their own academic and social integration within higher education. (Thayer, 2000) From this specific focus on a single student population, the review of literature logically moved into a broader array of research questions and subsequent research literature.

Broader Higher Education Research Literature

Broader higher education research associated with student demographics, student involvement, student persistence, strategies to improve student success, and access to higher education was reviewed in order to contribute to the overall intent of the literature review. Within this framework of review, these research resources provided the opportunity to highlight important factors related to both the general and niche student populations on college and university campuses. This approach also allowed for the appropriate comparison and contrast of the broader student population with the niche population of first-generation and low-income college students that occurred within this dissertation. Again, this process provided an orientation and increased understanding of the issues faced by all groups of students involved with higher learning at America’s colleges and universities.

This literature review served several important functions for the overall dissertation. It outlined the broader higher education research related to college student integration and success,

while it narrowly highlighted one of the largest federally funded programs developed to serve first-generation college and low-income college students. Given that the topic of the dissertation involved the analysis of the Student Support Services program at a mid-size, regional university in the Southern Appalachian Highlands, it was both necessary and appropriate to orient the review of literature toward both broad and specific higher educational research. This type of framework for the review provided useful material concerning the general population of students in order to adequately address issues common to all students.

Furthermore, it also served to provide a useful means for framing the specific issues inherent with the niche population of students served by the Student Support Services program. To be sure, this literature review addressed only a fraction of the higher education research related to strategies for increasing student success. This was a voluminous body of work that covered a variety of student populations and a host of complex analyses and assessments. To review all the unique areas of research related to student success in higher education was well beyond the scope of this dissertation. Nevertheless, the resources reviewed adequately addressed the issues that led to the development and implementation of the Student Support Services program, most notably, the war on poverty initiated under President, John F. Kennedy.

The War on Poverty

During the early 1960s President John F. Kennedy inspired what later became known as the War on Poverty. The Kennedy administration's efforts to address poverty amounted to a relatively small number of programs designed primary to move individuals off the welfare rolls and into the workforce. In 1963 the federal government committed about \$59 million toward such efforts, which seemed miniscule when compared to funding that followed for similar programs (Murray, 1984). President Kennedy sought to shape a new role, or responsibility, for

the federal government, which was to take responsibility for helping Americans to help themselves. This perspective gave rise to the “Give a hand, not a hand out” motto of the War on Poverty initiated soon after Kennedy’s assassination during the presidency of Lyndon Johnson (Murray, 1984).

Given the nature of President Kennedy’s untimely death and President Johnson’s ascendency as President of the United States, many of the same administrators who worked to develop Kennedy’s programs began working in the new Johnson Administration (Murray, 1984). Following President Kennedy’s initial ideas, President Lyndon Johnson and his administration passed significant legislation that led to the development a host of new government-sponsored and taxpayer-funded programs. These new programs built upon the work started during the Kennedy administration and became effectively known as the War on Poverty (Murray, 1984). For President Johnson, the War on Poverty was the effective means by which to set the United States on a course toward his Kennedy- inspired and idealized end of a “Great Society.”

The “Great Society” Legislation and Higher Education Act of 1965

The Economic Opportunity Act of 1964 and the Higher Education Act of 1965 were important pieces of legislation that served as key pillars in the development of President Johnson’s “Great Society” (Murray, 1984). Out of these two legislative acts came targeted programs specifically designed to address Johnson’s stated goals of eliminating poverty and racial injustice (Johnson, 1964). The underlying premise of these programs was founded upon the concepts of “Giving a hand, not a hand out” and equal opportunity (Murray, 1984). Essentially, the goal was to address the needs of certain niche groupings of individuals in American society by creating equal opportunities for them in employment, education, housing,

and other targeted areas considered instrumental in bringing about the idea of a “Great Society” (Johnson, 1964; Murray, 1984).

In 1965 President Lyndon Johnson signed the Higher Education Act of 1965 into law. That legislation has been lauded as the first federal legislation that had real and important implications for higher education policy in the U.S. (Heller, 2001). Much like the Morrill Act of 1862 and the G.I. Bill immediately following WWII, the Higher Education Act of 1965 placed the federal government in a pivotal position as the arbiters of increased access to higher education for millions of Americans. The important practical applications resulting from this change in the United States higher education policy was the creation of specific niche-oriented programs that promoted both access to and success in post-secondary education.

The TRIO and Student Support Services Programs

According to McElroy and Armesto (1998), the three niche-oriented programs that developed out of the Economic Opportunity Act of 1964 and the Higher Education Act of 1965 were the Upward Bound (UB) program (Economic Opportunity Act of 1964), the Educational Talent Search (ETS) program (Higher Education Act of 1965), and the Student Support Services (SSS) program. The SSS program was developed due to an amendment to the Higher Education Act (HEA) of 1965 during the reauthorization of the HEA in 1968 (McElroy & Armesto, 1998). The Student Support Services program was then referred to as the Special Services for Disadvantaged Students program and only later become known as Student Support Services (U. S. Department of Education, 2009a). All three programs collectively became known as the TRIO Programs (McElroy & Armesto, 1998).

These three programs were developed to specifically assist first-generation-college and low-income college students (McElroy & Armesto, 1998). The Upward Bound and Educational

Talent Search programs were designed to work primarily with first-generation-college and low-income students in secondary education, with the ultimate goals of improving student academic performance and steering those students into higher education (Mitchem, 1997). The SSS program was created to work solely with this same niche population of students in postsecondary education with the program goals of improved academic performance, retention in higher education, and degree completion (Mitchem, 1997). Nationally, the “TRIO” programs have endured and in 2009 there were 946 Upward Bound programs serving 65,179 students, 466 Talent Search programs serving 363,300 students, and 947 SSS programs serving 198,940 students, with combined budgets of \$740,202,585.00 (U.S. Department of Education, 2009a).

The Student Support Services Program at East Tennessee State University

In 1976 East Tennessee State University (ETSU) applied for and received a grant to develop an SSS program on its campus. The university has received continuous funding for the program since that time. The program at ETSU was slated to serve 225 first-generation, low-income, and disabled students and to aid their advancement through higher education toward completion of their first baccalaureate degrees. The program’s staff at ETSU designed its services to include academic advising, personal and career counseling, academic support services, freshman-year and college transition programs, and workshops related to the specific needs of first-generation, low-income, and disabled students (ETSU SSS Grant Proposal, 2010). The needs of this student population have been documented extensively throughout higher education research. Many experts agree that first-generation and low-income college students face obstacles that many other students do not (American Council on Education (ACE), 2003; Thayer, 2000; Tinto, 2004). Couple the needs of these students with an increased focus on performance outcomes as an aspect of funding allocations in higher education and the need for

support-oriented niche programming becomes apparent. Given that the Student Support Services program was created to address these needs, it was appropriate to focus on specific research studies related to the assessment of the SSS program as a whole at the various institutions in which it is found across the country.

National Profile of the Student Support Services Program

Individual Student Support Services (SSS) programs were not required by the U.S. Department of Education to complete comparative based analysis of its participants with either SSS-eligible nonparticipants or SSS-ineligible students at their host institutions. It was advantageous for them to complete this type of research and include it in the Institutional Need section of their grant proposals, but again it was not a requirement of the grantee institutions. However, each funded SSS program was required to complete an Annual Performance Report (APR). The Annual Performance Report documented each program's progress in meeting its specified performance objectives.

The United States Department of Education's, Office of Postsecondary Education, Federal TRIO Programs Department, commissioned a series of profile reports based on the Annual Performance Reports from each of the 946 SSS programs across the country. Four profile reports were completed with two directly related to this research study and appropriate for review. The four profile reports spanned approximately 8 years of service provided by the Student Support Services Programs on America's college campuses. These reports are comprehensive in that they provided a cumulative report of the all the SSS programs as a whole.

An important distinction must be made about these profile reports. They were not created to serve as research reports per se, nor should they be misconstrued to report on the effectiveness of the SSS programs in contributing to the academic performance of the SSS program participants. At the completion of the most recent profile report, for academic year 2003 – 2004,

the U.S. Department of Education's, Director of Special Programs, Larry Oxendine, described them as "...highlighting the characteristics of grantee institutions and the students they serve..." (U.S. Department of Education, 2007). Nevertheless, they did contain important aggregate data compiled from all the SSS Annual Performance Reports. Each report provided a comprehensive "profile" of the SSS programs ability to meet specific performance objectives related to the services provided to program participants.

Performance objectives included, but were not limited to, participant composition, student retention rates, 6-year graduation rates, and overall academic performance of each individual SSS participant. These objectives were specified by the U.S. Department of Education and outlined in the Student Support Services grant proposal writing instructions. Performance objectives are reviewed in conjunction with a program's grant renewal application and are directly related to a program's ability to earn Prior Experience Points. Prior Experience Points are awarded to programs that meet their performance objectives each year of the grant cycle as reported in their Annual Performance Reports.

Given that this research study focused on the 2001, 2002, 2003, and 2004 academic years, it was appropriate to include the SSS Profile Reports that encompassed these same academic years. However, the 2003 - 2004 profile report was the last report commissioned by the Office of Postsecondary Education and a profile report was not available for the 2004 – 2005 academic year (U.S. Department of Education, 2007). Each profile report was divided into two sections. Section I contained the demographic characteristics for the programs as a whole. Section II contained data related program outcomes and impact as related to graduation rates, academic success, and student retention rates for all full-time students. Length of services and degree completion data were also presented in Section II. Again, the profiles were import for

review in that they provided important demographic data that further illustrated the student characteristics and performance outcomes of SSS participants.

2001 – 2002 National SSS Profile Report

For the 2001 – 2002 academic year the Student Support Services served 199,956 students at 944 institutions across the U.S (U.S. Department of Education, 2005). For the 2001 – 2002 academic year the U.S Department of Education allocated \$254.9 million for the SSS programs, which was approximately, \$1,275 spent per student served by the programs (U.S. Department of Education, 2005). The following were the demographic characteristics and selected performance outcomes for the SSS programs 2001 – 2002 academic year as found on the 2001 – 2002 profile report (U.S. Department of Education, 2005):

- 57.0% of the students were first-time freshman students
- 66.5% were full-time students
- 60.8% of the students were first-generation and low-income college students
- 6.7% were low-income only students
- 19.3% were first-generation college only students
- 67% were female & 33% were male
- 42.7% were white, 28.7% were black or African-American, 18.1% were Hispanic or Latino, 4.4% were Asian, and 3.8% were American Indian or Alaskan Native, and 2.4% were other races reported.
- 23.3 was the average age of entry into the program

The following were related performance outcomes from the 2001 – 2002 SSS profile report:

- 2.6 was the mean GPA for all first-year students (GPA after their first year)

- 78.5% were in good academic standing
- 75.1% retention rate (enrolled at same institution for their second yr.), 86.6% persistence rate (enrolled at any institution for their second yr.)
- 22.2% was the 4-year graduation rate for students who first enrolled in fall 1998

2002 – 2003 & 2003 – 2004 National SSS Profile Reports

The Office of Postsecondary Education combined the profile reports for the 2002 – 2003 and 2003 – 2004 academic years and aggregated the demographic data for the two academic years rather than give the data specific to each year. However, the number of students served, the funding allocations, and costs per student was provided for each individual year. For the 2002 – 2003 academic year, the SSS programs served 198,551 students at 937 institutions across the country (U.S. Department of Education, 2007). For the 2002 – 2003 academic year the U.S. Department of Education allocated \$262.7 million for the SSS programs, which was approximately, \$1,323 spent per student served by the programs (U.S. Department of Education, 2007). For the 2003 – 2004 academic year, the SSS programs served 195,288 at 936 institutions across the country (U.S. Department of Education, 2007). In conclusion, for the 2003 – 2004 academic year the U.S. Department of Education allocated \$263.7 million for the SSS programs, which was approximately, \$1,350 spent per student by the programs (U.S. Department of Education, 2007). The following were the demographic characteristics and selected performance outcomes for the SSS programs 2002 – 2004 academic years as found on the 2002 – 2003 & 2003 - 2004 profile report (U.S. Department of Education, 2007):

- 39.4% of the students were first-time freshman students
- 65.3% were full-time students
- 63.5% of the students were first-generation and low-income college students

- 7% were low-income only students
- 17.3% were first-generation college only students
- 68% were female & 32% were male
- 41.9% were white, 30.4% were black or African-American, 16.9% were Hispanic or Latino, 4.4% were Asian, 3.9% were American Indian or Alaskan Native, and 2.6% were other races reported

The following were related performance outcomes from the 2002 – 2004 SSS profile report:

- 75.7% retention rate (enrolled at same institution for the second yr.), 85.7% persistence rate (enrolled at any institution for the second yr.)
- 28.0% was the 5-year graduation rate for students who first enrolled in fall 1998
- 23.0% was the 4-year graduation rate for students who first enrolled at a 4-year university in fall 1999

National SSS Profile Reports Summary

The SSS program data compiled in the Office of Postsecondary Education’s SSS profile reports were important to this review in that they provided a general understanding of the demographic and performance outcomes of SSS participants from the similar cohort years to be addressed in this research study. A significant number of the SSS participants were either first-generation college students, low-income college students, or both. For the academic years profiled the SSS participants’ retention rate was 1.5 points higher than the national retention rate average for the same years (A.C.E, 2003). However, the overall SSS 5-year graduation rate of 28% was significantly lower than the national average, which was approximately 50.9% at the 5-year mark (A.C.E, 2003). 48.2% of the SSS students from 2001 – 2004 were first-time freshmen

students and 65.9% were full-time students. Both of these demographic characteristics and the performance outcomes outlined in the profile reports, were important to this research study. Therefore, it was necessary and important to review the SSS Profile Reports compiled by the U.S. Department of Education's, Office of Postsecondary Education.

For the purposes of this literature review the SSS Profile Reports served as excellent resources. They provided national demographic trends of the Student Support Services programs and the outcomes of the student participants. However, they did not address correlational assumptions regarding the effects of SSS programs on student academic outcomes. Nevertheless, more important assessment type research for the SSS programs was completed at the national level and a detailed review of this research was more appropriate to the overall scope of the dissertation.

National Longitudinal Study of the Student Support Services Program

The research literature contained Student Support Services related studies that dated back to 1975. One research study commissioned by Congress in the 1990s was reviewed for this literature review. In 1991 the U.S. Department of Education's, Office of Postsecondary Education embarked on a quasi-experimental, longitudinal study that followed 5,800 students for 6 years beginning with their freshman year, 1991-92 (U.S. Department of Education, 2010). The study was commissioned by and prepared for the U.S. Department of Education's, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service. The purpose of the study was to estimate the effects of SSS programming and services on the outcomes of its student participants (U.S. Department of Education, 2010). The full report discussed five academic outcomes. Two of these key outcomes were specifically related to this review: retention in college and degree completion.

National SSS Longitudinal Study Research Methodology

For the study 200 Student Support Services programs were chosen in a nationally representative stratified random sample. From that same sample 30 SSS programs were randomly subsampled to provide data for half of the participants for the study. Twenty other higher education institutions without SSS programs were chosen to provide the other half of the 5,800 student sample for the study. The 20 other higher education institutions did not have SSS programs and were statistically chosen using propensity models to allow for shared or similar characteristics with the schools that provided the SSS participant sample. Three of the institutions that originally agreed to participate in the study dropped out of the study, leaving the study with 47 participant institutions.

The research methodology employed for the study was quasi-experimental and used quantitative data analysis. The researchers sought to create similar study groups, in that they wanted the two study groups, SSS participants and SSS nonparticipants groups, to match as closely as possible around a set of demographic characteristics, i.e., age, ethnicity, type of institution, etc. (U.S. Department of Education, 2010). Regression models and propensity scores were used as the means to create these groupings of students for the two study groups. Student surveys were used in the study to gather information regarding other supplemental services that students might have used either within their own SSS program or through institutional services offered outside the SSS program.

One specific data analysis methodology was not chosen for this study. Instead the researchers chose a variety of modeling techniques in an attempt to obtain as accurate results as possible. SSS services for first-year students, supplemental services received outside of SSS, and measures of student and school characteristics were generated as separate measures in the all the

models. The models differed in the statistical techniques that were used, particularly in the ways that SSS and other supplemental services were measured, and in the use of propensity scores.

The U.S. Department of Education (2010) reported that the researchers described the research models this way:

Some models used standard multivariate regression analysis while others use hierarchical linear modeling (HLM). Some models treated SSS participation as dichotomous (i.e., either a student was in SSS or he or she was not), while other models treated SSS participation as a collection of nine separate services, with each service measured separately in terms of the number of hours of participation by each student. Some models adjusted for differences among students solely through individual measures of student characteristics (such as academic strength, background, and attitudes), while other models also included propensity measures that are designed to estimate students' probability of receiving services. (p. XIII)

Clearly, the above description points to a very complicated but thoughtful study regarding SSS participants and nonparticipants. It was clear that the U.S. Department of Education was making an excellent attempt to understand the scope and range of interaction between student participation in a SSS program and academic performance, retention rates, and graduation rates. However, the possibility that the students used outside supplemental services contributed to one of two distinct issues related to sampling and data analysis in the study.

National SSS Longitudinal Study Research Methodology Issues

Two distinct issues that arose in study were specifically related to creating the study group samples and in their data analysis (U.S. Department of Education, 2010). The student sample for the SSS participants group tended to be far more disadvantaged than the students in the non-SSS participants group. This led to difficulties in creating equivalency in terms of socioeconomic status between the two sample groups. The other issue was related specifically to supplemental services. The only consistent service required for all SSS programs nationally was academic support services provided through one-on-one or group tutoring. By design, SSS

programs were free to create other services for students that included but were not limited to personal counseling, career counseling, and academic planning. The non-SSS participant comparison group could also have participated in non-SSS supplemental support services at their institutions. These supplemental services could have skewed the results related to the relationship between participation in a SSS program, or not, for both of the study groups. These supplemental services could have contributed to increased levels of academic performance and degree completion. The researchers tried to compensate for or determine a level of interaction for these supplemental services (U.S. Department of Education, 2010). Due to these significant issues and the scope of the study, the researchers used an array of statistical tools for data analysis.

While additional commentary could be made regarding the research methodology of this study, the findings of the study provided additional information pertinent to this review.

National SSS Longitudinal Study Findings

The U.S. Department of Education's longitudinal study of the SSS program resulted in what the researchers termed as four significant findings. The first and most significant finding of the study was that improved student success was significantly correlated with a student's receipt of supplemental support services at an institution. However, the improved student success was not necessarily related to the support services specific to SSS programs. Furthermore, the findings did not show any greater effect for the SSS programs supplemental services because the researchers could not determine what other outside supplemental support services the students may have received at their institution (U.S. Department of Education, 2010).

The second significant finding of the study was that students continue to benefit from supplemental support services well after the freshman year. Later-year services showed a

stronger relationship with long-term academic success than those concentrated in first-year services. This finding prompted the researchers to suggest that SSS programs would do well to not concentrate their support services into the first-year for their participants but spread services throughout all levels of an undergraduate's career (U.S. Department of Education, 2010).

The final findings of the study were related to positive effects of the SSS services and the contrast of SSS services with an institution's supplemental services. The researchers found SSS programs that offered a wide range of supplemental services that included counseling, cultural experiences, peer tutoring, academic advising, etc. showed a greater propensity for improved student outcomes (U.S. Department of Education, 2010). Furthermore, they indicated that the effects of SSS program services when compared to the institutionally offered supplemental services were underestimated for SSS programs, particularly as they related to latter-year services. SSS programs tended to offer more of the latter-year related services, but there were difficulties in the dichotomous models when comparing SSS program services to the supplemental services offered for non-SSS participants. Most importantly, some of the SSS program effects may have been captured in the general supplemental services measures and this caused an underestimation of the effect of SSS programs (U.S. Department of Education, 2010).

The U.S. Department of Education's national longitudinal study of the Student Support Services program from 1991 – 92 to 1997 – 98 offered some very important insights in terms of this research study. Most importantly it presented attempts to resolve issues related to sampling, statistical test methodologies, and more specifically the accurately measured effects of SSS program services on student academic outcomes could become very problematic. To compensate for these issues a variety of statistical models were used to arrive at the findings. Nevertheless, the longitudinal study was most instructive in pointing out that one of the main issues related to

assessing the relationship of program services and student outcomes was the function of outside sources that work to underestimate, or overestimate the effects of the program services. With all these issues considered and the finding presented, it's safe to say that the SSS program did have consistent and positive effects on student's cumulative GPA, retention from fall-to-fall semesters, and degree completion. While they may not have been more significant than the general institutionally offered supplemental services, they were consistent and positive in improving the academic performance of the students served by the Student Support Services program.

First-Generation College Students

First-generation college students were one of the initial student target groups when the Student Support Services was created in 1965 (Mitchem, 1997). Since the early 1990s research regarding this population began to appear in higher education literature (Bowman & York-Anderson, 1991; London, 1989; Pascarella & Terenzini, 1991; Richardson & Skinner, 1992; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). Most of the literature related to assessing risk factors, determining trends, and quantifying performance outcomes for this population. It's safe to say that most of these researchers agreed that first-generation college students faced challenges unlike their peers whose parents had attended college (Bowman & York-Anderson, 1991; London, 1989; Richardson & Skinner, 1992). By the late 1990s and mid 2000s research continued on this population but appeared not at the pace at which it had earlier in the decade. Nevertheless there was some significant research that seemed to affirm the assumptions found in the previous research.

Ishitani (2003) and Nuñez and Cuccaro-Alamin (1998) indicated that first-generation students were less likely to persist than were those students whose parent(s) had previously

attended or graduated from college. In fact, Ishitani (2003) found that first-generation students were 71.0% less likely to persist to the subsequent fall than were non-first-generation students. Supporting this finding, research by Pascarella, Pierson, Wolniak, and Terenzini (2004), suggested that first-generation students shared common attributes that may have increased their risk of attrition (Pascarella et al., 2004). Furthermore, Elkins, Braxton, and James (2000) found that an individual who had strong and knowledgeable support systems, i.e., not a first-generation college student, was more likely to persist in higher education (Elkins et al., 2000).

Chen (2005) completed research that concurred with the findings of these studies that first-generation students typically did not perform as well as their peers and were less likely to earn academic credits. However, Chen's research differed with previous research studies in that when he controlled for other variables, there was not a significant difference in retention and graduation rates between first-generation students and non-first generation college students whose parents had attended college. He explained that given the time period of the previous research studies, the researchers might not have had access to the type of variables he used in his study.

Bradburn (2005) controlled for the type of institution that the first-generation students attended and he found mixed results between first-generation and non-first-generation college students. He found a variance between first-generation student persistence at smaller 4-year colleges when compared to larger 4-year universities. While the literature suggested that first-generation college students were an important student population to understand and even research, the research seemed sparse in terms of finding current research regarding this student population. Both Terenzini et al. (1996) and Pascerella et al. (2004) offered significant insight to first-generation college students, but Chen (2005) was really the most current and dealt solely

with first-generation college students. Pascarella and Terenzini (2005) offered a second volume to their original *How College Affects Students* and it did offer some other studies for possible review, but their analysis was more geared toward policy and program development not performance outcomes of first-generation college students. Therefore, any assumptions regarding the association between first-generation college students and persistence could not be established from the literature.

Low-Income College Students

Like first-generation college students, low-income students were also a target population for inclusion into the Student Support Service program (Mitchem, 1997). Significant attention was given to low-income students at the onset of the War on Poverty (Murray, 1984). The federally-funded Pell Grant Program, which began as the Basic Education Opportunity Grant, was created to provide education grants to both low and middle-income students and was created following the work associated with ending the War on Poverty (Murray, 1984; Wei & Horn, 2002). Extensive research has been completed on low-income students, but often times in the research it's wrapped into research studies in relation to demographic characteristics or as an independent variable being controlled for in the research rather than the primary focus of the research study itself. However, several studies were found to provide basic insight and appropriate source data for this research study.

Wei and Horn (2002, 2009) have completed intensive research on Pell Grant recipients particularly as it related to retention and graduation rates. As mentioned, they also produced some secondary characteristics regarding low-income students. For instance in their 2002 study they found that low-income students were less academically prepared than higher-income students, completed a less rigorous academic curriculum in high school, and scored in the lower

quartile of the SAT or ACT (Wei & Horn, 2002). Horn and Premo (1995) identified seven risk factors associated with dropping out of college after the first year. Wei and Horn found that low-income college students were at a higher risk to possess these risk factors when compared to non-Pell grant recipients (Wei & Horn, 2002). These risk factors were: not graduating from high school, delayed enrollment in postsecondary education, financially independent, having dependents other than one's spouse, being a single parent, attending part time, and working full time while enrolled full time. However given these risk factors, Wei and Horn (2002) found no difference in the persistence rates among low-income students and higher-income students at 4-year public universities. While earlier research was available, Wei and Horn's research regarding low-income students seemed well structured and accurate when compared to other research presented on low-income students' persistence rates.

Graduation rates of low-income students were another interest of higher education researchers. Mortenson (1997) found that the level of family income was directly related to postsecondary graduation rates. In most cases the graduation rates increased as income levels increased, e.g., 51.4% of children from families with incomes exceeding \$90,000 graduated by the age of 24 (Mortenson, 1997). In a U.S. Department of Education (2000) longitudinal study began in 1995 it was found that low-income students were less likely than their higher-income counterparts to still be enrolled or graduated 3 years later. The persistence rate finding of this study ran counter to what Wei and Horn found in 2002 in terms of persistence rates of low-income students, but the graduation rate findings of the longitudinal matched the finding in Wei and Horn's research in 2009 regarding low-income students' graduation rates.

Wei and Horn found that low-income students had a less likely chance of graduating at the 4-, 5-, or 6-year mark than their higher income peers (Wei & Horn, 2009). However, Wei and

Horn (2009) found that when they controlled for transfers and stop-outs (not enrolled for a period of time then re-enrolled), lower income students actually had a shorter time to graduation than higher income students. Nevertheless, Pell grant recipients had an 81% greater chance of transferring and stopping out than their non-Pell grant receiving peers. This was a significant characteristic for Pell grant recipients (Wei & Horn, 2009). Again, as Wei and Horn (2002) found, low-income recipients began college with socioeconomic characteristics and educational experiences that are associated with increased chances of not finishing college. One final finding of Wei and Horn (2009) was that low-income students who started at a 2-year community college prior to transferring to a 4-year institution to complete their bachelor's degree had the same degree completion rate as their higher-income peers. Clearly, low-income students have struggled to persist and graduate at America's institutes for higher learning.

First-Generation and Low-Income College Students

From the beginning all Student Support Services programs were required to serve students who were both first-generation college and low-income students. In fact, 67% of all SSS participants in a given program had to be both low-income and first-generation college students (Mitchem, 1997). As suggested by the previously reviewed research regarding the separate populations of first-generation college and low-income students, these students faced sizable barriers to success at the college-level. When these two characteristics are coupled, these barriers increased in frequency and magnitude for this population.

Thayer (2000) presented demographic characteristics and strategies that addressed the unique issues related to students who are both first-generation and low-income college students. Thayer found that students who were both first-generation college and low-income were less likely to attend college and if they did enroll were more likely to drop out after the first or second

year (Thayer, 2000). He explained that more programs like Student Support Services, which addressed the challenges of this student population, were needed on America's college campuses. According to Thayer (2000) first-generation college and low-income students lacked sufficient knowledge to navigate the college process; they are less likely to enter college with the proper academic preparedness and are more likely to perceive a lack of support from their family for attending college. These characteristics have been found to be significant with decreased levels of college success for the single populations of first-generation college or low-income students, and they became more pronounced for students who were both first-generation and low-income (Filkins & Doyle, 2002).

Thayer (2000) addressed strategies that colleges and universities could implement to benefit first-generation college and low-income college students. He pointed out that the Student Support Services provided an excellent model for a "package" of services for this niche student population. Ting (1998) found that college and universities don't understand the needs of these students and they typically haven't had to deal with these issues in the past. Carey (2004) advised that colleges and universities take prudent steps to address the transition from high school to college especially for first-generation college and low-income students. Thayer (2000) included this strategy as well when he highlighted the services that Student Support Services programs were offering at different campuses across the country. Thayer also suggested that colleges and universities follow the lead of Student Support Services and address the academic deficiencies of first-generation and low-income college students in a more formalized process with institution sponsored academic support services like individual or group tutoring (Thayer, 2000). However, Ting (1998) found that grade point averages and standardized test scores were not significant predictors of success for Student Support Services participants, which include

first-generation and low-income college students. In conclusion, the research was clear that the combined attributes of first-generation college and low-income student status put students at a disadvantage and created difficulties in their persistence and bachelor's degree completion at the postsecondary level of education.

Limitations of Research Literature

There was a broad base of research found on the study of first-generation and low-income college student with particular emphasis placed on their retention and persistence to graduation at 4-year colleges and universities. Numerous articles and related books were found that provided a wealth of information and significant insights into this population of students at America's institutes for higher learning. The work of Bowman and York-Anderson (1991), Bradburn (2002), Carey (2004), Chen (2005), Filkins and Doyle (2002), London (1989), Ishitani (2003), Horn and Premo (1995), Horn and Chen (1998), Nuñez and Cuccaro-Alamin (1998), Pascarella et al. (2004), Pascarella and Terenzini (2005), Richardson and Skinner (1992), Riehl (1994), Terenzini et al. (1996), Thayer (2000), Ting (1998), Tinto (2004), and Wei and Horn (2009) focused on either first-generation and/or low-income college students but did not focus primarily on this population and their participation in the federally funded Student Support Services. Clearly, the limitation in available research that appeared during this review was that very little research had been completed with regard to the performance outcomes of individual Student Support Services programs, their participants, or the programs as a whole. Furthermore, the research that was completed by Bradburn (2002), Filkins and Doyle (2002, 2006), Thayer (2000), Ting (1998), U.S. Department of Education (2005), U.S. Department of Education (2007), and the U.S. Department of Education (2010) was either focused on nonperformance outcomes, or related psycho-social aspects of Student Support Services participants, as in Bradburn (2002) and Ting (1998), or it produced inconclusive results that failed to address their

intended research questions, as in U.S. Department of Education (2010). However, with respect to the U.S. Department of Education's longitudinal study of the Student Support Services program, which was released in 2010, there was not any current research found that related specifically to the current performance outcomes of Student Support Services programs or their participants. The Student Support Services longitudinal study started with Student Support Services participants from the 1991 – 1992 academic year and followed these students for 6 years (U.S. Department of Education, 2010). However, the final results were not released until 2010 and more than a decade of time had passed since the study groups had completed their assessment by the study. The research summary from this study suggested that more current research regarding the Student Support Services programs and participants was needed due to changes in demographics and services currently offered by the Student Support Services as a whole (U.S. Department of Education, 2010).

Literature Review Summary

Over the last 42-year span of the U.S. Department of Education's Student Support Services program there has been limited research completed on the program, especially when compared with research on the particular demographic characteristics of students that make up the Student Support Services program's student population. As previously mentioned, a significant amount of research was completed with regard to first-generation and low-income college students, which make up almost 90% of the Student Support Services population nationally (Wei & Horn, 2002), but very few studies related to the performance outcomes of the programs or SSS participants were found in higher education related literature. The U.S. Department of Education required annual performance reports on the students served by the programs but did not require programs to complete comparative research between the students served in the SSS program and the general population of students not served at the host-

institution. Only one longitudinal study was commissioned by the U.S. Department of Education (2010) that specifically addressed the performance outcomes of Student Support Services programs and their participants. The conclusions reached in the study seemed inconclusive and the researchers themselves suggested the findings were possibly out of date. Therefore, due to the nature of the SSS program, additional research was needed to address the performance of the program in its endeavor to support the first-time, full-time, traditional-aged students at East Tennessee State University.

CHAPTER 3

RESEARCH METHODOLOGY

First-generation college and low-income college students have typically been viewed as high-risk students in that they have increased difficulties with retention and degree completion (A.C.E., 2003; Bowman & York-Anderson, 1991; Braunstein & McGrath, 1997; Hopkins & Ishiyama, 2001; Kennedy, 2003; London, 1989; Riehl, 1994; Ting, 1998; Tinto, 2004). The intended purpose of the Student Support Services program was to increase the retention and graduation rates and improve the overall academic performance of first-generation college and low-income college students at the host institution. East Tennessee State University has maintained a Student Support Services program on its campus for the last 36 years. The program has served an estimated 4,000 individual students during its tenure. However, no researcher has completed a comprehensive research study comparing the outcome data of student participants with the general student population at ETSU.

This research study was an examination of the performance and outcome data of first-time, full-time, traditional-aged students at East Tennessee State University. More specifically, this study involved a comparison of the retention and graduation data of first-time, full-time, traditional-aged SSS participants with those of first-time, full-time, traditional-aged non-SSS participants in both the SSS eligible and SSS ineligible student populations. Various demographic variables of the three study groups were also considered as well as an assessment of certain variables that may operate as predictors of student outcomes. This research was important to the continuation of the SSS program at ETSU and to the institutional community as a whole.

This research study also offered broader insights related to new funding strategies implemented for state-level higher education institutions. Higher education pundits reported that

many states have changed their higher education funding formulas to include greater emphasis upon the student persistence and graduation rates at their state institutions (Gold & Albert, 2006; Locker, 2009). This new funding strategy was a transition from the traditional funding model that relied upon raw enrollment numbers as reflected in full-time enrollment headcount. This trend created new challenges for both students and institutions. More focus was placed on the academic skills and performance outcomes of college students as well as on the special needs of certain niche populations like first-generation college and low-income students. Such an emphasis required institutions to identify and address student issues in more specific and direct ways using services similar to the ones offered by the Student Support Services program.

To conclude, this study focused on first-time, full-time, traditional-aged freshman students at East Tennessee State University. ETSU first-time, full time, traditional-aged freshman SSS participants were compared with eligible non-SSS participants at ETSU as well as with ETSU SSS ineligible students at ETSU. Comparisons were made across these three study groups that included their fall-to-fall retention status and their 6-year graduation status within a public 4-year university setting. Other cognitive and noncognitive demographic variables were also researched in the study. This chapter describes the population, research design, data collection, and data analysis procedures used in the study.

Population

The target population for this study was the first-time, full-time, traditional-aged freshmen students at East Tennessee State University who entered the university in the fall semesters of 2001, 2002, 2003, and 2004. According to the East Tennessee State University undergraduate catalogue for 2011, ETSU was a state-supported, coeducational institution governed by the Tennessee Board of Regents, the sixth largest higher education system in the

country. Chartered in 1909 as East Tennessee Normal School, the institution became East Tennessee State Teachers College in 1925 and, 5 years later, State Teachers College, Johnson City. Beginning in 1943, the institution was known as East Tennessee State College until 1963 when it became officially known as East Tennessee State University (ETSU, 2011). For the first time in the history of the institution, ETSU's unduplicated headcount enrollment exceeded 15,000 students in fall 2011 (ETSU Fact Book, 2011). A majority, or 75.0%, of the student population resided within 16 Tennessee counties that were less than 100 miles from the main Johnson City campus.

ETSU Student Demographics

In fall 2011, 84.0% of the undergraduate student population was enrolled full-time, with 56.0% of the undergraduate student population being female. With a mean undergraduate age of 24, the institution's undergraduate age distribution by category was as follows: 22 and under (65%), 23-24 (10.0%), and 25 and older (25.0%), (ETSU Fact Book, 2011). Ethnically, the university was quite homogeneous, 84.55% of the undergraduate student population were White, 5.85% were African American, 5.60% were two or more ethnicities, nonresident aliens, or ethnicity unknown, 1.85% were Hispanic or Latino, and 1.93% were other ethnicities (ETSU Fact Book, 2011). The mean ACT composite score for entering freshmen was 20.9.

Approximately, 46.90% of the undergraduate student population received the Federal Pell Grant and were eligible to participate in the ETSU Student Support Services program. ETSU did not maintain an official statistic related to first-generation college students status, but the ETSU Office of Institutional Research estimated a range of 33% to 49% of the student population were first-generation college students. These students were also eligible to participate in the ETSU Student Support Services program. While the aforementioned statistics only reflected the fall

2011 semester, a study of ETSU's historical trends indicates these data were indicative of the institution (East Tennessee State University, 2011).

Research Study Group Development

The target population for this research study was broken down into three specific study groups. The study groups were taken from the general student enrollment of first-time, full-time, traditional-aged freshman at East Tennessee State University who entered the university in the fall semesters of 2001, 2002, 2003, and 2004. The first-time, full-time, traditional-aged freshman SSS participants made up the first study group, SSS participants. The first-time, full-time, traditional-aged SSS eligible freshman, but non-SSS participants, made up the second study group, SSS eligible nonparticipants. The first-time, full-time, traditional-aged SSS ineligible freshman students made up the third study group, SSS ineligible students. The ETSU SSS program assisted in the study group development process by providing a listing of its first-time, full-time, traditional-aged freshman to create the SSS participants study group. Identification of the other two groups was made using data from the Free Application for Federal Student Aid (FAFSA) and the East Tennessee State University undergraduate application maintained on the ETSU's BANNER student information system. These data aided the study in sorting the non-SSS participants into the SSS eligible nonparticipants and SSS ineligible study groups by providing first-generation college student status and income level. The BANNER system also housed the additional study group data related to age, ethnicity, high school GPA, ACT score, and individual ETSU cumulative GPA that was used in the research study.

Research Design

This research study was designed to examine the academic performance, fall-to-fall retention status, and graduation status of the Student Support Services first-time, full-time,

traditional-aged freshman participants at East Tennessee State University. The study involved a quantitative research approach with aspects of both quasi-experimental and nonexperimental research designs to address the research questions. McMillan and Schumacher (2010) described quantitative research as based in the hard sciences and grounded in the positivist school of philosophy. The positivist philosophical approach emphasized objectivity and the quantification of phenomena (McMillan & Schumacher, 2010). Most of the data analysis for this research study involved a nonexperimental comparative research design. The differences in performance, persistence, and graduation outcomes among the three research study groups were compared in this research study. McMillan and Schumacher (2010) described the comparative research model as one that focused on the differences between two or more groups in a particular phenomenon or the relationships between different phenomena.

The researcher did not set out to construct a quasi-experimental design for this study, but there were similarities with a quasi-experimental research design that used a control group type structure. This research study was similar to a quasi-experimental design in that it offered no conditions where there was the possibility of manipulating the stimulus and no control through matching and randomization over competing stimuli without active intervention of the researcher (Caporaso, 1973). McMillan and Schumacher (2010) defined quasi-experimental type research designs as:

Quasi-experimental designs are those that are “almost” true experimental designs, except that the participants are not randomly assigned to group...and the researcher studies the effect of a treatment on intact groups rather than being able to randomly assign participants to the experimental or control groups. (p. 135).

Caporaso (1973) described one type of quasi-experimental design, nonequivalent control group design, as “extremely useful in judging the effects of a variable on a group where that group has assembled naturally...that has not been brought together by the experimenter for his own

purposes” (p. 12). This research study was similar to these descriptions of quasi-experimental research designs in that the three study groups occurred naturally, were intact groups, and the researcher made assignments to each group based on their participation in the SSS program (or not) and demographic characteristics. Hence, there was no random assignment to treatment and control groups. Furthermore, nonequivalent control group design was essentially an extension over the one-group pretest-posttest design, and this research study did not use a pretest-posttest structure. This was another element of this research study that limited its description as an authentic quasi-experimental, nonequivalent control group design.

To conclude, this study was based upon the following three prediction variables:

1. High-School GPA
2. ACT Score
3. ETSU cumulative GPA (cumulative college GPA after the first year)

The criterion variables were first-year fall-to-fall retention status, 6-year college graduation status, cumulative college GPA after first-year, and cumulative college GPA at graduation.

Retention was defined as re-enrolling at the institution the subsequent fall semester (e.g., fall-to-fall retention). Graduation was defined as the time at which the student completes the first baccalaureate degree.

Data Collection

The data used for this study were housed in East Tennessee State University’s BANNER student information systems as required by the Tennessee Board of Regents. The BANNER System replaced SIS as the primary means to store student data at East Tennessee State University as well as at all other Tennessee Board of Regents institutions. The ETSU, Office of Institutional Research and Outcomes Assessment, in conjunction with the ETSU Student Support

Services Program agreed to support this research study and provided the necessary data to complete the study. The ETSU Student Support Services Program provided the ETSU Office of Institutional Research and Outcomes Assessment with a list of its first-time, full-time, traditional-aged freshman students for each of the years involved with the study, 2001, 2002, 2003, and 2004. Using this list the ETSU Office of Institutional Research and Outcomes Assessment then generated three distinct research study groups out of the ETSU population of first-time, full-time, traditional-aged freshman students. The three study groups were identified simply as SSS participants, SSS eligible nonparticipants, and SSS ineligible students.

The ETSU Office of Institutional Research and Outcomes Assessment provided specific data elements for each student record contained in each of the three study groups. The age, ethnicity, gender, education level of parents, Federal Pell Grant eligibility, High-School GPA, ACT score, Cumulative GPA after the first year, and Cumulative GPA at graduation were contained in each student record. The persistence rate after the first year and the graduation rate at the sixth year were also provided for each student record contained in each of the three study groups. The retention and graduation data were then used to split each of the three study groups into its own bifurcated groups of retained or nonretained and graduates or nongraduates. The Tennessee Board of Regents used fall-to-fall persistence as its measure of student retention for the first year, and this definition was used in this research study.

The ETSU Office of Institutional Research and Outcomes Assessment extracted the data from the ETSU BANNER system and provided them to the researcher. The researcher imported the data into the IBM-Statistical Package for the Social Sciences (SPSS), version 20, for analysis. The ETSU Office of Institution Research and Outcomes Assessment ensured that the confidentiality and privacy of the student information by using an in-house process that stripped

student records of any identification that could be used to tie the data to a specific student. A randomly assigned identification number for each student data record was used in place of any identifying student information.

In observance of the ETSU Policy regarding any institutional research that involved human subjects, a “Request for Waiver” was filed with the ETSU Institutional Review Board (IRB) using IRB form 129. The ETSU IRB required approval of any research that involved human subjects. A form 129 was filed to determine if this research study used human research subjects. This study was mostly a nonexperimental quantitative research design that did not use human subjects and used secondary student data that were maintained and stored in the ETSU BANNER student information system. All identification to any specific human subjects (students) in the data was removed prior to being given to the researcher. This research study was not considered one that involved direct human subjects. The ETSU Institutional Review Board approved the Form 129 request for this research study.

Data Analysis

This research study was designed to assess the performance outcomes of first-time, full-time, traditional-aged freshman participants in the Student Support Services (SSS) program at East Tennessee State University (ETSU) for the years of 2001, 2002, 2003, and 2004. The first-time, full-time, SSS participant data were compared with the first-time, full-time, SSS eligible nonparticipant data and first-time, full-time, SSS ineligible student data. The comparison data used in the study were the academic performance (ETSU cumulative GPA) of these three study groups after their first year in college and their cumulative GPA at the point of graduation, if applicable. First-year retention status and 6-year graduation status data for the three study groups were also used for comparative data analysis in the study. Three specific independent variables

were assessed for significance in predicting first-year retention status, 6-year graduation status, ETSU cumulative GPA after the first year, and ETSU cumulative GPA at the point of graduation for each of the three study groups. The data were analyzed using appropriate statistical techniques for the hypotheses under consideration.

The IBM-SPSS version 20 was used for the statistical analysis of the data. For this study the chi squared test of significance was used to address all the comparative research questions that contained nominal data and categorical variables. All interval level data and continuous variables were analyzed using the one-way analysis of variation, ANOVA, statistical test. Prediction related research questions were addressed through multivariate linear regression analysis and the binary logistic regression statistical tests. The .05 level of significance was used as the alpha level to test the null hypotheses of all research questions.

Research Questions and Null Hypotheses

In order to appropriately compare the first-time, full-time, traditional-aged students who comprise each of the three study groups for this study (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), the following demographic characteristics and performance outcome variables from each of the target years 2001 through 2004 were generated for this study:

- age
- gender
- educational levels of mothers
- ACT score
- cumulative GPA after the first year
- first-year fall-to-fall retention status
- ethnicity
- Federal Pell-grant eligibility
- educational levels of fathers
- high school GPA
- cumulative college graduation GPA
- 6-year college graduation status

Therefore, given these variables, the following research questions guided the study:

1. Are there significant differences in age for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho1: There are no significant differences in age for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

2. Are there significant differences in ethnicity for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho2: There are no significant differences in ethnicity for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

3. Are there significant differences in gender for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho3: There are no significant differences in gender for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

4. Are there significant differences in Federal Pell Grant eligibility for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible

nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho4. There are no significant differences in Federal Pell Grant eligibility for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

5. Are there significant differences in the educational levels of the mothers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho5. There are no significant differences in the educational levels of the mothers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

6. Are there significant differences in the educational levels of the fathers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho6. There are no significant differences in the educational levels of the fathers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

7. Are there significant differences in the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho7: There are no significant differences in the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

8. Are there significant differences in the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho8: There are no significant differences in the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

9. Are there significant differences in the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho9: There are no significant differences in the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS

eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

10. Which of the variables high school GPA or ACT score better predicts the cumulative GPA after the first year for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho10. There is no association in the identified variables high school GPA and ACT score with the cumulative college GPA after the first year for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

11. Which of the variables high school GPA, ACT score, or cumulative GPA after the first year best predicts the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho11. There is no association in the identified variables high school GPA, ACT score, and cumulative college GPA after the first year, with the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

12. Which of the variables high school GPA, ACT score, or cumulative college GPA after the first year best predicts the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible

nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho12: There is no association in the identified variables high school GPA, ACT score, and cumulative college GPA after the first year, with the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

13. Which of the variables high school GPA, ACT score, or cumulative college GPA after the first year best predicts the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho13: There is no association in the identified variables high school GPA, ACT score, and cumulative college GPA after the first year, with the 6-year graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

Summary

The research methodology that includes a description of the population for the study, the research design, the data collection procedures, and the data analysis mechanisms has been outlined in Chapter 3. The population for this study is the first-time, full-time, traditional-aged freshman students at East Tennessee State University from the 2001, 2002, 2003, and 2004 cohort years. From this larger student population three distinct study groups were created with

two of the study groups working as quasi-experimental control groups. The three groups are as follows, first-time, full-time, traditional-aged freshman participants in the ETSU Student Support Service program, first-time, full-time, traditional-aged freshmen students who are SSS eligible, but nonparticipants, and first-time, full-time, traditional-aged freshman students who are ineligible to participate in the ETSU SSS program. Again, each of the first-time, full-time, traditional-aged student populations from 2001, 2002, 2003, and 2004 was broken down into these three distinct study groups, with the last two study groups, ETSU SSS eligible nonparticipants and ETSU SSS ineligible students serving as control groups. Quantitative statistical analysis was used to test the null hypotheses in relation to each of the specific research questions. Chapter 4 provides a detailed analysis of the data with summary information, tables, and figures as appropriate to facilitate the understanding and interpretation of the results. Chapter 5 includes implications and conclusions related to the study and future recommendations for future research related to the study topic.

CHAPTER 4

RESULTS AND ANALYSIS OF DATA

Thirteen research questions were developed for this study and 13 corresponding hypotheses were tested during data analysis. Descriptive statistics were produced in association with the hypothesis testing procedures and reported with each subsequent data analysis. Chi Square and ANOVA statistical tests were used to analyze the demographic and performance outcome related variables. Multivariate linear regression analysis and the binary logistic regression statistical tests were used to test the effect of the predictor variables upon the various performance outcome variables. Tables, graphs, and other aids were used when appropriate to provide a visual representation of the data.

The chapter was divided into three primary sections. The first section was devoted to the demographic variable analysis that involved the first six research questions. The second section summarized the analysis of the performance outcome variables and related research questions, while the third section provided a summation of the prediction variables analysis.

Demographic Variables Analysis

The analysis of the demographic variables involved the first-time, full-time traditional-aged freshman students who comprised the three study groups, the SSS participants, the SSS eligible nonparticipants, and the SSS ineligible students. These three study groups were created from the 2001, 2002, 2003, and 2004 cohort populations of freshman students at East Tennessee State University. Demographic variables were researched in order to assess and understand the characteristics inherent to each of the three study groups. The demographic variables researched in this study were age, ethnicity, gender, Federal Pell Grant eligibility, and education level of parents.

Research Question 1: Age

Are there significant differences in age for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho1: There are no significant differences in age for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A one-way analysis of variation was conducted to evaluate the null hypothesis that there are no differences in age among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). The ANOVA was not significant, $F(2, 3924) = 1.32, p = .27$. Therefore, the null hypothesis Ho1 was retained. There are no statistical differences in age for the first-time, full-time, traditional-aged students in the three study groups. SSS participants ($M = 18.04, SD = .38$) were similar in age to the SSS eligible nonparticipants ($M = 17.99, SD = .44$) and the SSS ineligible students ($M = 17.99, SD = .41$). The 95% confidence interval for differences in means ranged from 17.91 to 18.10. The strength of the relationship between the three study groups and age as assessed by η^2 was weak, with the three study groups accounting for only .1% of the variance of the dependent variable age.

Because the variances among the three study groups ranged from .14 to .17 and there were no significant differences found among the three study groups, follow-up tests were not conducted to evaluate pairwise differences among the means. Descriptive statistics and the 95% confidence interval for differences in means for the three study groups are reported in Table 1.

Table 1

Descriptive Statistics and 95% Confidence Intervals for Differences in Mean Changes in Age for SSS Participants, SSS Eligible Nonparticipants, and SSS Ineligible Students

Group	<i>n</i>	<i>M</i>	<i>SD</i>	95% CI
SSS Participants	211	18.04	.38	[17.98, 18.10]
SSS Eligible Nonparticipants	2,102	17.99	.44	[17.97, 18.01]
SSS Ineligible Students	1,614	17.99	.41	[17.97, 18.02]

Research Question 2: Ethnicity

Are there significant differences in ethnicity for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho2: There are no significant differences in ethnicity for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A two-way contingency table analysis was conducted to evaluate the null hypothesis that there are no significant differences in ethnicity among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). The analysis indicated that there were significant differences in ethnicity among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), $X^2(8, N = 3864) = 31.02, p < .001$, Cramer's $V = .06$. Therefore, the null hypothesis Ho2 was rejected. The proportions of white and black students were highest in each of the three study groups. The SSS participant group had 88.50%

white students and 10.10% black students; whereas the SSS eligible nonparticipant group had 90.60% white students and 7% black students. The SSS ineligible groups had 93.90% white students and 3.50% black students.

Follow-up pairwise comparisons were conducted to evaluate the level of significance among the three study groups. The Holm’s Sequential Bonferroni method was used to control for Type 1 error at the .05 level across all three comparisons. Two pairwise differences were found to be significant among the three study groups. Significant differences in ethnicity were found between the SSS participants and the SSS ineligible students study groups, $X^2(4, N = 1794) = 21.52, p < .001$, Cramer’s $V = .11$ and between the SSS eligible nonparticipants and the SSS ineligible students study groups, $X^2(4, N = 3656) = 22.55, p < .001$, Cramer’s $V = .08$. However, differences in ethnicity between the SSS participants study group and the SSS eligible nonparticipants study group were not significant, $X^2(4, N = 2278) = 3.92, p = .42$, Cramer’s $V = .04$. Table 2 shows the results of these analyses.

Table 2

Results for the Pairwise Comparisons Regarding Ethnicity Among the Three Study Groups Using the Holm’s Sequential Bonferroni Method

Comparison	Pearson chi-square	<i>p</i> value (Alpha)	Cramer’s <i>V</i>
SSS Participants vs. SSS Ineligible Students	21.52*	< .001(.017)	.11
SSS Eligible Nonparticipants vs. SSS Ineligible Students	22.55*	< .001(.025)	.08
SSS Participants vs. SSS Eligible Nonparticipants	3.92	.42 (.050)	.04

* $p < .001$

Research Question 3: Gender

Are there significant differences in gender for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho3: There are no significant differences in gender for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A two-way contingency table analysis was conducted to evaluate the null hypothesis that there are no significant differences in gender among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). The analysis indicated that there were no significant differences in gender among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), $X^2(2, N = 3927) = 3.33, p = .19, \text{Cramer's } V = .03$. Therefore, the null hypothesis Ho3 was retained. Table 3 shows the gender breakdown for the three study groups.

Table 3

Gender Analysis of SSS Participants, SSS Eligible Nonparticipants, and SSS Ineligible Students

Group	Females		Males	
	<i>n</i>	%	<i>n</i>	%
SSS Participants	136	64.5	75	35.5
SSS Eligible Nonparticipants	1,241	59.0	861	41.0
SSS Ineligible Students	935	57.9	679	42.1
Total	2,312	58.9	1,615	41.0

Research Question 4: Federal Pell Grant Eligibility

Are there significant differences in Federal Pell Grant eligibility for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho4. There are no significant differences in Federal Pell Grant eligibility for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A two-way contingency table analysis was conducted to evaluate the null hypothesis that there are no significant differences in Federal Pell Grant eligibility among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). The analysis indicated that there were significant differences in Federal Pell Grant eligibility among the three

study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), $X^2(2, N = 3925) = 1730.78, p < .001$, Cramer's $V = .66$. Therefore, the null hypothesis Ho4 was rejected. Table 4 provides the proportions of both Federal Pell Grant eligible and ineligible students among the three study groups.

Table 4

Analysis of Federal Pell Grant Eligibility Among SSS Participants, SSS Eligible Nonparticipants, and SSS Ineligible Students

Group	Pell Grant Eligible		Pell Grant Ineligible	
	<i>n</i>	%	<i>n</i>	%
SSS Participants	124	59.3	85	40.7
SSS Eligible Nonparticipants	1,393	66.3	709	33.7
SSS Ineligible Students	0	0	1,614	100
Total	1,517	38.6	2,408	61.4

Follow-up pairwise comparisons were conducted to evaluate the level of significance among the three study groups. The Holm's Sequential Bonferroni method was used to control for Type 1 error at the .05 level across all three comparisons. Pairwise differences were found to be significant among all three of the study groups. Significant differences in Federal Pell Grant eligibility were found between the SSS eligible nonparticipants and the SSS ineligible students study groups, $X^2(1, N = 3716) = 1710.99, p < .001$, Cramer's $V = .68$, the SSS participants and the SSS ineligible students study groups, $X^2(1, N = 1823) = 1027.48, p < .001$, Cramer's $V = .75$, and between the SSS participants and the SSS eligible nonparticipants study groups, $X^2(1, N = 2311) = 4.06, p = .04$, Cramer's $V = .04$. Table 5 shows the results of these analyses.

Table 5

Results for the Pairwise Comparisons Regarding Federal Pell Grant Eligibility Among the Three Study Groups Using the Holm's Sequential Bonferroni Method

Comparison	Pearson chi-square	<i>p</i> value (Alpha)	Cramer's <i>V</i>
SSS Eligible Nonparticipants vs. SSS Ineligible Students	1,710.99**	< .001 (.017)	.68
SSS Participants vs. SSS Ineligible Students	1,027.48**	< .001 (.025)	.75
SSS Participants vs. SSS Eligible Nonparticipants	4.08*	.04 (.050)	.04

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

Research Question 5: Educational Levels of Mothers

Are there significant differences in the educational levels of mothers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho5: There are no significant differences in the educational levels of mothers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A two-way contingency table analysis was conducted to evaluate the null hypothesis that there are no significant differences in the educational levels of mothers for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible

nonparticipants, and SSS ineligible students). The analysis indicated that there were significant differences in the educational levels of mothers among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), $X^2(6, N = 3927) = 1128.09, p < .001$, Cramer's $V = .38$. Therefore, the null hypothesis H_05 was rejected. Table 6 shows the proportions of the educational levels of mothers for the three study groups.

Table 6

Analysis of the Educational Levels of Mothers Among the Three Study Groups

Group	Middle School		High School		College or Beyond		Other or Unknown	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
SSS Participants	17	8.1	149	70.6	35	16.6	10	4.7
SSS Eligible Nonparticipants	141	6.7	1,446	68.8	445	21.2	70	3.3
SSS Ineligible Students	4	0.2	364	22.2	1,177	72.9	69	4.3
Total	162	4.1	1,959	49.9	1,657	42.2	149	3.8

The SSS ineligible students were 4.39 times as likely (72.9%) as the SSS participants (16.6%) to have mothers with some level of college education or beyond.

Follow-up pairwise comparisons were conducted to evaluate the level of significance among the three study groups. The Holm's Sequential Bonferroni method was used to control for Type 1 error at the .05 level across all three comparisons. Two pairwise differences were found to be significant among the three study groups. Significant differences in the educational levels of mothers were found between the SSS participants and the SSS ineligible students study groups, $X^2(3, N = 1825) = 341.52, p < .001$, Cramer's $V = .43$ and the SSS eligible

nonparticipants and the SSS ineligible students study groups, $X^2(3, N = 3716) = 1060.81, p < .001$, Cramer's $V = .53$. However, no significant differences in the educational levels of mothers were found between the SSS participants and the SSS eligible nonparticipants study groups, $X^2(3, N = 2313) = 3.65, p = .30$, Cramer's $V = .04$. Table 7 shows the results of these analyses.

Table 7

Results for the Pairwise Comparisons Regarding Educational Levels of Mothers Among the Three Study Groups Using the Holm's Sequential Bonferroni Method

Comparison	Pearson chi-square	<i>p</i> value (Alpha)	Cramer's <i>V</i>
SSS Participants vs. SSS Ineligible Students	341.52*	< .001 (.017)	.43
SSS Eligible Nonparticipants vs. SSS Ineligible Students	1,060.81*	< .001 (.025)	.53
SSS Participants vs. SSS Eligible Nonparticipants	3.65	.30 (.050)	.04

* $p < .001$

Research Question 6: Educational Levels of Fathers

Are there significant differences in the educational levels of fathers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

H₀₆: There are no significant differences in the educational levels of fathers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible

nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A two-way contingency table analysis was conducted to evaluate the null hypothesis that there are no significant differences in the educational levels of fathers for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). The analysis indicated that there were significant differences in the educational levels of fathers among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), $X^2(6, N = 3926) = 1152.18, p < .001$, Cramer's $V = .38$. Therefore, the null hypothesis H_0 was rejected. The SSS ineligible students were 4.38 times as likely (71%) as the SSS participants (16.2%) to have fathers with some level of college education or beyond. Table 8 shows the proportions of the educational levels of fathers for the three study groups.

Table 8

Analysis of the Educational Levels of Fathers Among the Three Study Groups

Group	Middle School		High School		College or Beyond		Other or Unknown	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
SSS Participants	22	9.5	141	67.1	34	16.2	15	7.1
SSS Eligible Nonparticipants	189	9.0	1,414	67.3	377	17.9	122	5.8
SSS Ineligible Students	28	1.7	367	22.7	1,146	71.0	73	4.5
Total	237	6.0	1,922	49.0	1,557	39.7	210	5.3

Follow-up pairwise comparisons were conducted to evaluate the level of significance among the three study groups. The Holm's Sequential Bonferroni method was used to control for Type 1 error at the .05 level across all three comparisons. Two pairwise differences were found to be significant among the three study groups. Significant differences in the educational levels of fathers were found between the SSS participants and the SSS ineligible students study groups, $X^2(3, N = 1824) = 263.34, p < .001$, Cramer's $V = .38$ and the SSS eligible nonparticipants and the SSS ineligible students study groups, $X^2(3, N = 3716) = 1090.27, p < .001$, Cramer's $V = .54$. However, no significant differences in the educational levels of fathers were found between the SSS participants and the SSS eligible nonparticipants study groups, $X^2(3, N = 2312) = 0.97, p = .81$, Cramer's $V = .02$. Table 9 shows the results of these analyses.

Table 9

Results for the Pairwise Comparisons Regarding Educational Levels of Fathers Among the Three Study Groups Using the Holm's Sequential Bonferroni Method

Comparison	Pearson chi-square	<i>p</i> value (Alpha)	Cramer's <i>V</i>
SSS Participants vs. SSS Ineligible Students	263.34*	< .001 (.017)	.38
SSS Eligible Nonparticipants vs. SSS Ineligible Students	1,090.27*	< .001 (.025)	.54
SSS Participants vs. SSS Eligible Nonparticipants	0.97	.81 (.050)	.02

* $p < .001$

Performance Outcome Variables Analysis

The analysis of the performance outcome variables involved the first-time, full-time traditional-aged freshman students who comprised the three study groups, the SSS participants, the SSS eligible nonparticipants, and the SSS ineligible students. As explained, these three study groups were created from the 2001, 2002, 2003, and 2004 cohort populations of freshman students at East Tennessee State University. Because of the nature of this study population, it was assumed that there were differences in the performance outcome variables among the three study groups. These assumptions were bolstered by the significant differences found among the three study groups when the demographic variables were considered previously in the study. The performance outcome variables researched in this study were ACT score, cumulative GPA after the first year, first-year fall-to-fall retention status, high school GPA, cumulative college graduation GPA, and 6-year college graduation status.

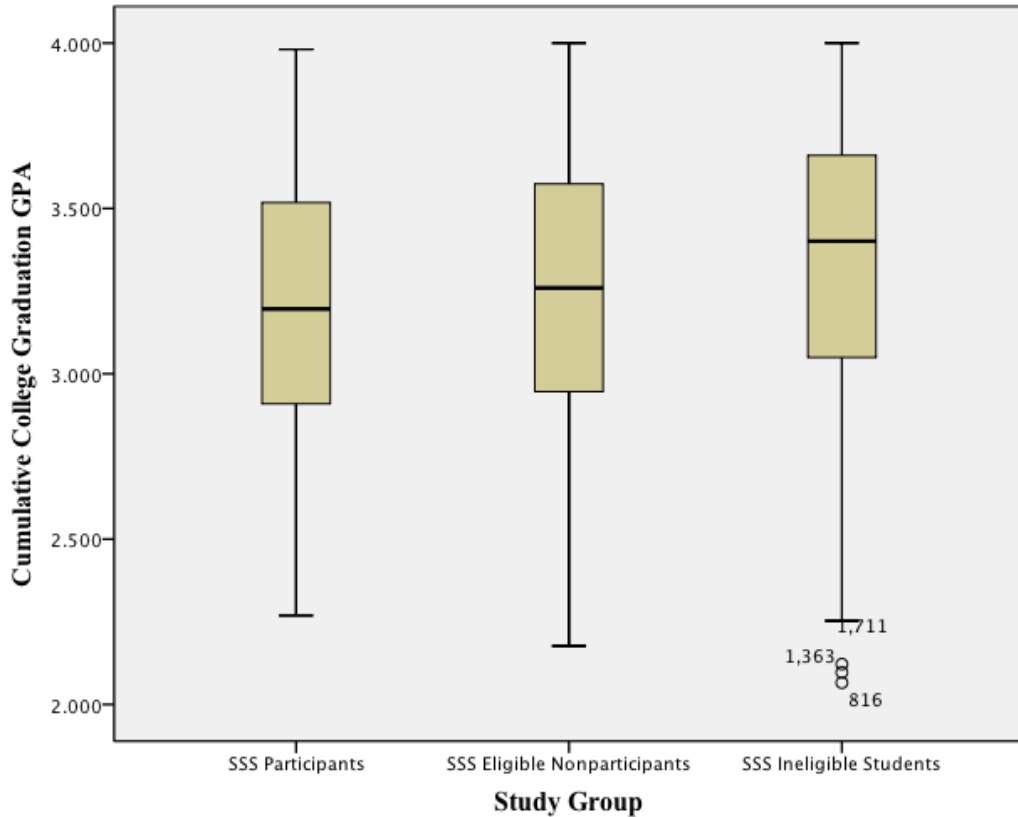
Research Question 7: Cumulative College Graduation GPA

Are there significant differences in the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho7: There are no significant differences in the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A one-way analysis of variation was conducted to evaluate the null hypothesis that there are no differences in cumulative college graduation GPA among the three study groups (SSS

participants, SSS eligible nonparticipants, and SSS ineligible students). The ANOVA was significant, $F(2, 1693) = 11.17, p < .001$. Therefore, the null hypothesis H_07 was rejected. There were statistical differences in cumulative college graduation GPA for the first-time, full-time, traditional-aged students among the three study groups. However, the strength of the relationship between the three study groups and cumulative college graduation GPA, as assessed by η^2 , was weak, with participation in one of the three study groups accounting for only .1% of the variance of the dependent variable cumulative college graduation GPA. Descriptive statistics showed that the SSS participants ($M = 3.20, SD = .40$) were similar in cumulative college graduation GPA to the SSS eligible nonparticipants ($M = 3.24, SD = .42$). The SSS ineligible students ($M = 3.33, SD = .41$) were only slightly different in mean and standard deviation from the other two study groups. Figure 1 shows boxplots of the cumulative college graduation GPA for the three study groups.



o = an observation that lies outside the interquartile range

Note: SSS Participants = 103, SSS Eligible Nonparticipants = 766, SSS Ineligible students = 827

Figure 1. Boxplots of the Cumulative College Graduation GPA for SSS Participants, SSS Eligible Nonparticipants, and SSS Ineligible Students

Follow-up tests were conducted to evaluate pairwise differences among the means. The variances among the three study groups ranged from .16 to .17 and appeared to be homogeneous. Typically when variances were found to be homogenous, the Tukey HSD post hoc test was sufficient to address pairwise differences among means and control for Type I error across the pairwise comparisons. Based on the Tukey HSD test, there were significant pairwise differences in means between the SSS participants and SSS ineligible students and between the SSS eligible nonparticipants and SSS ineligible students. However, there were no significant pairwise differences in means between the SSS participants and SSS eligible nonparticipants. The 95%

confidence intervals for the pairwise differences in means and the means and standard deviations for each of the three study groups are reported in Table 10.

Table 10

Descriptive Statistics and 95% Confidence Intervals for Differences in Mean Changes in Cumulative College Graduation GPA for SSS Participants, SSS Eligible Nonparticipants, and SSS Ineligible Students

Group	<i>M</i>	<i>SD</i>	SSS Participants	SSS Eligible Nonparticipants
SSS Participants	3.20	.40		
SSS Eligible Nonparticipants	3.24	.42	-.14 to .06	
SSS Ineligible Students	3.33	.41	-.23 to -.03*	-.14 to -.04*

*. The mean difference is significant at the .05 level

Research Question 8: First-year Fall-to-Fall Retention Status

Are there significant differences in the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho8: There are no significant differences in the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A two-way contingency table analysis was conducted to evaluate the null hypothesis that there are no significant differences in the first-year fall-to-fall retention status for the first-time,

full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). The analysis indicated that there were significant differences in the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), $X^2(2, N = 3927) = 54.89, p < .001$, Cramer's $V = .12$. Therefore, the null hypothesis Ho8 was rejected. Table 11 provides the proportions of both the retained and nonretained students in the three study groups.

Table 11

Analysis of the First-Year Fall-to-Fall Retention Status for the First-Time, Full-Time, Traditional-Aged Students in the Three Study Groups

Group	Retained		Nonretained	
	<i>n</i>	%	<i>n</i>	%
SSS Participants	176	83.4	35	16.6
SSS Eligible Nonparticipants	1,398	66.5	704	33.5
SSS Ineligible Students	1,224	75.8	390	24.2
Total	2,798	71.3	1,129	28.7

Follow-up pairwise comparisons were conducted to evaluate the level of significance among the three study groups. The Holm's Sequential Bonferroni method was used to control for Type 1 error at the .05 level across all three comparisons. Pairwise differences were found to be significant among all three of the study groups. Significant differences in the first-year fall-to-fall retention status were found between the SSS participants and the SSS eligible nonparticipants

study groups, $X^2(1, N = 2313) = 25.20, p < .001$, Cramer's $V = .10$, between the SSS eligible nonparticipants and the SSS ineligible students study groups, $X^2(1, N = 3716) = 38.25, p < .001$, Cramer's $V = .10$, and between the SSS participants and the SSS ineligible students study groups, $X^2(1, N = 1825) = 5.99, p \leq .01$, Cramer's $V = .05$. The probability that a first-time, full-time, traditional-aged freshman not be retained was about 2.02 times (.34/.17) more likely for SSS eligible nonparticipants when compared to the SSS participants. Table 12 shows the results of the pairwise comparison analyses.

Table 12

Results for the Pairwise Comparisons Regarding First-Year Fall-to-Fall Retention Status in the Three Study Groups Using the Holm's Sequential Bonferroni Method

Comparison	Pearson chi-square	p value (Alpha)	Cramer's V
SSS Participants vs. SSS Eligible Nonparticipants	25.20**	< .001 (.017)	.10
SSS Eligible Nonparticipants vs. SSS Ineligible Students	38.25**	<.001 (.025)	.10
SSS Participants vs. SSS Ineligible Students	5.995*	.01 (.050)	.05

* $p \leq .01$, ** $p < .001$

Research Question 9: 6-year College Graduation Status

Are there significant differences in the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho9: There are no significant differences in the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A two-way contingency table analysis was conducted to evaluate the null hypothesis that there are no significant differences in the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). The analysis indicated that there were significant differences in the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), $X^2(2, N = 3927) = 84.36, p < .001$, Cramer's $V = .15$. Therefore, the null hypothesis Ho9 was rejected. The probability that a first-time, full-time, traditional-aged freshman not graduate in 6 years was about 1.25 times (.64/.51) more likely for SSS eligible nonparticipants as opposed to the SSS participants. Table 13 provides the proportions of both the graduated and nongraduated students (6-year rate) in the three study groups.

Table 13

Analysis of the 6-Year College Graduation Status for the First-Time, Full-Time, Traditional-Aged Students in the Three Study Groups

Group	Graduated		Nongraduated	
	<i>n</i>	%	<i>n</i>	%
SSS Participants	103	48.8	108	51.2
SSS Eligible Nonparticipants	766	36.4	1,336	63.6
SSS Ineligible Students	827	51.2	787	48.8
Total	1,696	43.2	2,231	56.8

Follow-up pairwise comparisons were conducted to evaluate the level of significance among the three study groups. The Holm's Sequential Bonferroni method was used to control for Type 1 error at the .05 level across all three comparisons. Significant pairwise differences in the 6-year college graduation status were found between the SSS participants and the SSS eligible nonparticipants study groups, $X^2(1, N = 2313) = 12.52, p < .001$, Cramer's $V = .07$ and between the SSS eligible nonparticipants and the SSS ineligible students study groups, $X^2(1, N = 3716) = 81.63, p < .001$, Cramer's $V = .15$. However, no significant differences in the 6-year college graduation status were found between the SSS participants and the SSS ineligible students study groups, $X^2(1, N = 1825) = 0.44, p = .51$, Cramer's $V = .02$. Table 14 shows the results of the pairwise comparison analyses.

Table 14

Results for the Pairwise Comparisons Regarding the 6-Year College Graduation Status in the Three Study Groups Using the Holm's Sequential Bonferroni Method

Comparison	Pearson chi-square	<i>p</i> value (Alpha)	Cramer's <i>V</i>
SSS Participants vs. SSS Eligible Nonparticipants	12.52*	< .001 (.017)	.07
SSS Eligible Nonparticipants vs. SSS Ineligible Students	81.63*	< .001 (.025)	.15
SSS Participants vs. SSS Ineligible Students	0.44	.51 (.050)	.02

**p* < .001

Prediction Variables Analysis

The analysis of the prediction variables involved the first-time, full-time traditional-aged freshman students who comprised the three study groups, the SSS participants, the SSS eligible nonparticipants, and the SSS ineligible students. As previously explained, these three study groups were created from the 2001, 2002, 2003, and 2004 freshman cohort populations at East Tennessee State University. After careful consideration, it was determined that these analyses would involve all three study groups and not be differentiated between the three distinct study groups, as had been done with the demographic and performance outcome variables. The intent of the prediction variable analysis was to determine the association between the identified prediction and criterion variables for the four freshman cohorts involved with the study. The prediction variables researched in this study were high school GPA, ACT score, and cumulative college GPA after the first year. The criterion variables researched were cumulative college GPA

after the first-year, cumulative college graduation GPA, fall-to-fall retention status, and 6-year college graduation status.

Research Question 10: Predicting First-Year Cumulative College GPA

Which of the variables high school GPA or ACT score better predicts the cumulative GPA after the first year for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho10: There is no association in the identified variables high school GPA and ACT score with the cumulative college GPA after the first year for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A multiple regression analysis was conducted to evaluate how well high school GPA and ACT score predicted the cumulative college GPA after the first year for the students in the three study groups. The prediction variables were high school GPA and ACT score. The criterion variable was the cumulative college GPA after the first year. The linear combinations of high school GPA and ACT score were significantly related to cumulative college GPA after the first year, $R = .56$, adjusted $R^2 = .32$, $F(2, 3885) = 901.55$, $p < .001$. Therefore, the null hypothesis, Ho10 was rejected. The sample multiple correlation coefficient was .56 and indicated that 32% of the variance of the cumulative college GPA after the first year in the sample was accounted for by the linear combination of high school GPA and ACT score. Table 15 presents the mean, standard deviations, and the multiple linear coefficients for ACT score and high school GPA as predictor variables.

Table 15

Descriptive Statistics and Multiple Linear Regression Coefficients for ACT Score and High School GPA as Predictor Variables

Variables	<i>M</i>	<i>SD</i>	<i>B</i>	<i>t</i>	<i>p</i>
ACT Score	22.06	3.94	.03	7.91	< .001
High School GPA	3.28	0.51	.95	31.01	< .001

All the bivariate and partial correlations between high school GPA, ACT score, and cumulative college GPA after the first year were positive and significant ($p < .001$). However, high school GPA (.55) appeared to be the stronger predictor of the cumulative college GPA after the first year when compared to ACT score (.39). Table 16 reports the correlations.

Table 16

Bivariate Correlations and Partial Correlations of the Predictor Variables

Predictors	Correlation between each predictor and the criterion variable	Correlation between each predictor and the criterion variable controlling for all other predictors
ACT Score	.39*	.13*
High School GPA	.55*	.45*

* $p < .001$

Research Question 11: Predicting Cumulative College Graduation GPA

Which of the variables high school GPA, ACT score, or cumulative GPA after the first year best predicts the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho11: There is no association in the identified variables high school GPA, ACT score, and cumulative GPA after the first year with the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A multiple regression analysis was conducted to evaluate how well high school GPA, ACT score, and cumulative college GPA after the first year predicted the cumulative college graduation GPA for the students in the three study groups. The prediction variables were high school GPA, ACT score, and cumulative college GPA after the first year. The criterion variable was the cumulative college graduation GPA. The linear combinations of high school GPA, ACT score, and cumulative college GPA after the first year were significantly related to the cumulative college graduation GPA, $R = .81$, adjusted $R^2 = .65$, $F(3, 1689) = 1047.24$, $p < .001$. Therefore, the null hypothesis, Ho11 was rejected. The sample multiple correlation coefficient was .81 and indicated that 65% of the variance of the cumulative college graduation GPA in the sample was accounted for by the linear combination of high school GPA, ACT score, and the cumulative college GPA after the first year. Table 17 presents the mean, standard deviations, and the multiple linear coefficients for ACT score and high school GPA as predictor variables.

Table 17

Descriptive Statistics and Multiple Linear Regression Coefficients for ACT Score, High School GPA, and Cumulative College GPA After the First Year as Predictor Variables

Variables	<i>M</i>	<i>SD</i>	<i>B</i>	<i>t</i>	<i>p</i>
ACT Score	23.10	3.93	.01	4.94	< .001
High School GPA	3.49	.42	.22	11.95	< .001
Cumulative College GPA After 1 st Year	3.19	.51	.50	33.49	< .001

All the bivariate and partial correlations between high school GPA, ACT score, and cumulative college GPA after the first year were positive and significant ($p < .01$). However, cumulative college GPA after the first year (.78) appeared to be the strongest predictor of the cumulative college graduation GPA when compared to both ACT score (.50) and high school GPA (.62). This was especially true when cumulative college GPA after the first year (.63) was correlated with the criterion variable while controlling for the other two predictor variables, ACT score (.02) and high school GPA (.28). Table 18 reports the correlations of the predictor variable with the criterion variable.

Table 18

Bivariate Correlations and Partial Correlations of the Predictor Variables

Predictors	Correlation between each predictor and the criterion variable	Correlation between each predictor and the criterion variable controlling for all other predictors
ACT Score	.50*	.02*
High School GPA	.62*	.28*
Cumulative College GPA After 1 st Year	.78*	.63*

* $p < .001$

Research Question 12: Predicting Fall-to-Fall Retention Status

Which of the variables high school GPA, ACT score, or cumulative college GPA after the first year best predicts the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho12: There is no association in the identified variables high school GPA, ACT score, and cumulative college GPA after the first year with the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A binary logistic regression analysis was completed to evaluate the association of high school GPA, ACT score, and cumulative GPA after the first year with the first year fall-to-fall retention status for the students in the three study groups. The criterion variable, fall-to-fall retention status was a binary or dichotomous variable in which, 1 = yes, or retained through to the following fall semester and 0 = no, not retained through to the following semester. The logistic regression was the most appropriate statistical test to employ in order to predict the probability that the students in the three study groups would be retained through their first year to the following fall semester. A test of the full model versus a constant only model was statistically significant, $X^2(3, 3927) = 1380.13, p < .001$. Therefore, the H_0 null hypothesis was rejected. The predictors as a set were reliable to distinguish between those who would be retained through their first year to the following fall semester and those who would not be retained through their first year to the following fall semester.

Nagelkerke's R^2 of .43 indicated a moderately positive relationship between the prediction and the grouping. The model was able to correctly predict first-year fall-to-fall retention status with an 84% success rate (95.5% retained vs. 54.7% not-retained). The Wald X^2 statistic indicated that each of the three predictor variables, high school GPA, ACT score, and cumulative college GPA after the first year, had a significant relationship with the criterion variable first-year fall-to-fall retention status. The odds ratio statistic, which was similar to a measure of effect size, indicated that the strongest positive relationship was between cumulative college GPA after the first-year and fall-to-fall retention. When cumulative college GPA after the first-year is raised one unit, from a 3.0 to a 4.0 for example, a student is 5.5 times more likely to persist through the first year to the following fall semester. Table 19 shows the mean, standard

deviations, logistic regression coefficients, Wald's test scores, and odds ratio for each of the three predictors.

Table 19

Descriptive Statistics, Binary Logistic Regression Coefficients, Wald Tests, and Odd Ratios for ACT Score, High School GPA, and Cumulative College GPA After the First Year as the Predictor Variables

Variables	<i>M</i>	<i>SD</i>	<i>B</i>	Wald X^2	<i>p</i>	Odds Ratio
ACT Score	23.10	3.93	-0.03	5.24	< .05	.97
High School GPA	3.49	0.42	-0.26	5.51	< .05	.77
Cumulative College GPA After 1 st Year	3.19	0.51	1.71	675.92	< .001	5.51

Research Question 13: Predicting 6-Year College Graduation Status

Which of the variables high school GPA, ACT score, or cumulative college GPA after the first year best predicts the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

Ho13: There is no association in the identified variables high school GPA, ACT score, and cumulative college GPA after the first year with the 6-year graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004.

A binary logistic regression analysis was completed to evaluate the association of high school GPA, ACT score, and cumulative GPA after the first year with the 6-year graduation status for the students in the three study groups. The criterion variable, 6-year graduation status was a binary or dichotomous variable in which, 1 = yes, or graduated prior to or by the completion of their sixth year in college, and 0 = no, not graduate prior to or by the completion of their sixth year in college. A test of the full model versus a constant only model was statistically significant, $X^2(3, 3927) = 1338.48, p < .001$. Therefore, the Ho13 null hypothesis was rejected. The predictors as a set were reliable to distinguish between those who would graduate prior to or by their sixth year in college and those who would not graduate prior to or by their sixth year in college.

Nagelkerke's R^2 of .39 indicated a moderately positive relationship between the prediction and the grouping. The model was able to correctly predict the 6-year graduation status with a 73% success rate (74% success rate in predicting no graduation by the sixth year vs. 70% success rate in predicting graduation prior to or by the sixth year). The Wald X^2 statistic indicated that each of the three predictor variables, high school GPA, ACT score, and cumulative college GPA after the first year, had a significant relationship with the criterion variable, 6-year graduation status. The odds ratio for cumulative college GPA after the first year indicated it alone had the strongest positive relationship with the 6-year graduation status. When cumulative college GPA after the first-year is raised one unit, from a 3.0 to a 4.0 for example, a student is 5.05 times more likely to graduate prior to or by their sixth year in college. Table 20 shows the mean, standard deviations, logistic regression coefficients, Wald's test scores, and odds ratio for each of the three predictors.

Table 20

Descriptive Statistics, Binary Logistic Regression Coefficients, Wald Tests, and Odd Ratios for ACT Score, High School GPA, and Cumulative College GPA After the First Year as the Predictor Variables

Variables	<i>M</i>	<i>SD</i>	<i>B</i>	Wald X^2	<i>p</i>	Odds Ratio
ACT Score	23.10	3.93	-0.03	7.81	≤ .01	.97
High School GPA	3.49	0.42	-0.62	35.26	< .001	1.86
Cumulative College GPA After 1 st Year	3.19	0.51	1.62	467.09	< .001	5.51

Summary

Chapter 4 presented the 13 research questions along with the 13 associated hypotheses. The statistical test and subsequent data analyses were also provided as well as the related tables and figures for a visual representation. Chapter 5 summarizes and interprets the findings then presents the conclusions based upon the analyses. In closing, the limitations of the study, recommendations for practice, and recommendations for future research are presented in full in Chapter 5.

CHAPTER 5

SUMMARY, CONCLUSIONS, IMPLICATIONS FOR PRACTICE, AND RECOMMENDATIONS FOR FUTURE RESEARCH

Summary of the Study

The American College Testing Program (ACT) reported that both college retention and graduation rates have declined over the last decade. Their most recent higher education policy publication showed that nationally the first-to-second-year-retention rate in 1989 was 74.7% and by 2009 it had dropped to 65.9% (ACT, 2009). The publication also noted that the 5-year graduation rate during the same period had dropped from 55.1% to 52.7% (ACT, 2009). Although there is no 10-year comparison of 6-year graduation rates, ACT did report that in the 2008 the 6-year graduation rate was 55.6%, which is only several tenths of one percentage point higher than the 5-year graduation rate in 1989 (55.1%). These data points supported the assumption that the length of time to complete a baccalaureate degree has increased for most American college students. These declines were specifically related to first-generation and low-income college students and to the universities themselves.

Due to declines in both fall-to-fall retention and 6-year graduation rates, many state level colleges and universities became focused on the significant needs of their students, especially high-risk college students. This student population included first-generation college and low-income students and many other niche oriented student populations. The specific focus on high-risk college students became part of an institution's broader strategy to improve the overall retention and graduation rates at their institutions (Franklin & Streeter, 1991; London, 1989; Riehl, 1994; Santa Rita & Bacote, 1997; Ting, 1998). In 1968 the federal government created the Student Support Services program to serve first generation and low-income students at

America's institutions of higher learning. The intent was for this program to serve as a model for colleges and universities regarding the appropriate means by which to engage this challenging demographic of students (Mitchem, 1997).

In 1976 East Tennessee State University (ETSU) received a grant to develop a Student Support Services program on its campus. The university has maintained continuous funding for the program since that time. The main goal of the program was to support the advancement of individual college students through higher education and toward the completion of their first baccalaureate degree (ETSU, 2010). The ETSU SSS program has maintained an excellent record of student support for first generation and low-income college students. This was shown in the program's continued high student retention and graduation rates (ETSU, 2010). However, the SSS program at ETSU has not completed any formal comparative analysis of how their student participants perform when compared to the overall student population at ETSU, particularly the SSS eligible nonparticipants and the students who are ineligible to participate in the SSS program.

The purpose of this study was to examine the academic performance of the first-time, full-time, traditional-aged students in the Student Support Services program at East Tennessee State University by comparing their academic performance with the academic performance of first-time, full-time, traditional-aged non-SSS participants. The population for this study was the first-time, full-time, traditional-aged freshmen students at East Tennessee State University who entered the university in the fall semesters of 2001, 2002, 2003, and 2004. The population was further delineated between SSS participants, SSS eligible nonparticipants, and SSS ineligible students. These three groups became the primary study groups for the research study.

In order to appropriately compare the first-time, full-time, traditional-aged students who comprise each of the three study groups for this study (SSS participants, SSS eligible nonparticipants, and SSS ineligible students), the following demographic characteristics and performance outcome variables from each of the target years, 2001 through 2004 were generated for this study:

- age
- ethnicity
- gender
- Federal Pell-grant eligibility
- educational levels of mothers
- educational levels of fathers
- ACT score
- high school GPA
- cumulative GPA after the first year
- cumulative college graduation GPA
- first-year fall-to-fall retention status
- 6-year college graduation status

The goal of this research study was two fold. One aspect was to assess the performance of the ETSU Student Support Services program from a formal scientific position to determine the relationship between the program and student outcomes. The second aspect was oriented toward university policy. In that, if a positive relationship was found between the program and student outcomes, then the program should be used as a model for student intervention within the university as a whole. This aspect was especially important to the life of the university as the trend in higher education funding was to link funding with increased student performance outcomes, particularly retention and graduation rates (Locker, 2009).

In conclusion, both the scientific and policy aspects of this study were important to spur future research involved with the assessment or development of strategies to improve the academic performance of niche student populations, like first-generation college and low-income students at America's colleges and universities. As the funding allocation formula changes to

reflect an emphasis on the retention and graduation rates of college and universities, higher education administrators will be forced to address the needs of more niche student populations. The needs of these specific student populations could prove to be a significant policy challenge, as college and universities have tried in the past to develop a one size fits all approach to student services. This approach hasn't fully addressed individual needs or produced significant results. The Student Support Services program offers a workable model built to address a niche student population and affect change in student performance outcomes.

Summary of the Findings

The research questions were presented in Chapter 1 and operationalized in Chapter 3. A null hypothesis was provided for each research question. Both the independent and dependent variables for the research questions were drawn from the demographic and performance outcome variables created from the dataset provided by the ETSU Office of Institutional Research and Outcomes Assessment. These variables were also instrumental to the development of the prediction models used to assess the power of certain independent variables to predict performance outcome variables. One-way analysis of variance, two-way contingency table analysis, multivariate linear regression, and binary logistic regression statistical tests were used to analyze the research questions. The type of test used was dependent upon the type of research question presented in the study. For clarity, the research questions and their subsequent data analysis were organized into three sections, Demographic Variables Analysis, Performance Outcome Variables Analysis, and Prediction Variables Analysis. The .05 level of significance was used to test all 13 research questions.

Conclusions

The following conclusions were drawn from the findings in this research study. This section delineates the outcomes of the data analysis conducted to individually address the 13 research questions of this study.

Research Question 1: Age

Are there significant differences in age for the first-time, full-time, traditional-aged students among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

The ETSU Office of Institutional Research calculated the ages for the students in each of the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) based on their chronological age on the first day of class and provided them in the dataset for the study. Descriptive statistics indicated that the mean age for the population was 17.99 with a standard deviation of .421. SSS participants had a mean age of 18.04, while the SSS eligible nonparticipants and SSS ineligible students had a mean age of 17.99. A one-way analysis of variance indicated that there was no significant difference in age among the three study groups.

Considering that the population sample involved first-time, full-time, traditional-aged freshman students, it was not surprising that the results for this analysis were found to be insignificant in the study. The analysis was to determine the nature of this demographic variable within the population sample. It was also important to determine any distinct differences in age among the three study groups for the sake of parity in age among the three study groups. However, questions of age, particularly differences in performance outcomes based on age would warrant future research.

Research Question 2: Ethnicity

Are there significant differences in ethnicity for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A two-way contingency table analysis indicated that there were significant differences in ethnicity among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). The SSS participant group had 88.5% white students and 10.1% black students. The SSS eligible non-participant group had 90.6% white students and 7% black students and the SSS ineligible group had 93.9% white students and 3.5% black students. Significant differences in ethnicity were found between the SSS participants and the SSS ineligible students study groups and between the SSS eligible nonparticipants and the SSS ineligible students study groups. However, differences in ethnicity between the SSS participants study group and the SSS eligible nonparticipants study group were not significant.

Like age, ethnicity was used as a baseline to determine the demographic nature of the three study groups. It was important to understand the breakdown of ethnicity among the three study groups from a demographic perspective. The research literature was clear that more minority students make up the first-generation college and low-income college student population (Chen, 2005; Pascarella et al., 2004;). Therefore, it was not surprising that the SSS participants and SSS eligible nonparticipants study groups had a higher minority representation than the SSS ineligible students study group. Historically, the SSS program has had a significantly higher minority representation (Mitchem, 1997). However, it was not the intent of this researcher to quantify or elaborate on ethnicity as it relates to educational outcomes.

Research Question 3: Gender

Are there significant differences in gender for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A two-way contingency table analysis indicated there were no significant differences in gender among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). Like age and ethnicity, gender was used as means to address the demographic nature of the three study groups. All of the three study groups were equal on the question of gender. Each group was roughly 60% female and 40% male. This was one of the most interesting results regarding the demographic nature of the three study groups. Future research would be warranted to understand this trend and draw conclusions about its overall impact to higher education and the ETSU community.

Research Question 4: Federal Pell Grant Eligibility

Are there significant differences in Federal Pell Grant eligibility for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A two-way contingency table analysis indicated that there were significant differences in Federal Pell Grant eligibility among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). Significant differences in Federal Pell Grant eligibility were found between all of the three study groups. The Pell Grant eligibility question was used to determine low-income college student status, as Pell Grant eligible students are by definition low-income college students. Low-income student status was important to the study

because this was a criterion required for participation in the Student Support Services program and aided the process of delineating the students into the three study groups. So, by design the SSS ineligible students study group did not contain any Pell Grant eligible students. Therefore, it was anticipated that the SSS ineligible students study group would be different from the SSS participants and SSS eligible nonparticipants study groups based on this variable. However, it was not anticipated that the latter two study groups would have significant differences in Pell Grant eligibility.

Upon further examination of the results for Research Question 4, one found that the differences were merely statistically significant but not practically significant. One could argue that other factors might have contributed to this outcome. The p value between the SSS participants and SSS eligible nonparticipants was .044, which is very close to being beyond the set alpha level of .05 used to show significance between the two groups. The n for the SSS participants study group was 209 and the n for the SSS eligible nonparticipants study group was 2,102. The differences in the population sizes may have produced the significant differences between the groups given the nature of the chi-square statistical test.

Nevertheless, the importance of this analysis was to show that a significant number of students in both the SSS participant and SSS eligible nonparticipants study groups were low-income college students. The research literature was clear in explaining that low-income college students have a difficult time progressing through college to graduation and fall into the high-risk college student demographic (Horn & Chen, 1998; Horn & Premo, 1995; Wei & Horn, 2002). This finding was an important consideration in the analysis of the performance outcome variables. However, some of the research literature concerning low-income college students was inclusive and suggested future research on this topic.

Research Question 5: Educational Levels of Mothers

Are there significant differences in the educational levels of mothers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A two-way contingency table analysis indicated that there were significant differences in the educational levels of mothers among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). Significant differences in educational levels of mothers were found between the SSS participants and the SSS ineligible students study groups and also between the SSS eligible nonparticipants and the SSS ineligible students study groups. SSS ineligible students were 4.39 times as likely (72.9%) as the SSS participants (16.6%) to have mothers with some level of college education or beyond and 3.44 times as likely as the SSS eligible nonparticipants (21.2%). However, no significant differences in the educational levels of mothers were found between the SSS participants and the SSS eligible nonparticipants.

This research question was important to the study in that this demographic variable was one criterion used to determine first-generation college student status, a requirement for participation in the Student Support Services program. The educational levels of fathers were the other criterion used to establish first-generation status and was addressed in research question 6. By design, the SSS participants and the SSS eligible nonparticipants study groups contained students whose mothers had not completed a bachelor's degree. The question of first-generation college student status requires that neither parent have a bachelor's degree. The SSS ineligible students may have had some students whose mothers did not have bachelor's degree, as their fathers may have been the only bachelor's degree holder in the family, thus making them

ineligible for participation in the Student Support Services program. Some final thoughts concerning first-generation college students will be shared in the summation of research question 6.

Research Question 6: Educational Levels of Fathers

Are there significant differences in the educational levels of fathers for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A two-way contingency table analysis indicated that there were significant differences in the educational levels of fathers among the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). Significant differences in the educational levels of fathers were found between the SSS participants and the SSS ineligible students study groups and also between the SSS eligible nonparticipants and the SSS ineligible students study groups. However, no significant differences in the educational levels of fathers were found between the SSS participants and the SSS eligible nonparticipants study groups. The SSS ineligible students were 4.38 times as likely (71%) as the SSS participants (16.2%) to have fathers with some level of college education or beyond, and 3.97% as likely as the SSS eligible nonparticipants (17.9). One interesting fact about the analysis of the educational level of parents was that for the SSS eligible nonparticipants, mothers (21.2%) were 1.18 times more likely to hold a bachelor's degree than fathers (17.9).

The research literature provided support to the concept that first-generation college students faced unique barriers to success in higher education (Bowman & York-Anderson, 1991; London, 1989; Pascarella & Terenzini, 1991; Richardson & Skinner, 1992; Terenzini et al.,

1996). Ishitani (2003) and Nuñez and Cuccaro-Alamin (1998) indicated that first-generation students were less likely to persist than were those students whose parent(s) had previously attended or graduated from college. In fact, Ishitani (2003) found that first-generation students were 71.0% less likely to persist to the subsequent fall than were non-first-generation students. Chen (2005) completed research that concurred with the findings of these studies that first-generation students typically did not perform as well as their peers and were less likely to earn academic credits. Nevertheless, there was no conclusive evidence provided in the research literature that amounted to a consensus on the nature of first-generation college students and their success in higher education. This area seemed very ripe for continued exploration through additional research.

In conclusion, the demographic variable analysis was important to the study. It provided significant evidence that there was parity among the SSS participants and SSS eligible nonparticipants study groups and distinct differences in demographics between SSS ineligible students and the two groups. The SSS ineligible students acted as a sort of control group in the comparison of the SSS participants and SSS eligible nonparticipants. These comparison groups were an important consideration as the data analysis proceeded into the research questions relating to the performance outcome variables.

Research Question 7: Cumulative College Graduation GPA

Are there significant differences in the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A one-way analysis of variation indicated that there were statistical differences in cumulative college graduation GPA for the first-time, full-time, traditional-aged students among the three study groups. However, the strength of the relationship between the three study groups and cumulative college graduation GPA was weak, with participation in one of the three study groups accounting for only .1% of the difference in cumulative college graduation GPA. Descriptive statistics showed that SSS participants had a mean cumulative college graduation GPA of 3.20. This was very close to the mean cumulative college graduation GPA for the SSS eligible nonparticipants of 3.24. The SSS ineligible students had a mean cumulative college graduation GPA of 3.33, which was statistically different from the other two study groups. One could argue the practical significance of this difference.

Follow-up tests were conducted to examine the significant differences between each of the three study groups. There were no significant differences found between the SSS participants and SSS eligible nonparticipants, but significant differences were found between each of these two study groups and the SSS ineligible students study group. Given that both the SSS participant and SSS eligible nonparticipants study groups contained a significant number of low-income and first-generation college students, this finding supported many of the concepts presented in the research literature reviewed for this study.

The main idea presented in the research literature was that first-generation and low-income college students consistently performed at a lower level than other students (Bowman & York-Anderson, 1991; Horn & Premo, 1995; Ishitani, 2003; London, 1989; Nuñez & Cuccaro-Alamin, 1998; Pascarella & Terenzini, 1991; Richardson & Skinner, 1992; Terenzini et al., 1996; Wei & Horn, 2002). However, while the mean cumulative college graduation GPAs between the SSS participants and SSS eligible nonparticipants were statistically different from the SSS

ineligible students, the differences were only 3.20/3.24 from a 3.33. For East Tennessee State University a cumulative GPA of 3.20 or 3.24 was still well within a “high” B range (3.0 to 3.32) and a cumulative GPA of 3.33 was within the lower B+ range (3.33 to 3.69) (ETSU, 2011). So, in the case of a cumulative college graduation GPA, statistical differences may not mean that much to the overall general student population, especially with regard to first-generation and low-income college students. Nevertheless, the question of academic outcomes, as they relate to the cumulative college graduation GPA for first-generation and low-income college students, still warrants investigation through continued research.

Research Question 8: First-year Fall-to-Fall Retention Status

Are there significant differences in the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A two-way contingency table analysis indicated that there were significant differences in the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). Significant differences in the first-year fall-to-fall retention status were found between the SSS participants and the SSS eligible nonparticipants study groups, between the SSS eligible nonparticipants and the SSS ineligible students study groups, and between the SSS participants and the SSS ineligible students study groups.

The first-year fall-to-fall retention rate for the SSS participants was 83.4% and 66.5% for their primary comparison group, SSS eligible nonparticipants. SSS ineligible students were retained at a rate of 75.8%. Given these outcomes, the probability that a first-time, full-time,

traditional-aged freshman not be retained was about 2.02 times more likely for SSS eligible nonparticipants when compared with SSS participants. Clearly, the SSS participants study group exceeded both groups on the question of fall-to-fall retention. This finding was very interesting, especially when one considered the fact that the SSS participants study group consisted of both first-generation and/or low-income college students. This outcome ran counter to most of the ideas presented in the research literature concerning first-generation and low-income college students. Nevertheless, the work of Astin (1993), Thayer (2000), Ting (1998), and Tinto (1999, 2004) offered a convincing rationale for other factors that may have contributed to this finding.

SSS participants were involved with a program that offered a comprehensive array of services designed specifically to address the needs of first-generation and low-income college students. The program offered students academic support through tutoring, general guidance, and an extended connection with the university through the first year and beyond (ETSU, 2010). These elements were key to strategies designed to improve student retention as identified by Astin (1993), Thayer (2000), Ting (1998), and Tinto (1999, 2004). The key element involved with the Student Support Services program was that it was focused on creating connections with a niche student population. Both Astin (1993) and Tinto (1999, 2004) found that a connection to the university was a determining factor in a student's overall persistence through higher education. Certainly, more research is warranted concerning the relationship of the specific services offered by the SSS program with student retention rates. Nevertheless, this finding suggested that the ETSU SSS participants had a distinct advantage over their peers in the study, and this was especially true during their first year in college.

Research Question 9: 6-Year College Graduation Status

Are there significant differences in the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A two-way contingency table analysis indicated that there were significant differences in the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students). Significant differences in the 6-year college graduation status were found between the SSS participants and the SSS eligible nonparticipants study groups and between the SSS eligible nonparticipants and the SSS ineligible students study groups. However, no significant differences in the 6-year college graduation status were found between the SSS participants and the SSS ineligible students study groups.

The 6-year college graduation rate for the SSS participants was 48.8% and 36.4% for the SSS eligible nonparticipants. The SSS ineligible students 6-year college graduation rate was 51.2%. The probability that a first-time, full-time, traditional-aged freshman not graduate in 6 years was about 1.25 times more likely for SSS eligible nonparticipants as opposed to the SSS participants. Statistically, SSS participants exceeded their primary comparison group, the SSS eligible nonparticipants in their 6-year college graduation rate. Given the similar nature of the two study groups as determined by the demographic variables analysis, this finding was important to the overall value of the study. The finding also ran contrary to some of the research findings in the literature review. Furthermore, the fact that a high-risk student population

maintained parity with the SSS ineligible students study group, who by all accounts should have exceeded it, was a significant finding for the study.

Again, both Wei and Horn (2002) and Chen (2005) showed that first-generation and low-income students graduated from college at lower rates than other students. Carey (2004) focused research solely on student demographics and college graduation rates with similar results. However, Carey (2004) offered strategies for colleges and universities to enhance college graduation rates. One particular concept presented was student services oriented toward assisting students with the transition from high school to college. These services were shown to significantly enhance student outcomes like retention and graduation (Carey, 2004). This concept was congruent with the services provided by the Student Support Services program at ETSU (ETSU, 2010). This suggested a potential rationale for the parity in the 6-year graduation rate between the SSS participants and SSS ineligible students. Nevertheless, this finding warrants additional research regarding the nature of participation in the SSS program and the increase in the 6-year college graduation rate for its student participants.

Research Question 10: Predicting First-Year Cumulative College GPA

Which of the variables high school GPA or ACT score better predicts the cumulative GPA after the first year for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A multiple regression analysis indicated that the linear combinations of high school GPA and ACT score were significantly related to cumulative college GPA after the first year. The linear combination of high school GPA and ACT score accounted for 32% of the variance of the cumulative college GPA after the first year. Follow-up analysis was completed to determine the

strength of each variable in predicting the first-year cumulative college GPA. In this regression model high school GPA was the stronger predictor of the cumulative college GPA after the first year when compared to ACT score. This finding contrasted the research literature regarding ACT scores as found in the research disseminated by the American College Testing organization.

The ACT organization (2009) released its study that suggested the ACT assessment and subtests were stronger predictors of academic success than high school GPAs. Braunstein and McGrath (1997) and Ishitani (2003) found instances where high school GPA was a stronger predictor of educational outcomes. Their theories overlapped by suggesting that high school GPAs demonstrated a certain amount of effort put forth by students in their academics and ACT scores simply measured accumulated knowledge of particular topics. Clearly, there was no general consensus concerning the best predictor of first-year cumulative college GPA and more research is warranted for this particular educational outcome.

Research Question 11: Predicting Cumulative College Graduation GPA

Which of the variables high school GPA, ACT score, or cumulative GPA after the first year best predicts the cumulative college graduation GPA for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A multiple regression analysis indicated that the linear combination of high school GPA, ACT score, and cumulative college GPA after the first year was significantly related to the cumulative college graduation GPA. The linear combination of the three variables accounted for 65% of the variance in cumulative college graduation GPA. Follow-up analysis was completed to determine the strength of each variable in predicting the cumulative college graduation GPA. In this regression model, cumulative college GPA after the first year appeared to be the strongest

predictor of the cumulative college graduation GPA. This was especially true when the cumulative college GPA after the first year was correlated with the criterion variable while controlling for the other two predictor variables, ACT score and high school GPA.

The research literature consulted for this study was limited on the assessment of predictors that might be used in a model to predict the cumulative college graduation GPA. As with high school GPA, Braunstein and McGrath (1997) found that first-semester college GPA was a significant predictor of academic success at the college level and it had a direct influence on retention and graduation rates. In this research study high school GPA was found to positively predict the cumulative college GPA after the first year, and the cumulative college GPA after the first year was found to positively predict the cumulative college graduation GPA. However, supportive evidence from one research study finding is not enough to make a general consensus regarding the predictive power of either high school or cumulative college GPAs. More research on this topic is warranted and needed, particularly in an education reform era where both high schools and colleges have been criticized for grade inflation practices.

Research Question 12: Predicting Fall-to-Fall Retention Status

Which of the variables high school GPA, ACT score, or cumulative college GPA after the first year best predicts the first-year fall-to-fall retention status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A binary logistic regression analysis indicated a positive association between the prediction model and the first year fall-to-fall retention status for the students in the three study groups. The prediction model contained three performance outcome variables, high school GPA,

ACT score, and cumulative GPA after the first year. As a group these predictors were reliable to predict students who would be retained and who would not be retained in college after their first year. They were able to correctly predict first-year fall-to-fall retention status with an 84% success rate (95.5% retained vs. 54.7% not-retained).

Follow-up statistical tests were conducted to determine the power of the individual predictor variables. Cumulative college GPA after the first year had significant effects on the criterion variable, first-year fall-to-fall retention status when compared to high school GPA and ACT score. The odds ratio for cumulative college GPA after the first year indicated that when this variable was raised one unit, a student was 5.5 times more likely to persist through the first year in college to the following fall semester. Another way to interpret this finding was that there was a 450% greater chance that a student with a 4.0 GPA would be retained after the first year when compared to a student with a 3.0 GPA.

As with the previous two prediction models, one had to review the work of Braunstein and McGrath (1997) to find support for this finding in the research literature. Their work pointed specifically to college GPA as a significant determinant in higher education performance outcomes. In each of their analyses, which were very similar to the prediction models presented in this study, college related GPA, particularly after the first-semester and first-year, positively predicted increases in retention and graduation rates for college students (Braunstein & McGrath, 1997). Nevertheless, this finding and one supportive research article doesn't create a consensus concerning the significant predictor of first-year fall-to-fall retention status for college students. Clearly, more research is warranted to support the development of appropriate prediction models for this educational outcome.

Research Question 13: Predicting 6-Year College Graduation Status

Which of the variables high school GPA, ACT score, or cumulative college GPA after the first year best predicts the 6-year college graduation status for the first-time, full-time, traditional-aged students in the three study groups (SSS participants, SSS eligible nonparticipants, and SSS ineligible students) who entered college in the fall semesters of 2001 through 2004?

A binary logistic regression analysis indicated a positive association between the prediction model and the 6-year graduation status for the students in the three study groups. The prediction model contained three performance outcome variables, high school GPA, ACT score, and cumulative GPA after the first year. The prediction model was reliable to predict students who would and who would not graduate prior to or by their sixth year in college. The model was able to correctly predict the 6-year graduation status with a 73% success rate (74% success rate in predicting no graduation by the sixth year vs. 70% success rate in predicting graduation prior to or by the sixth year).

Follow-up statistical tests were conducted to determine the power of the individual predictor variables. Cumulative college GPA after the first year had significant positive effects on the 6-year graduation status when compared to the other prediction variables. The odds ratio for cumulative college GPA after the first year indicated that when this variable was raised one unit, a student was 5.1 times more likely to graduate prior to or by the sixth year in college. Another way to interpret this finding was that there was a 400% greater chance that a student with a 4.0 GPA would graduate within 6 years when compared to a student with a 3.0 GPA.

Once again, one had to review the work of Braunstein and McGrath (1997) to find support for this finding in the research literature. As previously discussed, their work identified

college GPA as a significant factor in predicting a student's performance at the college level. Their analyses, which were very similar to the prediction models presented in this study, showed that GPA at various points in the student's college career significantly predicted retention and graduation rates for college students (Braunstein & McGarth, 1997). Nevertheless, more research is required on this subject, as no overriding consensus was produced concerning the role that cumulative college GPA plays in determining individual student outcomes.

Implications for Practice

Results of this study indicate that the Student Support Services program at East Tennessee State University offers first-generation and low-income college students the opportunity to achieve at the college level. Despite differences in cumulative college GPA among the three study groups, the SSS participants were retained at a higher rate than both the SSS ineligible students and the SSS eligible nonparticipants. SSS participants also had a significantly higher 6-year graduation rate than the SSS eligible nonparticipants and were able to maintain parity with the SSS ineligible students. These were significant results when one recalled that SSS participants were a high-risk student population of first-generation and low-income college students. According to all the research highlighted in the literature, these students should not have achieved success at this level.

Clearly, the SSS program presents a valuable model for improving the retention and graduation rates for all students at America's institutions for higher learning. This is an important consideration, as evidence shows that more states are using retention and graduation rates as factors in determining funding allocations for state colleges and universities. In an era of education reform, higher education is not immune to scrutiny, and performance outcomes are the primary focus of reformers. Higher education administrators would do well to reassess and

revisit this small enigmatic program and discover the strength of a program designed to serve a niche student population. Perhaps the underlying implication of this study is that it highlighted a small, intentional, academically oriented program designed to meet the specific needs of students and produces significant student success in higher education. To be sure, the Student Support Services program at East Tennessee State University produces significant results and, if nothing else, deserves recognition for the opportunity it offers students.

Recommendations for Future Research

It should be noted that this study focused on one Student Support Services program at a midsize regional university in the Southern Appalachian highlands. The results thereof may not be generalized to all Student Support Services at large. Other Student Support Services programs and their nationally representative professional organizations are encouraged to undertake similar research studies for any of the other 900+ programs across the country. The last national study for SSS was completed in 2010 but contained data from 1990. Perhaps, a multi-institutional study of SSS programs would provide more generalizable results for the SSS programs at-large. Regardless of how or when future studies are created, continued research involving SSS programs, their service components, student outcomes, and involvement with first-generation and/or low-income college students is warranted and necessary.

Recommendations for additional research concerning the ETSU SSS program involve creating survey data that can be used to ascertain the student experience with the program so that inferences could be made about the role the program plays in increasing educational outcomes. One of the primary difficulties of determining the true impact of a program's service is to determine what other services a student had received outside the program. Survey samples or survey data could be used in conjunction with program tracking type data to cross reference the

various services the SSS students used on campus. This would be fertile ground for investigation and help the program staff determine the impact of their program on their student participants. In conclusion, more research is necessary concerning self-selection and the individual attributes of students who seek out services through the SSS program. The program is voluntary and the success of the program may hinge on the fact that students who would seek out support services are by nature going to succeed in higher education regardless of the type of support they receive. This is an important phenomena and an important consideration for future research.

Dissertation Summary

The purpose of this dissertation was to examine the academic performance of the first-time, full-time, traditional-aged students in the Student Support Services program at East Tennessee State University. This was accomplished by comparing the academic performance of first-time, full-time, traditional-aged SSS participants with SSS nonparticipants, including both the SSS eligible and SSS ineligible students from the 2001, 2002, 2003, and 2004 incoming freshman cohorts. Demographic and performance outcome variables and prediction models were of primary interest in the study. Thirteen research questions guided the study and were analyzed using quantitative statistical analysis.

Chapter 1 contained the Introduction, with a background of the problem, the statement of the problem, the research questions, the significance of the study, the limitations and delimitations contained in the study, and the definition of key terms used throughout the dissertation. Chapter 2 provided a review of the relevant literature that included the history of the SSS program and related research and research on first-generation and low-income college students that included broader higher education research. Chapter 3 provided a description of the research methodology that included the study population, research design, data collection

methods, data analysis procedures, and the research questions with hypotheses. Chapter 4 offered an analysis of the data for each of the research questions with tables and figures used to organize each of the 13 research questions. Chapter 5 provided the study summary, findings, conclusions, and the implications for practice and recommendations for future research.

The data analysis indicated that there were significant differences in the demographic and performance outcomes among the three study groups. The SSS participants were found to have a significantly lower cumulative GPA at graduation than their peers, but they exceeded their peers in their fall-to-fall retention status after the first year. SSS participants also had a higher 6-year graduation rate than their demographically similar peers, the SSS eligible nonparticipants. Furthermore, the SSS participants were able to maintain parity in their 6-year graduation rate with the SSS ineligible students, who by all accounts should have exceeded the SSS participants. The study's prediction models showed that the first-year cumulative college GPA was a powerful predictor of fall-to-fall retention status and 6-year graduation status for first-time, full-time traditional-aged freshman students.

In summary, it's reasonable to conclude that the students who participated in the Student Support Services program at East Tennessee State University increased the likelihood that they would be retained after their first year and graduate by their sixth year at the university. Clearly, more research is needed in regards to the Student Support Services programs nationally, but this study suggested that significant results were produced when a small niche-oriented student program was tailored to a specific student population, as the SSS program was for first-generation and low-income college students. In order to improve their retention and graduation rates, America's colleges and universities would be wise to implement a Student Support Services type program to address the needs of their niche student populations.

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East Tennessee State University,
Johnson City, Tennessee;
2004 – Present
 - Nexus Coordinator, Student Support Services – TRIO
East Tennessee State University,
Johnson City, Tennessee;
2000 – 2004
 - Graduate Assistant, Inside Track Tutoring Services
East Tennessee State University,
Johnson City, Tennessee;
1999 – 2000
 - Residential Manager, Sullivan House - Adolescent Treatment
Facility, Frontier Health,
Blountville, Tennessee;
1998 - 1999