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Examining the Relationship between Student Support Services and Student Outcomes at a Four-Year Institution

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EXAMINING THE RELATIONSHIP BETWEEN STUDENT SUPPORT SERVICES AND STUDENT OUTCOMES AT A FOUR-YEAR INSTITUTION

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By

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CHAPTER 1

Introduction

Background of the Study

President Lyndon Johnson's War on Poverty during the mid-1960s resulted in the United States expanding access to higher education not only to wealthy and white privileged youth but also to disadvantaged populations of individuals. For the first time since the end of World War II and the enactment of the landmark G.I. Bill of Rights, the U. S. government prioritized the broadening of access to higher education (Orfield, 1992; Thomas, Farrow & Martinez, 1998).

While higher education became accessible for previously excluded populations of students, the issue quickly became retention and graduation. Tinto (2003) noted gaining access does not guarantee graduation from higher education. Slightly more than half of college students (51 percent) who begin their postsecondary education in the United States complete their degree within six years in their initial institution of registration. An additional 8-12 percent of college students will eventually earn their bachelors' degrees by transferring to another institution. It is now estimated that approximately 60-63 percent of all students who begin in a university or four-year college will earn their degrees within seven or eight years (Tinto, 2003).

Graduation rates also vary considerably among colleges and universities (Tinto, 2003). Many private universities such as Harvard and Princeton boast graduation rates over 90 percent. Several very selective public universities such as the University of California at Los Angeles, the University of Virginia, and the University of Michigan,

have graduation rates over 80 percent. However, the graduation rates of many open enrollment universities are less than 30 percent. There is also considerable variation among states. Some states, such as Connecticut and Rhode Island, report that over 65 percent of their students earn their four-year degrees within five years while other states, such as Idaho and Utah, report that slightly less than 30 percent of their students do so (Tinto, 2003).

Disadvantaged students such as those who are first-generation, low-income and disabled students present even more challenges. The number of first-generation students enrolling in colleges and universities is increasing. In 1995-1996, 47 percent of all beginning postsecondary students were first-generation-that is, neither of their parents had more than a high school education. The proportion of students who were first-generation declined as institution level increased from 53 percent at less-than-two-year institutions, to 34 percent at 4-year institutions (Choy, 2001). Despite this increase in the numbers entering colleges, first-generation students who started at 4-year institutions in 1995-96 were less likely than their counterparts whose parents had bachelor's or advanced degrees to remain on a persistence track to a bachelors degree in 1998 (58 versus 77 percent) (Choy, 2001).

According to a report conducted by Nunez and Carroll (1998), first-generation students often have family and background characteristics that are associated with risk for attrition. They are more likely than their peers to come from low-income families, have lower achievement (as measured by the Collegiate Assessment of Academic Proficiency), are less likely to be white, non-Hispanic, and have lower overall aspirations.

While public policy has increased access to higher education and increased enrollment, significant gaps among low-income and high-income students persist. Census reports indicate that postsecondary participation, persistence and degree attainment are closely associated with socioeconomic status (Gladieux, 2004; Gladieux & Swail, 2000; Mortenson, 2001a).

Demographic studies indicate that by 2010, nearly 35 percent of the youth population will be members of minority groups (U. S. Census Bureau, 2003). Gladieux (1996) asserts these minority groups will include students from first-generation and low-income backgrounds and are likely to become applicants in the higher education pool. Policy makers and stakeholders of institutions of higher learning at all levels must begin to prepare for these students.

Similarly data indicate disabled students are at greater risk of attrition. Horn and Berktold (1999) found that compared to nondisabled students, students with disabilities were more often male, older, white and married with dependent children. The parents of students with disabilities were more often likely to have less than a high school education than parents of students without disabilities. Furthermore, students with disabilities were less likely to be qualified for admission to a 4-year college, less likely to have taken advanced placement courses in high school, were more likely to have taken remedial English and mathematics, had lower average cumulative high school GPAs, and among those who took college entrance exams, had lower SAT scores. Students with disabilities who are academically unprepared may have difficulty in their postsecondary programs of study. Consequently, their degree completion could be hindered or prolonged by such challenges.

The needs of such disadvantaged students must also be taken into account when considering institutional retention efforts if more equitable educational attainment rates are desired (Thayer, 2000). Strategies that work for first-generation, low-income and disabled students will likely be successful for the general student population and can help institutions address their commitment to racial and cultural diversity. Furthermore, if America is to maintain its level of prosperity and continue to compete in a global economy, higher education must increase the graduation rates of all college students (Carey, 2004). The future workforce will require advanced skills that higher education provides. The continued prosperity of America hinges on higher education meeting this challenge (Carey, 2004; Darling-Hammond, 1997; Mortenson, 1995). Astin (1998) suggested higher education will meet this challenge only by making improvements in their rates of enrollment, retention, and graduation of disadvantaged students.

Brief Overview of TRIO Programs

Federally funded TRIO Programs have successfully served disadvantaged populations for many years (U.S. Department of Education, 1994; Eisener, 1997). The term "trio" represents the three original federal programs Upward Bound (1964), Talent Search (1965), and Student Support Services (formerly called Special Services for Disadvantaged Students) (1968). Though the word TRIO (all caps) is not an acronym, it has been retained to avoid confusion. These programs emerged initially out of President Lyndon Johnson's War on Poverty during the mid-1960s. The administrations' earliest effort, the passing of The Economic Opportunity Act of 1964, established the Office of Economic Opportunity (OEO) to coordinate and administer programs designed to eliminate poverty. Upward Bound emerged as one of the first demonstration programs for

high school students (Groutt, 2003). The purpose of the program was to identify students who were underachieving and from low-income backgrounds and to provide motivation and preparation for postsecondary education. In 1965, the passing of the Higher Education Act, led to the creation of Talent Search, the second outreach program. Talent search serves students between the ages of 11 and 27 who have completed the fifth grade. Only two-thirds of the participants must be students who are low-income and potential first-generation college students. Moreover, Talent Search assists high school dropouts reenter the educational system with the goal of encouraging them to graduate, and to pursue a college education (U. S. Department of Education, n.d.).

In 1968, Higher Education Amendments authorized Student Support Services (SSS). SSS became the third in a series of educational opportunity programs. Several amendments of the Higher Education Act resulted in the establishment of additional programs.

Overview of Student Support Services

Student Support Services (SSS), the program of focus for this study, is designed to increase the rates of retention and graduation for first-generation, low-income and disabled college students. Results from a national study of SSS programs indicate SSS programs improve the retention and student achievement of participating students (U. S. Department of Education, 1997). Currently in operation at over 700 two- and four- year colleges throughout the nation, the three major goals of the program are: (1) to increase the college retention and graduation rates of program eligible students, (2) to increase the transfer rates of eligible students from two-year to four-year institutions, and (3) to foster an institutional climate supportive of success for low-income, first-generation and

disabled college students (U. S. Department of Education, 2004). The program seeks to improve the retention and graduation rates for this population of students by providing a variety of academic and social support services such as (1) peer tutoring, (2) counseling/academic advising, (3) special cultural events, and (4) workshops and academic courses designed specifically for SSS students. Some programs are designed as "home-based" programs, which assist students in securing, needed services from a variety of campus offices. Others are either single-service or full-service programs (U. S. Department of Education, 1997).

The SSS Program began at the University of Arkansas (UA), Fayetteville in 1976. After a discussion with the Director of SSS, data emerged that indicated there is significant need for the program at the UA (Gordon, 2004). Approximately 12,929 University of Arkansas UA undergraduates were enrolled fall 2002. Fifty-six percent of the fall 2002 undergraduates were estimated to be first-generation, low-income or disabled. With a total operating budget of $324,561, the program is designed to increase the retention and graduation rates of first-generation, low-income and disabled students by providing academic support services such as peer tutoring, academic, study skills instruction, goal setting, workshops and social support services such as personal, career, financial aid counseling, and cultural enrichment activities. Though college retention and graduation are the primary goals of the program, each SSS program has different and unique goals based on their own contract with the U. S. Department of Education. SSS programs must meet their goals and objectives. A program's failure to graduate a significant number of its participants each year can result in forfeiture of the grant (Thomas, Farrow & Martinez, 1998). However, few studies have been conducted on the

effectiveness of UA-SSS program. Several researchers contend that despite much national attention regarding the success of SSS programs in general, research has not been a priority (Gibson, 2003; Herbert, 1997; Kim, 1999; Martinez, 1996; Thomas et al., 1998).

Mahoney (1998) asserts that almost every national study conducted by the federal government found TRIO programs to be effective. However, these findings do not address the success achieved by individual TRIO programs at the local level. Since each program's design represents a unique contract with the U. S. Department of Education, what specific factors account for the success at each TRIO site, and how might these factors be manifested to define success (Mahoney, 1998)? Currently there is limited published research to answer these questions.

The Impact of SSS Support Services on Students' Academic Achievement, Retention, and Persistence

Successful SSS programs tend to be comprehensive, multifaceted and in many cases represent an integrated approach to addressing the barriers to disadvantaged students' learning process (Eisner, 1997). Research concluded that the common characteristic shared among institutions with effective retention programs is that they offer comprehensive programs (Clewell & Ficklen, 1986, Richardson, Simmons, & de los Santos, 1987; Tinto 1993, 2003).

The national SSS study (U. S. Department of Education, 1997) results concluded SSS programs that provided a home base on campuses that served the "whole student" were associated with increased GPAs in the first and second years and in the 3-year cumulative GPAs. Moreover, programs that were part of larger service entities, such as

equal opportunity programs or learning centers (rather than stand alone projects) had increased rates of retention at both the same institution and any institution (Eisner, 1997; U. S. Department of Education, 1997).

SSS programs across the nation most often provide academic and support services as a combination of services that include advisement, counseling, tutoring, special instruction, cultural enrichment activities and mentoring (Eisner, 1997). This is the case for several retention programs across the nation (Simpson, Hynd, Nist & Burrell, 1997). However, the configuration or arrangement of services varies from institution to institution (Thomas et al., 1998). Moreover, there is limited research to suggest that any particular arrangement of support services yields better results than others (Thomas et al.). Kim (1999) found that most studies regarding support services examine only one isolated service variable such as tutoring or counseling alone in relationship to student outcomes. Furthermore, such studies disregard the interaction between other variables that may have an additive or nonadditive relationship to student outcomes. Future studies should employ impact analysis in order to provide insights into the extent that specific or combined services have a statistically significant effect on student outcomes. A review of literature on studies related to Student Support Services programs found two published studies that conducted true impact analysis on the effectiveness of a specific arrangement or combination of services.

Kim (1999) examined the relationship between various services provided by a SSS Program at the University of Wisconsin-Madison and its undergraduate students' academic performance measured by the students' overall grade point averages. Using multiple regression analysis the study examined the strongest relationship between the

best combination of services and the students' academic performance. Findings from the study indicated the overall students' grade point averages in relation to the usage of services regardless of race, gender and socio-economic status were significant. The regression models that took into account the student's race, gender, and socioeconomic status also were significant and had higher adjusted coefficients of determination.

In another study Abbott (2004), using a quantitative, ex-post facto approach, investigated persistence and achievement outcomes of participation in specific services provided to community college participants of SSS. The purpose of the study was to identify the most cost-effective set of SSS services that best predicts persistence and achievement for program participants. The researcher explored the service contacts of 577 SSS participants from the time they entered the SSS program through the time they completed their community college goals by graduating, transferring to a four-year college, or withdrawing from the college. Independent variables were nine SSS services offered by the SSS program of study and independent cumulative grade point averages. The nine specific services included academic advising, personal counseling, workshops, tutoring, computer labs, transfer planning, career exploration, cultural activities, and group trips to visit universities and other educational sites. The dependent variable of persistence was indicated by a participant's status of continuing, graduating, or transferring.

Regression analyses were used to examine the relationships between service participation, persistence or non-persistence, and academic achievement as measured by GPA. Findings revealed that four SSS services predicted persistence, and two services predicted GPA. Findings also showed that services involving transfer planning, computer

labs, cultural activities, and personal counseling best predicted persistence or non-persistence. Transfer planning and academic advising predicted academic achievement.

The current study is based on cross-sectional data collected during the 2003-2004 academic year. Abbott used the number of contacts for each service as the independent variables. This study examined the impact of the intensity of services received by examining the relationship between the independent variables, total time devoted to services provided by SSS at the University of Arkansas (UA) and the dependent variables its participants' academic performance and retention rates. The primary purpose was to examine and identify the combination of service variables provided by SSS at the UA that had a statistically significant relationship with the program participants' academic performance and retention rates.

Statement of the Problem

There exists established knowledge that SSS affects freshman participants' GPAs, credits earned and retention (Eisener, 1997; U.S. Department of Education, 1994; U. S. Department of Education, 1997). However, a review of literature produced only two published studies that examined the effectiveness and the efficiency of the various service variables of SSS programs. Moreover, although SSS has played a significant role in the retention of disadvantaged students, scarce empirical research exists that examine the specific services or combination of SSS services that affect student outcomes as measured by GPA and retention rates.

While TRIO programs in general are considered examples of federal efforts that work, relatively few evaluations have been conducted of these programs since their enactment (Timpane and Hauptman, 2004). Furthermore, despite TRIO programs'

success, the political climate of 2005 threatened their existence. According to an article in The Chronicle of Higher Education, President Bush proposed to cut two popular TRIO programs, Upward Bound and Talent Search (Field, 2005). Bush questioned the programs' effectiveness. While the cuts didn't occur this does demonstrate that SSS programs need to continually assess their programs' effectiveness to justify continued institutional and legislative support. Data indicates that nationally SSS programs have been receiving less federal support, and it is unlikely that programs will experience large increases in federal support in the future (Eisener, 1997).

Purpose of the Study

The primary purpose of this study was to examine and identify the service variable combination(s) provided by SSS TRIO program at the University of Arkansas that had a statistically significant relationship with program participants' academic performance and retention.

Research Questions

1) What is the frequency of use of UA SSS services by the subjects of the study and the frequency of use of the total number of minutes subjects spent on each service?

2) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance?

3) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student retention?

4) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance according to ethnicity, eligibility, (low-income, first-generation and disability status), classification and gender?

5) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student retention according to ethnicity, eligibility, (low-income, first-generation and disability status), classification and gender?

Significance of the Study

This study was designed to assist SSS programs in offering the package or combination of services that has the greatest impact on program participants' academic performance and retention. Considering budget cuts proposed earlier this year that threatened to eliminate two popular programs, it is imperative that all TRIO programs evaluate and assess the services offered to justify continued institutional and legislative support. It is hoped that the findings and conclusions drawn from this study will aid SSS personnel in working more effectively and efficiently in addressing the needs of the population of students they serve. It is hoped that other SSS programs will use the methodology employed in this study to assess services offered for the purpose of becoming more effective in meeting program goals and objectives. Furthermore, it is a goal of this study to aid university officials in meeting its retention, racial and cultural diversity commitments.

Research indicates that more students with a variety of at-risk characteristics are entering colleges and universities (Astin, 1998; Garibaldi, 1997). As a result it will become more necessary for institutions to expand programs such as SSS in order to ensure the retention and graduation of these students. It is also hoped that this study will contribute not only to research on SSS, but it will also provide empirical knowledge and support for the expansion of SSS to more eligible students and help to justify institutional and legislative support for SSS programs.

Theoretical Framework

Vincent Tinto's (1975) Theory of Student Departure/Theory of Student Integration and Bean's Theory of Student Attrition (1980) provided the theoretical

framework for this study. Tinto theorized that students enter a college or university with a variety of pre-entry attributes such as personal, family, and academic skills. They also enter with personal goals and commitments, which are modified and reformulated on a continual basis through a series of interactions between the student, structures and members of the academic and social systems of the institution. The more rewarding the encounter between the student, formal, informal academic and social systems of the institution, the greater student integration and persistence. According to Tinto "as integration increases, it strengthens students' commitments to both their personal goals and to the institution through which these goals may be achieved" (p. 54).

Bean and associates generated an alternative model to explain the process of college persistence (Bean, 1980, 1982a, 1982b, 1983, 1985; Bean & Vesper, 1990; Metzner & Bean, 1987). Using models of organizational turnover and attitude-behavior interactions as their framework, Bean argued that student attrition is similar to turnover in organizations and stresses the importance of behavioral intentions as predictors of persistence behavior (Cabrera, Castaneda, Nora, & Hengstler, 1992). The Student Attrition Model presumes that behavioral intentions are shaped by a process whereby beliefs shape attitudes and, attitudes, in turn, shape behavioral intents. Beliefs are presumed to be affected by a student's experiences with the different components of an institution. The model also recognizes that factors external to the institution can play a major role in affecting both attitudes and decisions (Cabrera, Castaneda, Nora, & Hengstler, 1992).

Both theories regard persistence as a result of a complex set of interactions over time. Both argue that pre-college characteristics affect how well students adjust to their

institution. Persistence is affected by the successful match between the student and the institution.

However, unlike the Student Integration Model, the Student Attrition Model emphasizes the role factors external to the institution play in affecting attitudes and decisions. The Student Integration Model regards academic performance as an indicator of academic integration. The Student Attrition Model regards college grades as an outcome variable resulting from social-psychological processes.

Limitations of the Study

1. This study is limited to the Student Support Services program and the participants served at the University of Arkansas during the academic year 2003-2004. Consequently, generalizations to other areas and other populations of students should be made with caution.
2. Due to the high variation of factors that may contribute to the academic performance and retention of SSS participants, this study cannot completely assert that the program participants' academic success and retention were attributed to participation in the SSS program.
3 This study used cross-sectional research and examined only the service variables for one academic year.
4. The data utilized in this study was collected by Student Support Services at the University of Arkansas.

Assumptions of the Study

For the purpose of this study, it is assumed that:

1. The data used in this study are accurate.

Definition of Terms

1. Academic Counseling- a comprehensive process that includes an assessment of psychological, interpersonal, and academic needs of students and recommendations related to course scheduling, academic development, and personal development
2. Academic Performance- The cumulative GPA of the students at the end of the academic years 2003-2004.
3. Career Counseling- helping students learn about career opportunities through written and computerized information, assessing their career interests and capabilities, and making occupational plans.
4. Career Maturity- The possession of a clear and stable picture of one's goals, interests, personality and talents.
5. Cultural and Enrichment Activities- These include any activities, such as field trips, special lectures, and symposia, that foster academic progress and personal development.
6. Disadvantaged Population- Undergraduate students from first-generation, low-income background and/or students with disabilities.
7. Eligibility- Criterion (low-income, first-generation and disability) which qualifies students for program services.
8. Financial Aid Counseling- assisting students individually or in small groups in completing financial aid applications or workshops with the financial aid office to develop adequate aid packages.
9. First-Generation- Undergraduate student whose parent(s) or guardian(s) have not earned a baccalaureate degree.

10. Low-income Students- An individual from a family whose taxable income for the preceding year that did not exceed 150 percent of an amount equal to the poverty level determined by using criteria of poverty established by the Bureau of the Census.
11. One-to-One Peer Tutoring-peer tutoring, usually provided by another undergraduate.
12. Personal Counseling- crisis intervention and assistance with personal problems and decisions.
13. Service Variables- Services provided by UA-Fayetteville Student Support Services, which include tutoring, personal, academic, career and financial aid counseling, and study skills assistance
14. Student Retention- The student being academically eligible and returning to school for a third semester.
15. Students with Disabilities- Undergraduate students with documented physical or non-physical disabilities (e. g. Learning disabilities)
16. Study Skills classes/workshops- sessions or classes that help students adjust to the institution which may include help with registration for courses and understanding the academic requirements of the institution.
9. TRIO-. The term represents the three original federal programs Upward Bound (1964), Talent Search (1965), and Student Support Services (1968). Though the word TRIO (all caps) is not an acronym, it has been retained by federally funded programs to avoid confusion.

CHAPTER 2

Literature was reviewed for the following topical areas: an overview of retention and graduation rates for college students, related retention theories, history of TRIO programs, an overview and current status of Student Support Services, the impact of first-generation, low-income and disability status on student outcomes, and an overview of the types of support services provided by SSS at the program of study.

Overview of Retention

Over the past 20 years, few topics in American higher education have commanded as much attention from as many college and university administrators as student retention (Barefoot, 2004). Fewer college students today are completing college in four years than was the case a decade ago (Astin & Oseguera, 2002). Among freshmen who entered baccalaureate degree granting colleges in Fall 1994, only 36.4 percent completed their bachelor's degree within four years (compared to 39.9 percent a decade earlier and 46.7 percent in the late 1960s) (Astin & Oseguera, 2002). The degree completion rate jumps by nearly two-thirds to 58.8 percent if students are allowed six years to complete college and to 61.6 percent if those who are still enrolled after six years are counted as "completers" (Astin & Oseguera, 2002). The rate is significantly worse for publicly funded, rather than privately funded, colleges and universities (Barefoot, 2004). Equally troubling are the variations in completion rates according to race and ethnicity. The highest four-year completion rates are among Asian students (38.8 percent) and white students (37.6 percent), while the lowest rates occur among "under-represented" minority groups: Mexican-Americans (21.3 percent), American Indians (21.6 percent), Puerto Rican-Americans (23.6 percent), and African-Americans (28.9 percent). Within

each racial group, women have higher six-year degree completion rates than do men, with the exception of American Indian students whose completion rates are slightly higher for men (43.9 percent versus 41.1 percent) than for women (Astin & Oseguera, 2002).

The Impact of Low Retention and Graduation Rates

This mass departure from higher education bears serious consequences for the individual, the institution and the nation (Carey, 2004; Tinto, 1993). For the individual departure can mean a substantial decrease in the amount of money earned over a lifetime. On average, people with a four-year college degree or higher earn much more relative to high school graduates. The gap increases with the level of degree (Carey, 2004; Tinto, 1993).

Institutions that are small, private (non-governmentally controlled), and either secular or church-affiliated, often have tuition dependent operating budgets. A loss of even a few students can result in a significant decrease in operating funds. An increasing number of state legislatures are threatening to tie institutional funding to the numbers of graduating students. Institutional reputation concerns many institutions. Those that fail to graduate a significant number of students could be perceived negatively (Barefoot, 2004) by potential students, parents and donors.

Nationally, demographics estimate that the nation's minority populations collectively will become the majority in the near future (U. S. Census Bureau, 2003). Levin (1986) notes that in the wake of increasing demographic estimates, it becomes increasingly urgent to prepare these populations for the academic and occupational challenges ahead. Darling-Hammond (1997) points out that within the first ten years of

the 21st century, almost 50 percent of all occupations in the U. S. will require the higher levels of knowledge and skills once reserved for the elite few. The nation faces the daunting responsibility of educating this population of individuals. Failure to do so can have a detrimental economic impact upon the nation.

Factors Associated with Student Departure

Several factors are hypothesized to affect student departure from college. Many studies find that minority students have higher probabilities of dropout and stopout, lower average school quality, and lower socioeconomic status than their counterparts (DesJardins, Ahlburg & McCall, 2002). The lower average school quality and socioeconomic background of minority students are thought to be less favorable to academic achievement (DesJardins, Ahlburg & McCall, 2002). Students who are older at matriculation have higher opportunity costs and shorter time horizons over which to recoup their educational investment. Thus, these students are expected to more likely stop and drop out and less likely to graduate (DesJardins, Ahlburg & McCall, 2002). Expectations are that students with high scholastic aptitudes have relatively more academic potential and are less likely to exit before graduation (DesJardins, Ahlburg & McCall, 2002). Parental income is also an important determinant of the demand for education. Students from higher-income families are less likely to have to stop out or drop out for financial reasons. Empirical studies indicate a strong positive correlation between family income and other family background measures on educational attainment: enrollment, persistence, and graduation (DesJardins, Ahlburg & McCall, 2002).

The student integration model stresses the importance of the student's academic and institutional commitment and fit (Spady, 1970; Tinto, 1993). In recent studies, researchers have highlighted the importance of first semester GPA in predicting graduation and retention rates (Gao, Hughes, O'Rear, & Fendley, 2002). The rigor of students' high school curriculum is shown to be related to graduation and retention (Choy, 2001). It is frequently found that graduation and retention rates were lower for males and underrepresented minorities. However, previous studies report conflicting results of the effect of gender on the probability of graduation (Gerhart, 1990; Levy & Murnane, 1992).

Related Retention Theories

Tinto's Theory of Student Departure

Tinto's Theory of Student Departure, or as it is more commonly known, The Student Integration Model is based upon Emile Durkheim's Theory of Suicide (1951). Spady (1970) initially used Durkheim's Theory as an explanation for student departure. Durkheim's Theory provided Spady with the idea that some people commit suicide because their values are not congruent with those of their social group or they lack support from this group. Spady considered leaving college analogous to committing suicide-in each case a person withdraws from a social system. It followed that students would withdraw from college because they lacked value congruence or social support (Bean & Eaton, 2001).

Adapting Durkheim's theory (1951) and building on Spady's work (1970), Tinto (1975, 1987, 1993) describes his model of student departure as interactive and primarily sociological in character. Tinto used Durkheim's theory and Spady's work as the source

of academic integration (value congruence) and social integration (social support). These became the core of his longitudinal model of student retention. For two and a half decades this theory dominated our understanding of student retention. Midway through this period he added Van Gennep's (1960) idea of successful rights of passage as an explanation for student retention (Tinto, 1987). Using this approach Tinto theorizes that students enter a college or university with a variety of pre-entry attributes such as personal, family, and academic skills. They also enter with personal goals and commitments, which are adapted and altered on a continual basis through a series of interactions between the student, structures and members of the academic and social systems of the institution. More rewarding interactions between the student and formal or informal academic and social systems of the institution, lead to greater student integration and persistence. According to Tinto "as integration increases, it strengthens students' commitments to both their personal goals and to the institution through which these goals may be achieved" (1993, p. 54).

Tinto further maintained that students leave college because they fail to separate from a previous socializing agent, fail to negotiate a transitional period, and fail to incorporate new values into their lives at school.

Student Attrition Model

Over the years, Bean and associates have generated an alternative model to explain the process of college persistence (Bean, 1980, 1982a, 1982b, 1983, 1985; Bean & Vesper, 1990; Metzner & Bean, 1987). Using models of organizational turnover and attitude-behavior interactions as their framework, Bean argued that student attrition is similar to turnover in organizations and stresses the importance of behavioral intentions

as predictors of persistence behavior (Cabrera, Castaneda, Nora, & Hengstler, 1992). The Student Attrition Model presumes that behavioral intentions are shaped by a process whereby beliefs shape attitudes and, attitudes, in turn, shape behavioral intents. Beliefs are presumed to be affected by a student's experiences with the different components of an institution. The model also recognizes that factors external to the institution can play a major role in affecting both attitudes and decisions (Cabrera, Castaneda, Nora, & Hengstler, 1992).

Hossler (1984) notes commonalities and variation among the theories. Both regard persistence as a result of complex set of interactions overtime. Both argue that pre-college characteristics affect how well students adjust to their institution. Persistence is affected by the successful match between the student and the institution. Similarly there is variation among the theories. Unlike the Student Integration Model, the Student Attrition Model emphasizes the role factors external to the institution play in affecting attitudes and decisions. The Student Integration Model regards academic performance as an indicator of academic integration. The Student Attrition Model regards college grades as an outcome variable resulting from social-psychological processes.

History of TRIO Programs

In support of our nation's commitment to provide educational opportunities for all Americans regardless of race, creed, or socioeconomic background, Congress established a series of programs (TRIO Programs) to assist low-income Americans to enter college. The term "trio" represents the three original federal programs Upward Bound (1964), Talent Search (1965), and Student Support Services (formerly called Special Services for Disadvantaged Students) (1968). Though the word TRIO (all caps) is not an acronym, it

has been retained to avoid confusion. Educators began using the word TRIO to describe these programs in 1968 with the passage of the Student Support Services legislation (Grout, 2003; U.S. Department of Education, 2004; Wolanin, 1996).

TRIO programs began in August 1964 when Lyndon B. Johnson signed and passed legislation that established the Office of Economic Opportunity Act (McElroy & Armesto, 1998; Grout, 2003). Upward Bound, the first TRIO initiative, emerged from this statute (Grout, 2003; McElroy & Armesto, 1998;). Upward Bound assists first-generation high school students from low-income families and low-income, first-generation military veterans to prepare to enter postsecondary education. Students must have completed the 8th grade, be between the ages of 13 and 19 (except veterans), and have a need for academic support in order to pursue a program of postsecondary education. All students must be either from low-income families or be potential first-generation college students. The program requires that two-thirds of the participants in a project must be both low-income and potential first-generation college students. The remaining one-third must be either low-income or potential first-generation college students. The goal of Upward Bound is to increase the rates at which participants enroll in and graduate from institutions of postsecondary education. All Upward Bound projects must provide instruction in math, laboratory science, composition, literature, and foreign language. Other services include instruction in reading, writing, study skills, and other subjects necessary for success in education beyond high school. Additional services provided include academic, financial, or personal counseling, exposure to academic programs and cultural events, tutorial services, mentoring programs, information on postsecondary education opportunities, assistance in completing college entrance and

financial aid applications, assistance in preparing for college entrance exams, and work study positions to expose participants to careers requiring a postsecondary degree (U. S. Department of Education, n.d.).

In response to President Johnson's first State of the Union speech, in which he declared war on poverty, the Higher Education Act (HEA) was enacted into law in 1965 (National TRIO Clearinghouse, n.d.). Its purpose was to provide federal funding for student aid programs as well as institutional aid and support services for disadvantaged students. The Talent Search program, formerly called Contracts to Encourage the Full Utilization of Educational Talent search, created by the Higher Education Act (HEA) of 1965 followed thereafter (Grout, 2003). Today all TRIO programs are authorized under the amended law. (Grout, 2003; McElroy & Armesto, 1998; National TRIO Clearinghouse, n.d.;). Although Talent Search and Upward Bound share similar missions, they vary in the populations of students served. While all students served by Upward Bound must be first-generation, low-come high school students and veterans, Talent search serves students between the ages of 11 and 27 who have completed the fifth grade. Only two-thirds of the participants must be students who are low-income and potential first-generation college students. Moreover, Talent Search assists high school dropouts reenter the educational system with the goal of encouraging them to graduate, and to pursue a college education (U. S. Department of Education, n.d.)

With the reauthorization of the Higher Education Act of 1968, all TRIO programs were transferred from the Office of Economic Opportunity to the Office of Higher Education Programs. In addition, the Student Support Services Program (SSS) was created for the purpose of assisting first-generation, low-income and disabled students to

enter postsecondary education (Council for Opportunity in Education, n.d.). The program was created as a result of the requirement in the 1965 Higher Education Act that schools participating in the Educational Opportunity Grants program (EOG) must identify and enroll students who had financial need (Grout, 2003). Grout (2003) also emphasized that many low-income students entered postsecondary education with academic deficiencies; however, there existed few programs that offered support to students with such needs. Programs such as SSS were necessary to assist inadequately prepared students to meet college requirements.

The second reauthorization of HEA of 1972 created the Educational Opportunity Centers (Council for Opportunity in Education, n.d.). The expansion of TRIO's reach and outreach continued in 1976 with the third reauthorization of HEA (Council for Opportunity in Education, n.d.). Out of this reauthorization came the creation of the TRIO Staff and Leadership Training Authority (SLTA). By the end of the 1970s most of the programs were in place (Wolanin, 1996). The third reauthorization of HEA was particularly important because TRIO adopted two key concepts for TRIO Programs: first-generation in college and prior performance (Wolanin, 1996; McElroy & Armesto, 1998). Wolanin (1996) noted first-generation was important for defining the eligibility of students for the programs. Prior performance is vital because it fostered the development of a network of supportive, experienced TRIO professionals who have assisted in the expansion of TRIO.

Additional reauthorizations of The Higher Education Act of 1965 (1980, 1986, 1992 & 1998) brought about the establishment of other programs, the Ronald E. McNair Post-Baccalaureate Achievement Program, the Upward Bound Math/Science Program

and the TRIO Dissemination Partnership Program (Wolanin, 1996). Before each reauthorization, Congress amended additional programs, changed the language and policies of existing programs, or made other changes (National TRIO Clearinghouse, n.d.). The next HEA reauthorization scheduled for 2004 was not renewed by the scheduled deadline-the first time since the act's history, according to a top Republican on the U. S. House of Representatives education committee (Burd, 2004). Finally, the bill to renew the HEA was approved by the House Committee on Education and the Workforce in late July and will be sent to the floor of the House for a vote late this fall (Burd, 2005). While TRIO programs have been demonstrated to be effective, they have received little support for expanding the programs so that more eligible students are served (Kalenberg (2000).

Who is Served?

Congress mandates that two-thirds of TRIO participants must come from families with incomes under $24,000, where neither parent has earned a baccalaureate degree. Currently over 2,700 TRIO Programs serve nearly 873,000 low-income students. Program participants can range from grades six through 12. College participants include traditional and non-traditional students. The program serves a diverse population of students. Thirty-seven percent of TRIO students are Whites, 35 percent are African-Americans, 19 percent are Hispanics, 4 percent are Native Americans, 4 percent are Asian-Americans, and 1 percent is listed as "Other," including multiracial students. In addition, currently enrolled in TRIO Programs are sixteen thousand students with disabilities and more than 25,000 U.S. veterans (U. S. Department of Education, n.d.).

Overview and Current Status of Student Support Services

National Status

The Student Support Services Program began in 1970 with 121 projects serving about 30, 000 students and funding of about $10 million ($42.9 million in constant 1999 dollars). By 1999 there were 796 projects serving 178,000 students with funding of $178.9 million (U.S. Department of Education, 2004). The goal of SSS is: (1) to increase the college retention and graduation rates of low-income, first-generation college students and students with disabilities, and (2) to facilitate their transition from one level of postsecondary education to the next (U.S. Department of Education, 2004). Services provided by the program include: (1) instruction in basic skills, (2) tutoring, (3) academic, financial, personal and career counseling, (4) assistance in securing admission to and financial aid for enrollment in four-year institutions and graduate and professional programs, (5) mentoring, and (6) special services for students with limited English proficiency (U.S. Department of Education, 2004).

For the program year 1999-2000, SSS had the largest yearly funding of any TRIO program. The average project served 224 participants at a cost of about $1,000 per person per year. Funding for SSS has increased more than fourfold since its inception in 1970 (U.S. Department of Education, 2004).

A national study suggests SSS demonstrates a small but positive and statistically significant effect on three measures of student outcomes: college GPA, number of credits earned and retention (U. S. Department of Education, 1997). Researchers compared the

college retention rate, grades, and credits of program participants against those of a statistically matched comparison group of college students who were not participants.

The study indicates the size of the impact depended on the degree to which students participated in the program. Greater levels of participation resulted in a greater impact. The estimated impact of SSS also varied based on which particular service each student received, and the structure of the SSS project. The greatest impact occurred during the first year. Services that had the greatest impact on student outcomes were peer tutoring, participation through SSS in cultural events, SSS workshops, and instructional courses that were exclusively for SSS participants and programs that provided a home base on campus.

The Impact of First-generation, Low-income and Disabled Status on Student Outcomes

Student Support Services serves three populations of students (1) first-generation, (2) low-income, and (3) disabled students. There is considerable research that suggests these populations of students are at greater risk of attrition than their peer counterparts (Billson & Terry, 1982; Kahlenberg, 2004; NCES, 1998; Pratt & Skaggs, 1989; Riehl, 1994; Roth, 1999; Timpane & Hauptman, 2004; Williams, 1998).

First-generation Status

Colleges and universities have become more diverse with respect to students' age, enrollment status, attitudes, family conditions, and physical and psychological health, gender and race/ethnicity (Hodgkinson, 1985). One of the reasons for the increase in diversity is the increase in the number of first-generation and low-income students appearing on our nation's college and university campuses (Choy, 2001). In 1995-1996,

34 percent of students entering four-year institutions and 53 percent of students entering two-year colleges were first-generation students (Choy, 2001).

Researchers have defined first-generation in many ways in the literature. In one group of literature it is defined as undergraduates whose parents never enrolled in postsecondary education (Nunez & Cuccaro-Alamin, 1998; Horn & Nunez, 2000). The broadest definition and one used least frequently was that neither parent had completed a college degree (U. S. Department of Education, 1996; Willet, 1989). The definition used most frequently was that their parents had no college experience (Billson & Terry, 1982; NCES, 1998; Pratt & Skaggs, 1989; Riehl, 1994; Terenzini et al., 1994; Williams, 1998). For the purposes of this study, the researcher used the definition as assigned by the Higher Education Act of 1965, 1998 Higher Education Act Amendment for TRIO programs. The term is defined as (a) An individual whose parents did not complete a baccalaureate degree; or (b) In the case of any individual who regularly resided with and received support from only one parent, an individual whose only parent did not complete a baccalaureate degree.

There is an increase in the body of research, interest in and knowledge of this population of students. Previous studies find that first-generation status has a negative effect on students' demographics, secondary academic preparation, college choice process and selection, enrollment, experiences, outcomes, persistence and degree attainment (Berkner & Chavez, 1997; Horn & Nunez, 2000; York-Anderson & Bowman, 1991; Ishitani, 2004; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996; Warburton, Bugarin, & Nunez, 2001). Mortenson (1999) also documented the relationship between parental education levels

and college participation. As the education level of a student's mother, father, or guardian increases, the probability that the student would enroll in college also increases.

Studies indicate that compared to their peers whose parents held bachelor's degrees first-generation college (FGC) students have in general less knowledge about postsecondary education, are less academically prepared, have lower SAT scores, are less likely to make a decision to attend college later in their high school career, and more likely to choose less selective colleges (Fallon, 1997; Horn & Nunez, 2000; MacDermott, Conn, & Owen, 1987; Pratt & Skaggs, 1989; Riehl, 1994; Warburton, Burgarin & Nunez, 2001).

FGC students who manage to overcome barriers and actually enroll in college, face transition difficulties that place them at-risk of attrition (Pascarella, Pierson, Wolniak, & Terenzini, 2004; Rendon, 1992; Weis, 1992). Nunez and Cuccaro-Alamin (1998) showed first-generation college students had difficulty becoming academically and socially integrated in their college environments. For example, FGC students were more likely to be older, have lower incomes, married and have dependents, to enroll in postsecondary education part-time, and more likely to take remedial classes than their non-first-generation peers. Particularly challenging is the adjustment FGC students must make to two cultures—that of friends and family and that of the new college community. (Brooks-Terry, 1988; London, 1992; Orbe, 2003). FGC students have tend to have false expectations about college, lack of clear career goals, are academically unprepared, do not get involved in campus activities and fail to interact with other students and faculty (Billson & Terry, 1982; Terenzini, Springer, Yaeger, Pascarella & Nora, 1996). Moreover, researchers have identified FGC students as those who do not have adequate

study habits; consequently, they have lower first-semester grades, are more likely to drop out the first semester, or fail to return for the second year (Brooks-Terry, 1988; Riehl, 1994; Terenzini, et al., 1996). They also lack the necessary family support to succeed in college (York-Anderson & Bowman, 1991).

There is some evidence that students who enter postsecondary education with more academic preparation are at less risk for attrition. Warburton, Bugarin, and Nunez (2001) conducted an analysis on a subset of 1995-96 beginning postsecondary students who started their postsecondary education in 4-year institutions. Findings from the analysis indicate that students who were more academically prepared for postsecondary education were more likely to persist in 4-year institutions. Students who took rigorous course work in high school accounted for more than 80 percent of those students who either stayed on the persistence track and who were retained. Moreover, the analysis indicated parents' levels of education were found to be associated with rates of students' retention and persistence, even when controlling for measures of academic preparedness.

The research is reasonably clear that compared to students whose parents are college graduates, first-generation students are more likely to leave a four-year institution or to be on a persistence track to a bachelor's degree after three years and are less likely to remain enrolled after five years (Atinasi, 1989; Berkner, Horn & Clune, 2000; Billson & Terry, 1982; Choy 2000; Horn, 1998; Nunez & Cuccaro-Almin, 1998, Richardson & Skinner, 1992; Warburton, Bugarin, & Nunez, 2001).

Ishitani (2003) noted that studies illustrating longitudinal effects on attrition between first-generation students and their counterparts have been nonexistent to date. Ishitani conducted a study in which attrition was observed for five academic years (nine

semesters) to determine the time of dropout. Findings indicated that after controlling for factors such as race, gender, high school grade point average, and family income, the risk of attrition in the first year among first-generation students was 71 percent higher than that of students with two college educated parents.

On a positive note, Nunez and Cuccaro-Alamin (1998) showed FGC students who attained bachelor's or associate's degrees, earned comparable salaries and were employed in similar occupations as their non-generation peers. Conversely, Pascarella et al. (2005) indicate that after four or five years, compared to their peers who have parents with college degrees, first-generation college students are less likely to be enrolled in a graduate program or professional program.

Low-income Status

In 1965, Congress passed the Higher Education Act and made the commitment to open college doors to all students regardless of race, gender or family income (Gladieux & Swail, 2000). Federal student aid and other efforts have influenced an increase in college enrollment and educational attainment (Gladieux & Swail, 2000; Gladieux, 2004). According to the National Center for Education Statistics 2003, degree granting institutions in the U. S. enrolled nearly 16 million students in 2001. Gladieux (2004) noted that this is two and a half times the number enrolled in 1965 and is ten times greater than the pre World War II enrollment. Many of these students are eighteen to twenty-four years old, from low-income families whose parents did not earn a bachelor's degree and are people of color (Corrigan, 2003; Mortenson, 2001c).

While public policy has increased access to higher education and increased enrollment, significant gaps among low-income and high-income students persist. Census

reports indicate that postsecondary participation, persistence and degree attainment are closely associated with socioeconomic status (Gladieux & Swail, 2000; Mortenson, 2001a; Gladieux, 2004). Thomas G. Mortenson, in the newsletter *Postsecondary Education Opportunity*, tracked these gaps using Census Bureau data. In this analysis he described the significant gaps between low-income and high-income students (Mortenson, 2001a). Mortenson's analyses suggest low-income students face similar inequalities as first-generation students. When compared to students from higher income backgrounds, low-income students are less likely to graduate from high school (67.5 percent versus 91.5 percent), attend college in fewer instances (38.3 percent versus 78.5 percent), complete college at lower rates (8.5 percent versus 61.3 percent) and are more likely to attend four-year less selective institutions. Mortenson (2001a) notes "the importance of family income is apparent. A student from the top quartile of family income was about seven times more likely to have a bachelor's degree by age 24 than was a student from a bottom quartile family income (p. 7)."

Low-income students who overcome barriers and enroll in college face severe challenges on the path to degree attainment. Corrigan (2003) analyzed data collected from several studies conducted by the U. S. Department of Education's National Center for Education Statistics. The National Postsecondary Student Aid Study (NPAS) provides detailed information on student and family financing of higher education for a single academic year. Beginning Postsecondary Students (BPS) is a longitudinal study that follows first-time beginning students included in the NPAS studies. The 1998 BPS follow-up tracks students who began three years earlier in 1995-96. Corrigan's (2003) study, which focused exclusively on undergraduate students, analyzed the attainment of

two-year degrees and interim progress among those seeking a bachelor's degree. The study found that the following factors had a negative impact on low-income students' persistence and degree attainment: academic background, family circumstances, institutional choice, attendance patterns and hours worked while enrolled.

1. Academic Background. Low-income students often enter higher education with additional risk factors associated with their academic preparation. In comparison to their high-income counterparts, low-income students are less likely to take rigorous high school courses, to earn an alternative high school credential, to delay enrollment, to come from families where neither parent holds a bachelor's degree.
2. Family Circumstances. Low-income students are more likely than high income students to be independent and supporting a family. Data revealed that dependent low-income students are more likely to be retained than independent low-income students.
3. Institutional Choice. Less than 10 percent of low-income independents with dependents attend less than four-year colleges as compared to low-income students with no dependents. Low-income dependents, although more likely to attend four-year institutions, are more likely to attend public two-year and for-profit institutions than middle- and upper-income dependents. Forty-five percent of low-income dependents attend community colleges, compared with 38 percent of middle- upper-income students. Low-income students were less likely than their middle- and upper-income counterparts to attend public or private four-year institutions.

4. Attendance Patterns. Low-income beginning students are more likely to attend part-time. Among low-income beginning students, independents supporting dependents were twice as likely as dependent students to attend exclusively part-time. In contrast, the attendance patterns of low-income dependent students more closely resemble those of their middle- and upper income peers than those of low-income independent students.
5. Work. Low-income students regardless of family structure are no more likely to work than their middle- and upper-middle income peers. However, among those students who do work, low-income students work more hours on average. Regardless of income, students who worked full-time were less likely to have attained or to still be enrolled three years after entering postsecondary education. One-third of beginning postsecondary students working full-time had left postsecondary education without a degree or certificate after three years. However, low-income students working full-time were more likely than middle- and upper-income students to have attained a degree or certificate after three years (29 percent versus 11 percent) (Corrigan, 2003, pp. 27-33).

The U. S. Department of Education's National Center for Education Statistics has identified seven risk factors associated with reduced likelihood of persisting through college and earning a degree: being independent, attending part-time, working full-time while enrolled, having dependents, being a single parent, delaying entry to college, and not having a traditional high school diploma. All low-income students have more risk factors than their middle-and upper-class counterparts (Corrigan, 2003). Several studies support these findings (Mortenson, 2001a; Paulsen & St. John, 2002; Walpole, 2003).

Parental educational attainment and parental expectations have been other areas of focus for research on low-income students. College enrollment rates and degree attainment vary considerably with parents' educational attainment (Braxton, Sullivan, & Johnson, 1997; Choy 2001; McDonough, 1997; Mortenson, 1999a; Tinto, 1987). However, parents' level of education is only one of many factors linked to postsecondary enrollment. In fact, multivariate analyses have shown that family income, educational expectations, academic preparation, parental involvement, and peer influence also independently affected high school graduates' likelihood of enrolling in a four-year institution (Horn & Nunez 2000). Nonetheless, Choy (2001) found parents' education-specifically, having a parent with a bachelor's degree remained significant even after controlling for these other factors. Low-income parents are more likely to view a high school diploma as the norm for their children than high income parents, whereas, high income parents are more likely to consider a bachelor's degree the norm (Lareau, 1987; MacLeod, 1987).

Experiences and involvement in college also influence students' aspirations and persistence (Astin, 1984, 1993; Pascarella & Terenzini, 1991; Tinto, 1987; 1993). However, little research has been done on low-income students' college experiences (Walpole, 2003). Research has found that low-income students engage in very different behaviors in college and experience different outcomes after graduation (Hossler, Schmit &, Vesper, 1999; Paulsen & St. John, 2002, McDonough 1994, 1997; Walpole, 2003). For example, Walpole (2003) used longitudinal data from the national study of college students, which is part of the Cooperative Institutional Research Program (CIRP) sponsored by the Higher Education Research Institute (HERI) at UCLA and the

American Council on Education. The researcher investigated these students' activities in college including contact with faculty; time spent studying, co curricular activities and working; and their income, educational attainment, and educational aspirations nine years after college entry. Findings indicate students from low and high-income backgrounds exhibit some similarities and some differences in their patterns of activities, which are opportunities for capital accumulation. Compared to high-income students, low-income students spend less time visiting in faculty members' home, but more time working on professor's research and talking to faculty outside of class. Compared to high-income students, low-income students seemed less involved in student activities, worked more hours, spent less time studying and reported lower GPAs. Nine years after entering college, students from low-income backgrounds have lower levels of income, graduate school attendance, and educational attainment than their peers from high-income backgrounds. Income for students from low-income backgrounds in 1994 is lower than the income of students from higher income backgrounds. Overall, these results indicate different investment strategies that low and high-income students make in college and may indicate different habits possessed by these two groups of students. Low-income students invest more heavily in economic capital, working more hours, which leaves less time for studying. On the other hand the work experience may make them more attractive to potential employers.

Another issue is the achievement gap that exists between low-income and high-income students. Timpane and Hauptman (2004) point out that as far as can be discerned, there are no measures of the achievement levels over time of high school graduates by family income. Timpane and Hauptman analyzed SAT scores and found that for more

than thirty years, the combined verbal and math scores of students with family incomes in the lowest 10-15 percent of test takers have lagged approximately two hundred points behind the scores of students from the top 10-15 percent in family income. Moreover, in 1998 and again in 2002, the National Assessment of Educational Programs (NAEP) has reported reading scores broken out by eligibility for free/reduced-price lunch, with similar patterns of disparity for twelfth graders in both of those years-the average reading achievement scores of eligible twelfth-grade students are almost identical to the scores of eighth graders who do not qualify for free or reduced-price lunch. The majority of low-income students are not minorities; yet minority status, not family income, accounts for some part of the disparity in student performance (Timpane & Hauptman, 2004).

Currently there is scarce research that focuses on the academic performance of low-income students in college. The results from studies indicate low-income students had lower grade point averages compared to their high-income counterparts (Holmstrom, 1973; Paulsen & St. John, 2002; Walpole, 2003). Holstrom (1973) examined the educational progress of low-income college students. The sample consisted of 185,845 first-time full-time freshmen in fall 1967 and a sub sample consisted of 63,510 students in 1971. Results of the questionnaires indicated low-income students made slightly better high school grades than did other-income students. Low-income students made slightly lower grade-point averages in college than did other-income students, and high school grade-point average was a positive predictor of degree completion in four years. Paulsen and St. John (2002) found that although the type of grades received had no effect on the persistence of high-income students, low-income students who earned A grades were more likely to persist. Academic performance has been found to be one of the most

important indicators of academic integration, which promotes persistence (Pascarella & Terenzini, 1991).

Another category of research indicates that family income and social class sorts students by institutions of higher education (Carnevale & Rose, 2003; Kipp, Price, Wohlford, 2002; Mortenson, 2003). Of all college first-year entrants, almost half of low-income students attend two-year community colleges as compared to one in ten high-income students. Only 3 percent of low-income students are enrolled at top tier colleges and universities as compared to 74 percent of students in the highest socioeconomic quartile (Carnevale & Rose, 2003). Carnevale and Rose (2003) examined the academic characteristics of students who attend institutions at every level of selectivity. They analyzed this information based on two sets of longitudinal data published by the National Center of Educational Statistics (NCES): the National Education Longitudinal Study of 1988 and the High School and Beyond Study of 1992. They found that under current affirmative action policies, racial minorities are underrepresented; however, low-income students are even more underrepresented. Seventy-four percent of students at the top 146 highly selective colleges came from families in the top quarter of the income quartile (as measured by combining family income and the education and occupations of the parents), while three percent came from the bottom income quartile. Nearly 10 percent came from the bottom half of the income scale. Furthermore, findings from Carnevale and Rose's study revealed that the selection of colleges matters. Data show that attending a selective institution provides three main advantages: greater likelihood of graduating, greater access to graduate school, and a wage premium in the labor market.

Pascarella, Edison, Hagedorn, Terenzini, and Nora (1998b) found that in the presence of controls for precollege plans, other background factors, and college academic and nonacademic experiences, community college students initially planning to obtain a bachelor of arts degree were between 20 percent and 31 percent more likely than similar four-year college students to lower their plans below a bachelor of arts degree by the end of the second year of college.

Currently research suggests that threats to financial aid availability and rising tuition costs may be hindering access to institutions of higher education and reducing retention rates for low-income students (Gladieux, 2004; Mortenson, 1990, 1994; Paulsen & St. John, 2002). Paulsen and St. John (2002) examined how students' enrollment responses to college cost--both in college choice and persistence decisions--vary by social class. The researchers found substantial class-based patterns of enrollment behavior in response to prematriculation perceptions of college costs and actual post matriculation costs, consistently restricting postsecondary opportunities for lower-income relative to higher-income students.

Although it is evident from research that this group is disadvantaged, they have received limited attention from researchers despite requests for such research (Berger, 2000; Tinto, 1987, 1993, Walpole, 2003). The lack of attention can be attributed to higher education's interest on mainstream students (Paulsen & St. John, 2002; Walpole, 2003). In recent years, however, higher education research literature focused on the experiences of students from different racial and ethnic groups including those of different sexual orientations and genders (Walpole, 2003). Walpole emphasized that higher education scholars who conduct research including low-income populations often control for social

class differences rather than focusing on how those differences may possibly shape students' experiences and outcomes. Understanding such differences will not only benefit higher education research, but will also enlighten higher education policy.

Disabled Status

Federal legislation, state and local policies increased the participation of students with disabilities in higher education (Paul, 2000; Roth, 1999; Thompson, Bethea, & Turner, 1997). In 1978 2.6 percent of all first-time, full-time college freshmen reported having one or more disabilities (Mortenson, 1996). In a nationally representative survey of students attending postsecondary education institutions during the 1995-96 academic year, 6 percent of postsecondary students reported having a disability (Horn & Berktold, 1999). By 1999 the proportion had grown to 9 percent (Horn, Peter & Rooney, 2002). According to the 1995 survey, students with learning disabilities comprised the largest category (29 percent). By 1999, students with orthopedic or mobility impairment comprised the largest category (29 percent). Learning disabilities comprised between 5 and 7 percent of reported disabilities. However, Henderson (2001) surveyed a national representative sample of full-time freshmen at public and private four-year colleges and universities and found on average, between 1988 and 2000, learning disability was the fastest growing category of reported disability among students. By 2000, 40 percent of freshmen with disabilities reported a learning disability compared to 16 percent in 1988.

Despite the integration of students with disabilities into higher education, research revealed disabled students face significant challenges compared to their nondisabled counterparts. Horn and Berktold (1999) found that compared to nondisabled students, students with disabilities were more often male, older, white and married with dependent

children. The parents of students with disabilities were more often likely to have less than a high school education than parents of students without disabilities. Furthermore, students with disabilities were less likely to be qualified for admission to a 4-year college, less likely to have taken advanced placement courses in high school, were more likely to have taken remedial English and mathematics, had lower average cumulative high school GPAs, and among those who took college entrance exams, had lower SAT scores. Being less academically prepared indicates students with disabilities may have difficulty in their postsecondary programs of study. Consequently, their degree completion could be hindered or prolonged by such challenges.

Further data from the 1995 survey revealed as of 1994, about 2 years after most finished high school, approximately 63 percent of students with disabilities had enrolled in some form of postsecondary education, compared with about 72 percent of students without disabilities. As compared to nondisabled students, students with disabilities were less likely to attend public four-year colleges and universities (25 versus 32 percent). Among those who enrolled, nearly one-half of students with disabilities (45 percent) enrolled in public two-year institutions, compared with one-third of students without disabilities. The majority of students with disabilities attended full-time, 60.3 percent. Moreover, students with disabilities more often reported half-time attendance than nondisabled students. Students with disabilities, on average, entered postsecondary education nearly three years later than students without disabilities. Previous research has shown part-time enrollment, financial independence, delayed enrollment, and having dependent children pose a greater risk to persistence and completion of a college degree (Horn & Berktold, 1999). Horn, Peter and Rooney (2002) found similar results.

Moreover, students with disabilities were found to be in the lower income quartile. Conversely, Henderson (2001) found students with disabilities were slightly more likely to come from higher income families. The median family income of students with disabilities was $66,794, compared to $64, 500 for nondisabled students' families.

As of 1994, 53 percent of students with disabilities had attained a degree or vocational certificate or were still enrolled, compared with 64 percent of their counterparts without disabilities. Among students with disabilities, 16 percent attained a bachelor's degree; 6 percent attained an associate's degree; and 19 percent earned a vocational certificate. The corresponding percentages for students without disabilities were 27 percent, 12 percent, and 13 percent, respectively (Horn & Berktold, 1999). Even when controlling for such factors, disability alone represented a greater risk to attaining a degree from a 4-year college. Horn and Berktold (1999) note these findings are similar to other postsecondary surveys (i. e. Henderson, 1999).

With the increase in the participation of students with disabilities in higher education come major challenges to colleges and universities. The special education provisions provide much greater protection and accommodation for students with disabilities than do the nondiscrimination protections under the 1973 Rehabilitation Act and the 1990 Americans with Disabilities Act (ADA)-the two laws providing legal protection for college students with disabilities (Paul, 2000; Rothstein, 2003). Elementary and secondary schools are obligated by law to reach out and identify students in need of special services, pay for the documentation to evaluate students and provide specialized programming. This is not the case for institutions of higher education. Section 504 of the Rehabilitation Act of 1973, as amended in 1974, outlines the responsibilities of higher

education in providing equal educational opportunity for "otherwise qualified handicapped individuals" and imposes an "affirmative action obligation" on higher education institutions (Kaplan, 1985, p. 242). Rothstein (2003) notes as a result of this law, "colleges and universities are obligated only to ensure nondiscrimination and reasonable accommodation to a student's disability. Institutions need not lower standards, fundamentally alter programs, or provide accommodations that are unduly burdensome" (p. 39). The burden is placed on the student to make known the disability, to provide documentation and to pay for evaluation. Rothstein further emphasizes two complex issues that now face higher education. These include the removal of architectural barriers, and deciding who is actually entitled to protection and what reasonable accommodations are required.

Students with disabilities in higher education face complex challenges as well. In a recent review of literature, Paul (2000) focused on college environments, support services, academic achievement, and adjustment to disability. He concluded that various disability laws have contributed to the increase in the numbers of students with disabilities in higher education; however, these students continue to face physical and attitudinal barriers in college environments that limit their ability to achieve their educational and social goals. In Paul's review of the literature, he suggested institutions of higher learning make the following revisions in order to increase disabled students' educational experiences: (1) The university community must become aware of the presence of individuals with disabilities in its environment, (2) Respect and cooperation from faculty, staff and students could lead to a more effective educational experience for students with disabilities, (3) Include students with disabilities in the various university-

wide programs, services and activities, and (4) Provide students with disabilities the necessary support services to meet their academic and social goals.

Despite the increase in the number of students with disabilities in higher education and despite the challenges they face when they enter our college and universities, the experiences of students with disabilities have not been the focus of much research. Fuller, Healey, Bradley and Hall (2004) cite Hurst's (1996) study in which he noted that the experience of disabled students in higher education has been absent from previous studies. He requested research that focuses on disabled students' own perspectives. Fuller et al. (2004) point out that despite the publication in the last few years of a number of guides to support higher education staff teaching disabled students (Teachability, 2000; Gravestock & Healey, 2001; Doyle & Robson, 2002), there are few studies that have responded to Hurst's call. A few investigations have undertaken in-depth studies of the experience of higher education, but they have focused on small numbers of disabled students (Baron, Phillips & Stalker, 1996; Hall & Tinklin, 1998; Borland & James, 1999; Holloway, 2001). None has systematically analyzed a large sample of disabled students' experience of learning in higher education (Fuller et al.).

Attitudes toward disabilities is a widely researched topic in terms of published studies. However, Rao (2004) asserts that faculty attitudes toward students with disabilities in higher education is one of the least studied variables. Rao conducted a review of the literature on faculty attitudes towards persons with disabilities in four different parts: attitudes as a construct, views on attitudes towards disabilities, measurement of attitude towards disabilities, and studies done at colleges and universities with faculty. Rao contended that faculty at institutions of higher education should be

better informed of disabilities and students with disabilities in order to improve their attitudes towards disabled students. Fichten (1988) asserts that attitudes of faculty and administrators could play a vital role in the success or failure of students with a disability. Junco (2002) concluded that negative attitudes of instructors, may prevent students with disabilities from using self-advocacy skills. Faculty with positive attitudes toward students with disabilities is more readily able to accommodate the students' needs (Barnes, 1994). Research findings have indicated a positive connection between faculty awareness and accommodation, their familiarity and experience with students with disabilities and their knowledge about disability laws and rights (Bowman & Marzonk, 1990). According to Marchant (1990) the success of a college student with a disability depends on a match between teacher and student.

In summary, research indicate the number of first-generation, low-income and disabled students are increasing their participation in higher education. Many of these students arrive on campuses academically and socially ill prepared for their college experience. This presents challenges for the students as well as the admitting institutions. As indicated in the review of literature, the status of first-generation, low-income and disabled can place these students at a serious disadvantage in terms of accessing and completing postsecondary education. In order for institutions of higher education to meet their retention and graduation challenges, they must make it a priority to establish institutional programs and make changes to institutional policies that assist these populations of students.

Tinto (2003) contended that despite years of focus and research on student dropout, America has yet to determine what really retains students in higher education.

Much of the previous research on retention centers on the causes of student dropout. But knowing why students drop out does not tell us directly what institutions can do to promote student retention. Tinto further explained the reason for this is that factors that help us to understand why students leave are different from those that help us understand an institution's ability to retain students. He concluded that the area of research left to explore is examining what actually works in retaining students. Student Support Services is an example of a program that has been demonstrated to be effective in increasing the graduation and retention rates of disadvantaged populations of students. The remainder of this literature review will be devoted to literature related to the most prevalent academic and social support services provided by the SSS program at the University of Arkansas. These programs include one-to-one/individual peer tutoring, student involvement, study skills training, and counseling services.

Types of Support Services

Overview of Tutoring

Tutoring, recognized as a vital tool for helping diverse populations of students overcome academic difficulty, has not been a field that has been widely researched (Hartman, 1990; Graesser & Person, 1994; Maxwell, 1994). Tutoring is an old practice dating as far back as the ancient Greeks (Topping, 1998). Since the opening of Harvard in 1630, tutoring has been a part of higher education. Since most instruction and books were in Latin, students needed to be tutored in Latin before they could begin their studies (Brubacher & Rudy, 1976; 1994; Dvorak, 2001). Today college campuses employ tutoring to improve retention rates and to assist a diverse population of students (Dvorak, 2001). Although tutoring can carry the stigma of being remedial, it is recognized that

most college students need some academic support (Dvorak, 2001; Maxwell, 1994). While the most obvious purpose of tutoring is to help students learn material, research indicates tutoring also assists students in becoming more self-directed (Hartman, 1990) and promotes cognitive and affective development (Guorney, 1994). The literature on college tutoring suggests that programs are diverse and vary in purpose, philosophy, and structures. They can include such forms as individual or one-to-one, group, peer and computer based tutoring (Dvorak, 2000; Maxwell, 1994).

Benefits of Tutoring

In their report on the findings from the National Study of Developmental Education, Boylan, Bliss, Bonham, and Saxon (1995) concluded that the literature suggests tutoring has consistently been found to have a positive impact on college students' course grades, overall grade point averages, persistence and graduation, and students' attitudes towards instruction. Hock, Deshler & Schumaker (1999) noted that while tutorial programs have been helpful, the results of studies regarding its effectiveness have been contradictory. Because tutoring can take many forms, and because it is only one part of many services offered to under prepared students, it is difficult to show that tutoring itself leads to higher student outcomes such as higher grades, grade point averages, or persistence (Maxwell, 1994). In the three year longitudinal study prepared for the U. S. Department of Education, research indicated that participating in tutoring during the first year had a positive and statistically significant impact on students in each of three outcomes areas: (1) grades, (2) credits, and (3) retention. Greater involvement in tutorials resulted in greater impact, and participation

in the first year had more of a significant payoff for students than in later years (U. S. Department of Education, 1997).

Hock (1998) found some tutorial programs had positive short-term effects on credit hours earned and overall grade point average of college students. However, these positive effects may be limited to certain populations of students. Other tutoring programs were found not to have had effects on semester grade point averages or on long-term success.

Hock, Deshler, & Schumaker (1999) concluded that mixed reviews of the effectiveness of tutoring stemmed from two problems. One is related to an issue of operational definition, and the other is related to differences in selecting targeted student outcomes. Concerning the issue of the operational definition Hock et al. (1999) pointed out that some researchers present tutoring as a form of instruction in which tutors: (1) analyze the assignment in terms of learner skills needed to complete the assignment; (2) analyze the student's current level of skill and strategy knowledge; (3) instruct the student through explanation, modeling, and guided practice in relevant skills, strategies and content knowledge; (4) provide sustained corrective feedback; and (5) provide immediate support for current assignments while the student develops skills necessary to become an independent learner (Hock et al.).

Hock et al. (1999) noted another method of tutoring that he described as assignment-assistance tutoring. In assignment-assistance tutoring, a tutor meets with either a small group of two to six students or individual students who have difficulty independently completing their course assignments. The major goal of assignment-assistance tutors is to help each student with whatever assignments or tasks the student

brings to the tutoring sessions. Assignment-assistance tutoring is a model in which tutors: (1) provide small-group or one-to-one home work assistance; (2) react to demands of the general curriculum and review content with the student; (3) provide brief feedback on student performance; and (4) make little or no systemic attempt to teach skills and learning strategies relevant to the homework assignment at hand and generalizeable to similar assignments in the future. One factor that contributes to the controversy regarding the effectiveness of tutoring is researchers' failure to make the distinction between the two tutoring methods in their writing.

The second problem in determining effectiveness is related to major differences in the targeted student outcomes. In the instructional tutoring model or one-to-one instructional model, the intended outcome is the development of skilled and independent learners. In contrast, the assignment-assistance tutoring model focuses on the task at hand. Tutors provide short-term help with homework and focus on helping the student survive in his or her classroom (Hock et al., 1999).

Benefits of One-to-one Peer Tutoring

Higher education and further education have shown increased interest in peer tutoring as a result of the dual need to improve teacher quality while doing more with fewer resources (Topping, 1998). The definitions of peer tutoring are varied.

> Topping (1998) suggests "archaic definitions of peer tutoring perceived the peer tutor as a surrogate teacher in a linear model of transmission of knowledge from teacher to tutor to tutee. Later, it was realized that the peer tutoring interaction was qualitatively different from that between a teacher and a student, and involved different advantages and disadvantages" (p. 50).

Moreover, as the development and research regarding peer tutoring progressed, it became more apparent that peer tutoring involves more than transmission of information from the more able and experienced to the less able. Topping offers the following broad definition: "people from similar social groupings who are not professional teachers helping each other to learn and learning themselves by teaching" (p. 50). Peer tutoring is characterized by specific role taking. At some point an individual plays the role of tutor while the other plays the role of tutee. Houston and Lazenbatt (1996) offer the following definition:

> "Peer tutoring is a structured way of involving students in each other's academic and social development. As a learning experience it allows students to interact and to develop personal skills of exposition while increasing their knowledge of specific topics. It is thus an involvement that can benefit both tutor and student" (p. 71).

The term "peer tutoring" often includes both cross-age and same-age tutoring. As Gaustad (1993) explains "peer tutoring occurs when tutor and tutee are the same age. In cross-age tutoring, the tutor is older than the tutee. However, sometimes the term peer tutoring is used in the literature to include both types. (p. 1).

Houston and Lazenbatt (1999) noted several reasons for encouraging the development of peer tutoring among students: 1) the discussion among students helps them to explain and clarify thoughts and ideas; 2) forces students to engage in higher order thinking which includes application, analysis, synthesis and evaluation; 3) encourages students to engage in a deep approach to learning (active learning) as opposed to the traditional surface-level learning; 4) enhances communication and other inter-and

intra-personal skills. Moust and Schmidt (1994) found that students felt peer tutors better understood their problems, were more interested in their lives and personalities, and were less authoritarian, yet were more focused on assessment.

Peer tutoring can have economic and political benefits as well (Topping, 1998). Economically, it creates the possibility of teaching more students effectively, freeing staff time for other purposes. Politically, it promotes independent learning and reduces dissatisfaction and unrest (Topping).

Peer tutoring can be found throughout the literature in many forms. Topping (1998, pp. 56-67) described the forms as follows:

1. Cross-year small-group tutoring-this is where upper year undergraduates or postgraduates act as tutors to lower year undergraduates, each tutor dealing with a small group of tutees simultaneously. Some well known examples of this type of tutoring are The Personalized System of Instruction and Supplemental Instruction.

   The Personalized System of Instruction. This system of instruction is also called the "Keller System". In 1968 he described the procedure, which is based upon programmed learning material, through which each student proceeds at their own pace with the goal of mastering each step. The peer tutor's role is largely as a checker, tester and recorder, to ensure tutee mastery.

   Supplemental Instruction. This type of peer tutoring aims to reduce drop-out rate and usually targets risk courses rather than high risk students. It is often used in courses with new and difficult content, a predominance of lectures and low rates of interactive teaching, and where assessment and monitoring are relatively infrequent. It operates on a cross-age basis with one "leader: working with several tutees. Leaders are trained to model, advise and facilitate rather than directly address curriculum content. Leaders have also always previously completed the same course as the tutee, and usually again attend the tutees' lectures.

2. Same-year dyadic fixed-role tutoring. This system of peer tutoring involves tutoring between pairs (dyads) in the same year of study (i.e. at the same point in the course, where one member retains the role of tutor throughout.

3. Same-year dyadic reciprocal peer tutoring. This system of tutoring "enables each student to derive the benefits from preparing to teach another student. Students in an reciprocal peer tutoring dyad must provide instruction, evaluation and reinforcement to one another, thereby encouraging mutual assistance and social support for each other" (Rittschof & Griffin, 2001, p. 313).

4. Dyadic cross-year dyadic fixed-role tutoring-This system of tutoring involves pairs of students. Upper year undergraduates or postgraduates act as tutors to lower year undergraduates. Each tutor deals with a small group of tutees simultaneously. One member retains the role of tutor throughout.

5. Same-year group tutoring
6. Peer Assisted Writing
7. Peer Assisted Distance Learning (Topping, 1998, pp. 56-67).

The Student Support Services Program at the institution of study provides individual/one-to-one peer tutoring. Each SSS student who requests tutoring is paired with the same tutor for an entire semester. The form most closely resembling SSS' style of tutoring is dyadic cross-year fixed-role peer tutoring. However, the tutoring is cross-age and is typically one-to-one.

One-to-one tutoring has been regarded as the most effective method of teaching (Bloom, 1984; Cohen, Kulik, & Kulik, 1982). The tutor can respond to one student's needs as opposed to responding to several others simultaneously (Bloom, 1984; Slavin, Madden, Karweit, Dolan, Wasik, Shaw, Mainzer, Haxby, 1991). Furthermore, one-to-one tutoring can optimize the impact of a variety of validated instructional practices and techniques (Hock, 1999).

Bloom (1984) and two doctoral students compared student learning under one-to-one tutoring, mastery learning, and conventional instruction. Students were randomly assigned to these three learning conditions. Their initial aptitude test scores, previous achievement in the subject, and initial attitudes and interests in the subject were similar.

The amount of time for instruction was the same in all three groups except for the corrective work in the mastery learning and tutoring groups. The graduate assistants replicated the study with four different samples of students at different grade levels and with two different subject fields. Using the standard deviation (sigma) of the control class, which was taught under conventional conditions, it was found that the average student under tutoring was about two standard deviations above the average of the control class.

Hock et al's (1999) review of the literature concluded that instructional tutoring or the one-to-one instructional model was found to be more effective as a tutoring intervention. Four studies indicated that instructional tutoring significantly reduced the amount of time highly skilled college students needed to solve computer problems (Merrill, Reiser, Merrill & Landes, 1995). It was found to be effective for students who were referred and participated in tutoring. The students who were referred and participated in tutoring had significantly higher GPAs than comparison students (MacDonald, 1987). One-to-one tutoring also improved the scores of tutored students on a comprehensive content exam and increased their retention of content (Semb, Ellis, & Araujo, 1993), and increased the grades of academically under prepared student athletes (Hock, 1998).

Student Involvement

Student involvement outside of the classroom has been linked to students' learning and development, cognitive development, and persistence (Astin, 1999; Pascarella & Terenzini, 2005; Tinto, 1993, Tinto, 2003)."Student affairs' administrators have long believed in the importance of co-curricular student involvement and its

influence on student development" (Hernandez, Hogan, Hathaway & Lovell, 1999, p. 184). Astin's (1985) involvement theory suggested that such an influence existed. He theorized that "students learn by becoming involved" (p. 133) and suggested five basic postulates that characterize involvement: 1) mental and physical energy must be invested in objects (i.e., activities, tasks, people), 2) involvement is a continuous concept—with different amounts of energy applied by different students to different tasks, 3) involvement has both qualitative and quantitative characteristics, 4) the amount of development has both qualitative and quantitative features proportional to the quantity and quality of involvement, and 5) the effectiveness of any practice or policy is related to its capacity to encourage student involvement (pp. 135-136). Astin assigns the institutional environment a major role in that it can offer students a wide array of academic and social opportunities to become involved. However, it is the student who must decide to capitalize on the offered opportunities and become involved (Pascarella & Terenzini, 2005). Astin theorized that the level of student learning and personal development associated with an educational program was directly related to the quality and quantity of students' involvement in that program (Astin, p. 136).

There have been numerous studies on the impact of student involvement on student development and learning during the last decade. Pascarella and Terenzini (2005) reviewed and synthesized the research in this area from 1989 through the end of 1999 and concluded that students who are more psychologically engaged in activities and tasks that "reinforce and extend the formal academic experience" (p. 119) are more likely to learn. They made further observations that a number of scholars have suggested peer influence has a significant effect on student learning. This suggests that since much learning is

socially based, social and extracurricular involvements are significant factors of student learning. Pascarella and Terenzini's review of literature focused on interaction with peers, interactions with faculty, Greek affiliation, intercollegiate athletic involvement, service involvement, diversity experiences, work experiences, and on-or-off campus residence. The most positive impacts were found for: 1) nonclassroom interactions with peers and faculty that extend and reinforce students' actual experience; 2) interactions with racially and culturally diverse peers; 3) and involvement in academically integrated service learning experiences which enhance subject matter knowledge. The researchers also concluded that studies suggest on- or off-campus work during college, in particular part-time work, may not seriously inhibit student learning. Similarly, they found no consistent evidence to suggest living off campus and commuting to college (versus living on campus) directly inhibits the acquisition of subject matter knowledge.

Pascarella and Terenzini's review also concluded student involvement has a positive impact on dimensions of cognitive development in areas such as critical thinking, analytical competencies, and thinking complexity. For example, diversity and service learning experiences were found to have a strong impact on dimensions of cognitive development.

However, some studies pointed to negative effects. The researchers found evidence to suggest that men participating in revenue producing intercollegiate sports, and men joining a fraternity in their first-year have a negative impact on the development of critical thinking during college.

A more recent study (Pascarella, Flowers, & Whitt, 2001) found that the negative effects of Greek affiliation were much less pronounced during the second or third years

of college. Furthermore, given the inconsistency of results across studies, there is little compelling evidence to suggest that on- or off-campus work in general has more than a trivial impact on cognitive or intellectual development during college. Similarly, the researchers found little consistent evidence to suggest that living on campus (versus off campus and commuting to college) directly influences cognitive growth as it relates to critical thinking.

Student involvement has also been found to have a positive impact on college students' persistence decisions. Pascarella and Terenzini's (2005) review of literature produced findings that suggest "the level of student integration in any of the components of an institution's academic and social systems can be a critical factor in students' persistence decisions" (p. 426). These findings are consistent with other researchers (Astin, 1993; Braxton, Sullivan, & Johnson, 1997).

Study Skills Training

Research suggests that many students enter postsecondary education ill prepared (Choy, 2001; Cooper, 2004; Henderson, 1999; Horn, 1998; Horn, & Berktold, 1999; Horn, & Nunez, 2000; Pascarella, Truckenmiller, Nora, Terenzini, Edison, & Hagedorn, 1999) to meet the rigorous study demands (Pressley, Yokoi, van Meter, Van Etten, & Freebern, 1997). These students may have the ability to succeed, but may lack the motivation to achieve or lack the necessary skills that could lead to academic success. Students who lack the necessary skills and preparation may be more successful in college if academic behaviors that contribute to college achievement are acquired. There are many individual and institutional factors that can lead to success among college students (Upcraft, Gardner, Barefoot, 2005). Study skills are factors that researchers have

consistently reported to have a positive effect on college students' academic success (Agnew, Slate, Jones, & Agnew, 1993; Elliott, Godshall, Shrout, & Witty, 1990; Nist, & Simpsom, 2002; Tuckman; 2003). Consequently, most colleges and universities offer courses or programs that assist students in becoming efficient active learners (Maxwell, 1997a).

Study skills can often be found in the literature are referred to as cognitive and metacognitive strategies or learning strategies (Hattie, Biggs & Purdie, 1996; Tuckman; 2003). Hattie et al. (1996) in their meta-analysis of the literature related to study skills, defined study skills as an attempt to improve student learning by interventions outside the normal teaching context. The authors note

> interventions may be broadly classified as cognitive, metacognitive, and affective in nature. Cognitive interventions are those that focus on developing or enhancing particular task-related skills, such as underlining, note taking, and summarizing. Metacognitive interventions are those that focus on the self-management of learning, that is, on planning, implementing, and monitoring one's own learning efforts. Affective interventions are those that focus on such noncognitive aspects of learning such as motivation and self-concept. Hattie et al. found that intervention programs comprised any one or more of these kinds of targets (p. 100).

There has been a preponderance of research on study skills. Hattie, Biggs, and Purdie (1996) found 1,415 journal articles reporting research on study skills published between 1982 and 1992. Overall, the results from studies indicate that study skills training has been found to have an impact on academic performance and affect (Hattie et al., 1996). However, research also indicates that certain features or combinations of study skills interventions have differing impact on student outcomes. For example, Hattie et al. conducted a meta-analysis and examined 51 studies in which interventions aimed to enhance student learning by improving student use of either one or a combination of learning or study skills. For the purposes of their review, a study was considered for

review if (a) it was concerned with learning or study skills; (b) it was possible to calculate an effect size, (c) there was some type of intervention; and (d) the outcome was either performance, study skills, or affect. The nature of the intervention was categorized according to the SOLO taxonomy. The outcome measure used to assess the effectiveness of an intervention was also classified. Academic performance measures such as subject-based tests and examinations, grade point averages, and tests of general ability were categorized as performance. Where the outcome measured change in either one or a range of study behaviors, the category study skills was assigned. Affect was used when the outcome measure was related to self-efficacy, self-concept or attitude.

The researchers concluded that most study skills intervention is effective most of the time but only under certain conditions. Most studies reported an average effect size of 0.45 and a very respectable 0.57 for performance. However, with respect to age, the researchers concluded that although interventions are effective across all age groups, youngest students (primary to upper secondary students) benefit most from study skills. University students and adults show much lower effects on their performance outcomes but stronger effects on affect. Most affective outcomes for university students related either to improved attitudes towards learning or to the reduction of anxiety. However, one study Gadzella, Goldston, and Zimmerman (1977) involving college students showed clearly the relative impact of study skills training on performance and affect. The experimental group, after participation in a fairly traditional program dealing with such topics as managing time, improving memory, taking lecture notes, improving concentration, improving scholastic motivation, reading textbooks, writing reports, and taking examinations, showed no significant improvement in academic performance when

compared with the control group (effect size = -0.16). There was a marked improvement for the treatment group in study attitudes (effect size = 0.57). That is, after attending study skills programs, students have more positive attitudes towards their study, but these positive attitudes do not necessarily translate into performance outcomes.

Unistructural component interventions (programs focused on a single point of change, such as training in underlining, using a mnemonic or time management) involving direct teaching of mostly mnemonic devices are highly effective with virtually all students. Multiple-component interventions were found to be ineffective when used for high cognitive levels or for far transfer. Multiple-component interventions were not effective for older adults. However, several studies in the multiple component category did show small gains in grade point average.

When relational programs, which integrate the informed use of strategies to suit particular content, were used for near transfer, they were highly effective in all domains (performance, study skills, and affect) over all ages and abilities.

Generally, research suggests that direct teaching of general all-purpose study skills is not effective (e.g. Garner, 1990, McCombs, 1984; Pintrich & deGroot, 1990; Tabberer, 1984). Kirschenbaum and Perri (1982), reviewing studies conducted with adult participants and published in the period 1972-78, found 35 studies in which the interventions comprised programs based on applied behavioral analysis, general counseling, self-control techniques, and study skills, either as a single-component program or in multiple-component programs involving certain combination approaches, such as self-control and study skills training. Dependent variables were based on performance measured by grade point average, individual subject grades, and sometimes

anxiety and/or attitude. Kirchenbaum and Perri found that the proportion of successful and unsuccessful interventions was higher on the affective dependent measures (over 50 percent were effective) than on performance (33 percent were effective). In respect to performance, single component interventions were less effective. Behavioral interventions on their own were most effective in reducing anxiety.

In a more recent study, Bender (2001) compared students in a comprehensive development studies program (study skills course and required attendance at tutoring sessions) to students enrolled in study skills course only and to a control group that did not attend study skills course or tutoring sessions. Bender found students in the comprehensive program exceeded their predicted grade point average significantly more than the comparison groups, and instructors reported a greater number of positive behavioral changes on the part of the students in their classes.

Consequently, the present thought on study skills training is that intervention (1) is not simply a tactic or microcomponent such as a particular study skill or set of study skills...but rather a range of cognitive and metacognitive procedures, (2) is not only cognitive but also affective, involving motivation both as a precursor to effective strategy use and continuing support to the complex of learning related beliefs and procedures, (3) should evoke, support, and maintain the components being targeted by intervention. (Hattie et al., 1996, p. 102).

Limited studies have successfully related study skills interventions to student retention (e.g., Bishop & Brennenman, 1986; Frank & Kirk, 1975; Mitchell, Hall, & Piatrowska, 1975; Polansky, Horan, & Hanish, 2001; Rubin & Cohin, 1974). Results of a

recent study suggests there is an indirect correlation between the two variables (e. g. Kern, Fagley, & Miller, 1998).

Counseling Services

Personal Counseling. Today's college students are increasingly becoming more diverse: 30 percent are minorities, 20 percent are foreign born or first generation, 55 percent are female, and 44 percent of all undergraduates are over the age of 25 (Choy, 2002). As the demographics of college students have changed so have their needs, specifically regarding their mental health (Kitrow, 2003).

The need for personal or mental health counseling has increased on college campuses. More college students are arriving on college campuses suffering from serious emotional conditions that run the full spectrum of diagnostic disorders (Heitzmann & Nafziger, 2001). According to Archer and Cooper (1998), "compared with students in the past, today's students arrive on campus with more problems as a result of dysfunctional family situations, with more worries and anxieties about the future and about the serious problems facing them in modern society, with an increased awareness of their own personal demons, and with a great willingness to seek psychological and psychiatric help" (p. 6).

According to a national survey of counseling center directors (Gallagher, Zhang, & Taylor, 2004), in the 2003-2004 school year, nearly 92 percent of 339 counseling centers in the United States and Canada reported an increase in students coming to counseling already on psychiatric medications. Furthermore, 91.2 percent reported hospitalizing at least one student for psychological problems. The American College Health Association monitors all aspects of student health. According to their 2000 survey

of 16, 000 students from 20 colleges and universities, 64 percent of students reported feeling emotionally exhausted, 38 percent were so depressed it was difficult to function, and 10 percent had been diagnosed with depression (Eudaly, 2002).

Not all students experience psychological or mental health issues. Students may experience emotional, social or adjustment issues as a result of the complex challenges involved in making the transition to college (Gerdes & Mallinckrodt, 1994). Whatever psychological, emotional, adjustment or social concerns, institutions provide direct counseling interventions to students whose personal problems interfere with their ability to function in the academic environment (Sharkin, 2004).

Despite data that indicates increases in the numbers of students using or needing counseling services, one of the biggest challenges has been for counseling centers to demonstrate that their services significantly contribute to student retention (Sharkin, 2004). Although limited studies indicate that personal counseling has a positive effect on student retention (Bishop & Brenneman, 1986; Bishop & Walker, 1990; Sharkin, 2004; Turner & Berry, 2000; Wilson, Mason, & Ewininig, 1997), Wilson, Mason, and Ewining found that students' chances of persisting increased with the number of counseling sessions, at least up to six or seven sessions. However, after 6 sessions, additional sessions did not have much impact on likelihood of retention.

Academic Counseling

The purpose of academic counseling is to assist students in improving study and test-taking skills for the specific purpose of improving academic performance (Sharkin, 2004). Wlazelek and Coulter (1999) suggest

> academic counseling is distinguished from advising in that academic counseling is regarded as a more comprehensive process that includes an assessment of

> psychological, interpersonal, and academic needs of students and recommendations related to course scheduling, academic development, and personal development (p. 33).

There is some evidence to suggest that academic counseling has some impact on retention. Sharkin (2004) found that counseling programs have positive results for retaining academically at-risk students. He cited studies by Boyd, Friesen, Hunt, Hunt, Magoon,Van Brunt (1996) and Boyd, Hunt, Hunt, Magoon, and Van Brunt (1997a). Boyd et al. (1996) evaluated a summer retention program for college students who had been academically dismissed and had subsequently applied for reinstatement. These students were invited by the university counseling center to participate in a summer program designed to teach skills necessary for academic success. The comparison group consisted of students who had been academically dismissed and then reinstated but did not participate in the summer program.

Using Chi Square analysis, Boyd et al. (1996) found academic persistence rates were significantly higher for the treatment group for three of the four semesters after the summer program. By the end of the fourth semester, 64 percent of the treatment group was still enrolled compared to only 49 percent of the students who did not participate in the program. Although the proportion of students in the treatment group who ended their semester in good academic standing was consistently higher than that of the comparison group, the difference was not statistically significant.

In another study cited by Sharkin (2004), Boyd et al. (1997a) evaluated a retention intervention program in which parents served as referral agents for their first year college students. The treatment group consisted of 150 parents who attended an orientation session and who chose to participate in the program. These parents were

instructed in the use of the Resource Directory for the purpose of assisting their student in identifying and locating appropriate campus support services. Ninety sets of parents attending two other orientation sessions, where there was no exposure to the program, served as a nontreatment comparison group. Results indicated there were no statistically significant differences between the treatment and comparison groups on rates of academic persistence for either fall or spring semester. However, there were statistically significant differences between the treatment and comparison groups on rates of persistence in good academic standing. While Sharkin (2004) cited the Boyd et al. (1997a) study as support for the impact of academic counseling on retention, the study fails to do so. It more strongly indicates a relationship between parental involvement and student retention.

However, a more current study by Engle, Reilly, and Levine (2004) found that academic counseling had a significant impact on the academic improvement and retention of at-risk students. Engle et al. (2004) investigated the impact that a 12-week retention program had on participants' retention, GPA, self-reported study skills and self-esteem. The 12-week retention program was designed to assist participants with test-taking, study and career skills through individual and group counseling. The results indicated 69 percent of the program participants earned a cumulative GPA $\geq$2.0 by the end of the program compared to 43 percent of the control group. Furthermore, 55 percent of program participants were retained as compared to 28 percent of the control group.

Trippi and Cheatham (1991) investigated the impact of a specialized counseling intervention program on the graduation of African American students. The counseling program is a special academic support unit specifically charged with providing academic

counseling services to African American students attending the university. They found special counseling programs had a statistically significant impact on the academic progress and graduation of African American students.

Career Counseling

Career counseling interventions are designed to assist students in developing and clarifying career goals (Polansky, Horan, Hanish, 1993). These authors further pointed out that despite the expansive amount of literature heralding the effectiveness of career counseling on various outcome variables, they found no study addressing the specific relationship between career counseling and student retention. The authors noted a review of literature by Lenning, Sauer, and Beal (1980) that concluded that counseling strategies focusing on improving commitment were the most promising ways to improve retention.

In theory, career counseling should improve commitment and retention through the mediating of career goal development (Polansky et al., 1993). Wiley and Magoon (1982) found that students with career choices consistent with their Holland codes persist at higher rates than do undecided students. Several researchers have concluded that career clarity or career maturity in undergraduate students is related to retention and graduation (Astin, 1993; Beal & Noel, 1980; DeCosmo, 1977; Eric Fact Sheet No. 16, 1982; Gordon, 1984; Noel, 1985; Reimanis, 1973; Boyd, Hunt, Hunt, Magoon, & VanBrunt, 1997b). These studies suggest that college students with unclear or uncertain academic and career goals are more at-risk of not persisting to degree completion. However, Lewallen (1993) utilizing a national, longitudinal database, found that being initially undecided or uncertain about career and/or major choice does not place students at-risk of not persisting to degree completion. Lewallen reports on a study by Gordon:

> Indeed, there is a widely accepted opinion and belief that undecided students are attrition-prone. This widely held claim can be found in several writings and studies. Statements like the following are typical and have certainly fueled this opinion: Gordon (1984) stated that one of the key issues involved in discussing the undecided student is that "undecided students have been identified as attrition-prone" (p. X). She also stated that "college students with unclear, unrealistic, or uncertain academic and vocational goals have been identified in several attrition studies as a dropout-out prone population (Gordon, 1985, p. 116). (p. 103).

Lewallen cited statements from several other authors who made similar claims. He noted that these statements were made with no reference to the research that supports the claim. Other statements were made with reference to only one study, and often the results from that one study were reinterpreted to support the notion that undecided students are attrition-prone. Furthermore, he concluded that previous research findings on undecided-student persistence are inconclusive due to methodological problems and lack of a theoretical framework.

In contrast, Perry, Cabrera and Vogt (1999) found career maturity to be positively associated with a number of variables important to college persistence (e.g., GPA, academic integration, faculty contact, and encouragement. Career maturity also contributed to variance in intent to persist. However, career maturity had no significant direct effect on persistence.

As noted earlier, several studies have found social involvement to be one of the variables associated with college persistence. Adler (1939) theorized that individuals who have high levels of social interest are the most successful in achieving satisfaction in their career "life task" because their innate potentiality for "social useful goal striving" has been realized (p. 28). One study conducted by career counselors found that students experiencing academic difficulty, who had undecided majors or who had unformulated long-term career goals also had low social interest. Based on Adler's theory (1939),

Behrens, Newlon, and Duran (1995) selected a sample of 85 college students, 43 students who voluntarily sought career counseling assistance and 42 who were facing academic probation and were mandated to seek career counseling. All students were administered Crandall's Social Interest Scale. Results yielded significantly low levels of social interest for students who were facing academic probation ($p=.040$; $p<,05$); for those who had an undecided major ($p=.0006$; $p<.05$); and for those who had not formulated long term career goals ($p=.009$; $p<.05$). While no direct causal relationship can be made between career maturity and student involvement, the data does suggest that students who are more involved or who have more social interests have higher levels of career maturity.

Summary of Review of Literature

The literature review reveals that SSS programs across the nation most often provide academic and support services as a combination of services that include advisement, counseling, tutoring, special instruction, cultural enrichment activities and mentoring (Eisner, 1997). This is the case for several retention programs across the nation (Simpson, Hynd, Nist & Burrell, 1997). While most support services have been demonstrated to be effective, most studies regarding support services examine only one isolated service variable such as tutoring or counseling alone in relationship to student outcomes (Kim, 1999). Futhermore, the configuration or arrangement of services varies from institution to institution (Thomas et al., 1998). Moreover, there is limited research to suggest any particular arrangement of support services yields better results than others (Thomas et al.). Such studies disregard the interaction between other variables that may have an additive or non-additive relationship to student outcomes. A review of literature on studies related to Student Support Services programs' impact on participants'

outcomes produced only two published studies that conducted true impact analysis on the effectiveness of a specific arrangement or combination of services. Kim (1999) examined the relationship between various services provided by a SSS Program at the University of Wisconsin-Madison and its undergraduate students' academic performance measured by the students' overall grade point averages. Findings from the study indicated the overall students' grade point averages in relation to the usage of services regardless of race, gender and socio-economic status were found to have a significant relationship with students' academic performance.

In another study, Abbott (2004), using a quantitative, ex-post facto approach, investigated persistence and achievement outcomes of participation in specific services provided to community college participants of SSS. The purpose of the study was to identify the most cost-effective set of SSS services that best predicts persistence and achievement for program participants. The researcher explored the service contacts of 577 SSS participants from the time they entered the SSS program through the time they completed their community college goals by graduating, transferring to a four-year college, or withdrawing from the college. Findings revealed four SSS services predicted persistence, and two services predicted GPA. Findings also showed that services involving transfer planning, computer labs, cultural activities, and personal counseling best predicted persistence or non-persistence. Transfer planning and academic advising predicted academic achievement.

CHAPTER 3

Methodology

The purpose of this chapter was to: (1) describe the design of the study; (2) describe the database and sample; (3) delineate the variables that were used; and (4) give an overview of the analysis that were employed for the study. This study sought to answer the following research questions:

1) What is the frequency of use of UA SSS services by the subjects of the study and the frequency of use of the total number of minutes subjects spent on each service?

2) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance?

3) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student retention?

4) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance according to ethnicity, eligibility, (low-income, first-generation and disability status), classification and gender?

5) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student retention according to ethnicity, eligibility, (low-income, first-generation and disability status), classification and gender?

Research Design

This was a cross-sectional study that used existing data available on the UA Student Support Services Program database. This study employed the use of multiple regression analysis and logistic regression analysis to examine the relationship between service variables and the dependent variables student retention and student academic performance provided by UA Student Support. The study also sought to determine which service or combination of services had a statistically significant relationship with

program participants' academic performance and retention rates according to ethnicity, gender, program eligibility, and classification.

Student Access, the program's database, was used to collect archival data for the academic year 2003-2004. Student Support Services staff compiled the data.

Target Population

Subjects of the study included 307 students who participated in the program during the academic year 2003-2004. According to self reports, 66.4% (n=204) of the subjects were females while 33.6% (n=103) were males. The majority of the subjects were White; 51.8% (n=159), followed by African American; 29.6% (n=91) then Asian; 6.5% (n=20), Hispanic, 5.2% (n=16), while 3.65% (n=11) reported more than one race and finally American Indian or Alaskan Native 3.3% (n=10). The majority of subjects were Low-Income and First-Generation 62.9% (n=193), while the least number were Disabled and Low-Income 2.6% (n=8). The largest percentage of subjects were first-year freshmen who had never attended college, 33.2% (n=102), while the lowest percentage of subjects were 5th year seniors, 3% (n=1).

The research study examined four different categories of population characteristics: Ethnicity, gender, classification and eligibility.

Instrument

The SSS program of study utilized a uniform record structure (Appendix A) to collect federally required information regarding participants. The software application was developed by the U. S. Department of Education and revised in 2002. It is used nationwide by all SSS programs for the purpose of collecting data and submitting annual electronic performance reports to the Department of Education (Abbott, 2004). There are

28 required fields of data; however, only the following fields were used for the purposes of this study: (1) Students Name, (2) Gender, (3) Race/Ethnicity, (4) Eligibility, (5) College Grade Level, (6) End of Year Enrollment Status, and (7) Cumulative GPA

Data Collection

The Institutional Review Board at the University of Arkansas approved the data collection procedures before any data was collected (Appendix D). Data for this study were collected during the Spring 2005 academic year. A computerized recording form was used for data collection. Variables of interest were copied in the electronic data collection form from the Student Support Service Program's Student Access database. This database was maintained by the program to store students' demographics, record of service usage and contact information. The software is unique because it records various program services in minutes for each program participant, which was useful in analyzing the data. The services (academic, financial aid, career and personal counseling, tutoring, study skills and cultural enrichment activities) served as independent variables.

Measurement

Dependent variables. The dependent variables for this study were program participants' academic performance and retention rates. Academic performance was defined as the cumulative GPA of the students at the end of the academic years 2003-2004. Retention rate was defined as the student being academically eligible and returning to school for a third semester. Retention was a categorical dependent variable and was coded as returned or did not return.

Independent variables. The independent variables for this study were the program services provided to the participants:

(1) Counseling measured in total minutes devoted to the following types: (a) Academic Advising, (b) Personal, (c) Career, and (d) Financial Aid; (2) Tutoring measured in total minutes spent receiving tutoring: (3) Study Skills measured in total minutes spent discussing study skills; and (4) Cultural Enrichment Activities measured in total minutes spent attending cultural enrichment activities.

Data Analysis

Descriptive and inferential statistical techniques were employed to analyze the data. Descriptive statistics were used to describe the data collected. The mean, median, and standard deviation are the main descriptive statistics; they are used to indicate the average score and the variability of scores for the sample. The advantage of descriptive statistics is that they enable the researcher to use one or two numbers (e. g., the mean and standard deviation) to represent all of the individual scores of subjects in the sample (Borg & Gall, 1989, p. 336).

Inferential statistics are used to make inferences from sample statistics to the population parameters. These types of statistics are important in educational research in that the researcher can make generalizations about the larger population from which a sample or samples are drawn (Borg & Gall, 1989, p. 336).

The data were downloaded from the Student Access database to a Microsoft Access spreadsheet. The data were coded and entered into the Statistics Package for the Social Sciences version 13.0 (SPSS 13.0) to be analyzed. At the end of data collection, all data entered were examined for data entry errors and organized for computer analysis. Multiple linear regression analysis was used to find the service or combination of services that had a statistically significant relationship with academic performance.

Multiple linear regression analysis is a statistical technique for exploring the strength of relationship between several independent variables (singly or in combination) and one dependent variable (Borg & Gall, 1989, p. 346).

Logistic regression analysis was used to find the service or combination of services that had a statistically significant relationship with student retention. Logistic regression is a specialized form of regression that is formulated to predict and explain a binary (two-group) categorical variable rather than a metric dependent measure (Hair, Anderson, Tatham & Black, 1998, p. 246).

Data transformation. The data set that was selected for this study was not randomly selected; therefore, the data could have been in violation of the rules of constant variance and normality (Heckman, 1978). To avoid the imprecision of nonparametric statistics, it was necessary to check for normal distribution and constant variance of the data.

Analysis of research questions. This section will outline the specific procedures that were followed to answer the research questions:

Research Question 1

This research question examined the frequency of use of UA SSS services by the subjects of the study and the frequency of the total number of minutes subjects spent on each service. Because data collected here were measured at the nominal level, descriptive statistical methods using frequencies and percentages in categories were employed to answer this question.

Research Questions 2

The objective of research question two was to determine the relationship between the dependent variable, the academic performance of the subjects of the study and the independent variables, total minutes that students received the following services: counseling, tutoring, workshops, study skills training, and cultural enrichment activities. The dependent variable was measured on the interval level. The independent variables were measured on the ratio levels. Multiple regression analysis was employed to answer this question.

Research Question 3

Research question three sought to determine the relationship between the dependent variable, retention of the subjects of the study and the independent variables of the study, total minutes students received the following services: counseling, tutoring, workshops, study skills training, and cultural enrichment activities. Because the dependent variable, student retention, is categorical in nature and was measured at the nominal level, logistic regression analysis was employed to analyze this variable. The dependent variable, student retention, was coded as dichotomous variables (1=returned, 2=did not return) in order to perform the logistic regression analysis.

Research Question 4

Research Question four sought to determine the relationship between the dependent variable academic performance of subjects in the study, and the independent variables of the study, total minutes students received the following services: counseling, tutoring, workshops, study skills training, and cultural enrichment activities according to various student characteristics (classification, gender, eligibility, and ethnicity). The relationship

between the independent variables and the dependent variable was analyzed using multiple regression analysis. Academic performance was the dependent variable and was measured as an interval variable. The relationship between the independent variables and the dependent variable was analyzed for all students according to gender, eligibility, classification, and ethnicity using multiple regression analysis. The independent variables were entered as ratio variables.

Research Question 5

Research question five sought to determine the relationship between the dependent variable student retention of subjects in the study and the independent variables of the study, total minutes students received the following services: counseling, tutoring, workshops, study skills training, and cultural enrichment activities according to various student characteristics (classification, gender, eligibility, and ethnicity). The relationship between the independent variables and the dependent variable was analyzed using logistic regression analysis. Student retention, which was measured as a nominal variable, was used as the dependent variable in the analysis. The relationship between the independent variables and the dependent variable was analyzed for all students according to gender, eligibility, classification, and ethnicity using logistic regression analysis. Independent variables were entered as ratio variables.

CHAPTER 4

Findings

The purpose of this study was to identify and examine the service variable combinations provided by the SSS TRIO program at the University of Arkansas that affect program participants' academic performance and retention rates most significantly.

The first section of this chapter includes a description of selected demographics regarding the subjects of the study, followed by reports of the multiple regression and logistic regression analyses results between the amount of time subjects spent on service variables and the subjects' academic performance and retention. The results presented in this chapter are arranged by research questions of the study.

Subjects of the study included all students who participated in the program during the academic year 2003-2004. As shown in Table 1, 66.4% (n=204) of the subjects were females while 33.6% (n=103) were males.

Table 1

Gender of Subjects in the Study

Gender	Frequency	Percent
Female	204	66.4
Male	103	33.6
Total	307	100.0

Regarding the ethnicity of subjects in the study, Table 2 shows the majority of the subjects were White; 51.8% (n=159), followed by African American; 29.6% (n=91) then

Asian; 6.5% (n=20), Hispanic, 5.2% (n=16), 3.65% (n=11) reported more than one race and finally American Indian or Alaskan Native 3.3% (n=10).

Table 2

Ethnicity of Participants in the Study

Ethnicity	Frequency	Percent
American Indian or Alaskan Native	10	3.3
Asian	20	6.5
African-American	91	29.6
Hispanic	16	5.2
White	159	51.8
More than one race reported	11	3.6
Total	307	100.0

Table 3 provides a summary of the eligibility status of subjects of the study. The majority of subjects were Low-Income and First-Generation 62.9% (n=193), while the least number were Disabled and Low-Income 2.6% (n=8).

Table 3

Eligibility Status of Subjects in the Study

Eligibility	Frequency	Percent
Low-Income and First-Generation	193	62.9
Low Income Only	43	14.0
First-Generation Only	51	16.6
Disabled	12	3.9
Disabled and Low-Income	8	2.6
Total	307	100.0

As shown in Table 4 the largest percentage of subjects were first-year freshmen who had never attended college, 33.2% (n=102), while the lowest percentage of subjects were 5th year seniors, 3% (n=1).

Table 4

Classification of Subjects in the Study during 2003-2004 Academic Year

Classification	Frequency	Percent
Freshmen	102	33.2
Sophomores	66	21.5
Juniors	64	20.8
Seniors	75	24.4
Total	307	100.0

Research Question One

What is the frequency of use of UA SSS services by the subjects of the study and the frequency of the total number of minutes subjects spent on each service. The purpose of research question one was to examine the frequency of use of UA SSS services by the subjects in the study and the frequency of the total number of minutes subjects spent on each service.

As shown in Table 5 subjects in the study used academic counseling services most frequently, 92.8% (n=285) and study skills least frequently, 6.8% (n=21).

Table 5

Frequency of Use of Services by Subjects in the Study

Services	Frequency	Percent
Academic Counseling	285	92.8
Personal Counseling	113	36.8
Career Counseling	177	57.6
Financial Aid Counseling	218	71.0
Study Skills	21	6.8
Tutoring	172	56.0
Culture Enrichment Activities	215	70.0

Tables 6-11 show the frequency of the total number of minutes subjects spent for each service received. As shown in Table 6, 41% (n=126) of the subjects spent 1-60 minutes in academic counseling, while 2.6% (n=8) of the subjects spent 181minutes or more in academic counseling.

Table 6

Total Time Subjects Spent on Academic Counseling Services

Total Time in Minutes	Frequency	Percent
.00	22	7.2
1-60 min	126	41.0
61-120 min.	86	28.0
121-180 min	65	21.2
181 or more	8	2.6
Total	307	100.0

Regarding personal counseling services, data in Table 7 indicate the majority of the subjects in the study 34.2% (n=105) utilized personal counseling services for 1-60 minutes, while the minimum number of subjects, .3% (n=1), spent 121-180 minutes in personal counseling.

Table 7

Total Time Subjects Spent on Personal Counseling Services

Total Time in Minutes	Frequency	Percent
.00	194	63.2
1-60 min	105	34.2
61-120 min.	7	2.3
121-180 min	1	.3
Total	307	100.0

Data in Table 8 show that the majority of the subjects 54.1% (166) devoted 1-60 minutes to career counseling services, while the minimum number of subjects 3.6% (n=11) spent 61-120 minutes in career counseling.

Table 8

Total Time Subjects Spent on Career Counseling Services

Total Time in Minutes	Frequency	Percent
.00 minutes	130	42.3
1-60 min	166	54.1
61-120 min.	11	3.6
Total	307	100.0

Table 9 shows the largest number of subjects 64.2% (n=197) spent 1-60 minutes on financial aid counseling. The least number of subjects .3% (n=1) spent 121-180 minutes on financial aid counseling.

Table 9

Total Time Subjects Spent on Financial Aid Counseling Services

Total Time in Minutes	Frequency	Percent
.00	89	29.0
1-60 min	197	64.2
61-120 min.	20	6.5
121-180 min.	1	.3
Total	307	100.0

Data in Table 10 reveal that the majority of subjects 28.7% (n=88) devoted 20-120 minutes to cultural enrichment activities, while the least number of subjects 1.3% (n=4) devoted 481-600 minutes to cultural enrichment activities.

Table 10

Total Time Subjects Spent on Cultural Enrichment Services

Total Time in Minutes	Frequency	Percent
.00	92	30.0
20-120 min	88	28.7
121-240 min.	75	24.4
241-360 min.	32	10.4
361-480 min.	16	5.2
481-600min.	4	1.3
Total	307	100.0

Table 11 shows the greatest number of subjects in the study, 15.3% (n=47) used tutoring services 601-1200 minutes, while the least number of students 3.3% (n=10) used tutoring services 3001-3600 minutes.

Table 11

Total Time Subjects Spent on One-on-One Tutoring Services

Total Time in Minutes	Frequency	Percent
.00 min.	135	44.0
60-600 min	43	14.0
601-1200 min.	47	15.3
1201-1800 min	34	11.1
1801-2400 min.	11	3.6
2401-3000 min.	12	3.9
3001-3600 min.	10	3.3
3601-6960 min.	15	4.9
Total	307	100.0

Data in Table 12 show that the majority of the subjects in the study 7.2% (n=22) spent 15-600 minutes on study skills training. The lowest percentage of subjects 2% (n=6) spent time on study skills training that ranges from 2401 minutes to 3000 minutes.

Table 12

Total Time Subjects Spent on Study Skills Training

Total Time in Minutes	Frequency	Percent
.00	279	90.8
15-600 min	22	7.2
2401-3000 min.	6	2.0
Total	307	100.0

Research Question Two

What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance? The objective of research question two was to determine the relationship between the dependent variable, the academic performance of the subjects in the study and the independent variables, total minutes subjects spent on academic, personal, and financial aid counseling, tutoring, study skills training and cultural enrichment activities.

The descriptive statistics of all the variables used in the model are presented in Table 13.

Table 13

Descriptive Statistics for All Variables Used in the Model

Variable	n	M	SD	Minimum	Maximum
Academic Counseling	285	84.15	52.43	7.50	355.00
Personal Counseling	113	30.80	22.99	5.00	165.00
Career Counseling	177	31.56	18.44	7.50	100.00
Financial Aid Counseling	218	35.00	20.55	5.00	130.00
Tutoring	172	827.31	954.83	2.00	5420.00
Cultural Enrichment Activities	215	148.60	140.127	.00	600.00
Study Skills	28	661.43	1185.31	15.00	2940.00

Prior to multiple regression analysis, a simple correlation matrix was used to establish whether multicollinearity existed between the variables studied. Table 14 shows the simple correlation matrix of the major variables used in the study. As the coefficients show in Table 14, there were no tendencies of multicollinearity.

Table 14 shows there was a positive relationship between the variables amount of time spent on the services academic counseling, financial aid counseling and study skills training, tutoring, cultural enrichment activities and the academic performance of subjects in the study. There was a negative relationship between the variables amount of time spent on personal counseling, career counseling and academic performance.

Table 14

Simple Correlation Matrix for the Variables in the Study (n=307)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	.046	1						
Personal Counseling	-.142	.212	1					
Career Counseling	-.075	-.018	.196	1				
Financial Aid Counseling	.002	.149	.143	.649	1			
Study Skills	.052	.049	-.038	.047	.128	1		
Tutoring	.074	.191	.040	.108	.037	-.046	1	
Cultural Enrichment Activities	.130	.553	.130	.060	.298	.035	.139	1

Data in Table 15 show the regression results. The estimated regression coefficients for various variables are shown. Also the standardized coefficients, the adjusted R^2, t-statistics, the significance levels of variables estimated, and the F value of the model are presented.

As the results in Table 15 show, the model is significant $F = 2.38$, $p = .022$. The adjusted R^2 is relatively low (.031), indicating that only 3.1 percent of the variation in

academic performance of subjects in the study may be attributed to the independent variables in the study. The results show that the independent variables personal counseling and cultural enrichment activities were significant ($p < .05$). However, personal counseling had a negative correlation with academic performance. The following variables were not found to be significantly related to the academic performance of the subjects in this regression model: academic counseling, career counseling, financial aid counseling, study skills training and tutoring.

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. The data in Table 15 show, the variables found significant in the model with the greatest statistical effect on the subjects' academic performance were personal counseling (-.144) and cultural enrichment activities (.148).

Table 15

Regression Analysis for All Variables in the Study (n=307)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	.000	-.027	-.391	.696
Personal Counseling	-.006	-.144	-2.444.	.015*
Career Counseling	-003	-.085	-1.100	.272
Study Skills	9.24E-005	.046	.812	.417
Financial Aid Counseling	.001	.029	.365	.715
Tutoring	4.52E-005	.074	1.275	.203
Cultural Enrichment Activities	.001	.148	2.096	.037*

Note. Adjusted $R^2 = .031$; F value = 2.379; $p = .022$

*$p < .05$

Research Question Three

What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student retention? The purpose of research question three was to determine the relationship between the dependent variable, retention of the subjects in the study and the independent variables of the study, total minutes subjects spent on the services academic, personal, and financial aid counseling, tutoring, study skills training and cultural enrichment activities. Because the dependent variable, student retention, is categorical in nature and was measured at the nominal level,

logistic regression analysis was employed to analyze this variable. The dependent variable, student retention, was coded as dichotomous variables (1=returned, 2=did not return) in order to perform the logistic regression analysis. The independent variables were entered as ratio variables.

Data in Table 16 summarize the results of the logistic regression analysis. From Table 16, a direct estimation of the probability of an event occurring (student being retained) can be made by computing the B (effect coefficient), X (the independents variable), and e (the base of the natural logarithms, approximately 2.718) using the formula: Prob (event) $=1/(1 + e^{-Z})$, where $Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$.

In logistic regression analysis, the greater the Wald value the lesser the probability of an event to occur. As illustrated in Table 16, the independent variable, academic counseling (Wald value = 2.754, $p < .10$), had a more relaxed statistically significant relationship with student retention.

Table 16

Parameter Estimates for the Logistic Regression Model

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	.007	.004	2.754	.097*	1.007
Personal Counseling	.000	.012	.001	.975	1.000
Career Counseling	-.003	.016	.028	.866	.997
Financial Aid Counseling	-.006	.014	.150	.699	.994
Study Skills	.000	.000	.741	.389	1.000
Tutoring	.000	.000	.729	.393	1.000
Cultural Enrichment Activities	.001	.002	.109	.741	1.001

Note. *$p < .10$

To determine how the logistic regression model fits, a comparison of the predictions to the observed outcome was done. As illustrated in Table 17, subjects who returned to school (n=287) were correctly predicted. Twenty subjects who did not return were incorrectly predicted. Regarding subjects who returned to school, 100% were correctly predicted. Of the subjects who did not return to school none were predicted correctly. Overall, 93.5%.of the cases were correctly predicted by the model.

Table 17

Classification Table for Retention through Goodness of Fit with All Variables
The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	287	0	100.0
Did Not Return	20	0	0
		Overall	93.5

Research Question Four

What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance according to ethnicity, eligibility, (low-income, first-generation and disability status) and gender? Research question four sought to determine the relationship between the dependent variable academic performance of subjects in the study, and the independent variables of the study, total minutes subjects in the study spent on academic, personal, and financial aid counseling, tutoring, study skills training and cultural enrichment activities according to various student characteristics (gender, eligibility, classification and ethnicity).

For this research question, the relationship between academic performance and the independent variables in the study was analyzed by classification, gender, eligibility, and ethnicity using multiple regression analysis. Academic performance was the dependent variable and was measured as an interval variable. The independent variables were entered as ratio variables.

Ethnicity

African-American Subjects

With regard to the ethnicity of subjects in the study, only African Americans and Whites had enough subjects to be included in the analysis. Descriptive statistics for the variables used in the model for African-American subjects in the study are presented in Table 18.

Table 18

Descriptive Statistics for Variables Used in the Model for African-American Subjects (n=91)

Variable	M	SD	Minimum	Maximum
Academic Counseling	81.18	50.37	7.50	230.00
Personal Counseling	15.12	21.07	.00	92.00
Career Counseling	23.76	20.51	.00	75.00
Financial Aid Counseling	24.73	19.52	.00	67.50
Tutoring	830.00	1369.29	.00	6630
Cultural Enrichment Activities	164.84	143.13	.00	600.00
Study Skills	67.42	428.73	.00	2940.00

Prior to the multiple regression analysis, a simple correlation matrix was used to establish whether multicollinearity existed between the variables studied. Table 19 shows

the simple correlation matrix of the major variables used in the study specifically for African-American subjects. As the coefficients show in Table 19, there were no tendencies of multicollinearity. Table 19 also shows there was a positive relationship between all of the variables in the study and the academic performance of African-American subjects in the study.

Table 19

Simple Correlation Matrix for the Independent Variables in the Study for African-Americans (n=91)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	.145	1						
Personal Counseling	.063	.135	1					
Career Counseling	.093	-.114	.251	1				
Financial Aid Counseling	.039	.173	.125	.542	1			
Study Skills	.031	.003	-.081	.056	.200	1		
Tutoring	.117	.256	.140	.033	.037	-.063	1	
Cultural Enrichment Activities	.227	.565	.148	.026	.376	.004	.300	1

Data in Table 20 presents a summary of the regression results. The estimated regression coefficients for various variables are shown. Also presented are the standardized coefficients, the adjusted R^2, t-statistics, the significance levels of variables estimated, and the F value of the model.

As the results in Table 20 show, the model is not significant F = 1.026, p = .420. The coefficient of determination is relatively low (.002), indicating that only .2 percent of the variation in the academic performance of African-American subjects in the study may be attributed to the independent variables in the study. The results show that the independent variable total minutes spent on cultural enrichment activities was significant ($p < .10$). The following variables were not found to be significantly related to the academic performance of African-American subjects in this regression model: personal counseling, career counseling, financial aid counseling, study skills training and tutoring.

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. The data in Table 20 reveal that the independent variable, total time spent on cultural enrichment activities ($p < .10$), had a more relaxed statistical effect on the academic performance of African-American subjects in the study.

Table 20

Regression analysis for Independent Variables in the Study for African-American Subjects (n=91)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	.001	.045	.346	.730
Personal Counseling	.000	-.005	-.041	.967
Career Counseling	.007	.184	1.354	.179
Study Skills	.000	.056	.518	.606
Financial Aid Counseling	-007	-.175	-1.220	.226
Tutoring	1.96E-005	.034	.298	.767
Cultural Enrichment Activities	.001	.253	1.796	.076*

Note. Adjusted $R^2 = .002$; F value = 1.026; $p = .420$

*$p < .10$

White Subjects

Descriptive statistics for the variables used in the model for White subjects in the study are presented in Table 21.

Table 21

Descriptive Statistics for Variables Used in the Model for White Subjects (n=159)

Variable	M	SD	Minimum	Maximum
Academic Counseling	78.55	53.63	.00	205.00
Personal Counseling	9.44	20.60	.00	165.00
Career Counseling	17.17	22.07	.00	100.00
Financial Aid Counseling	26.17	25.91	.00	130.00
Tutoring	1039.93	1278.65	.00	6960.00
Cultural Enrichment Activities	136.60	123.72	.00	480.00
Study Skills	74.71	452.22	.00	2880.00

Data in Table 22 show the results for White subjects in the study. Prior to the multiple regression analysis, the simple correlation matrix was used to establish whether multicollinearity existed between the variables studied. Table 22 shows the simple correlation matrix of the major variables used in the study specifically for White subjects. As the coefficients show in Table 22, there were no tendencies of multicollinearity. Table 22 also reveals there was a positive relationship between the variables total time spent on academic counseling, study skills, tutoring and cultural enrichment activities and the academic performance of White subjects in the study. There was a negative relationship

between personal counseling, career counseling, financial aid counseling and the academic performance of White subjects in the study.

Table 22

Simple Correlation Matrix for the Independent Variables in the Study for White Subjects (n=159)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	.099	1						
Personal Counseling	-.207	.258	1					
Career Counseling	-.098	.072	.167	1				
Financial Aid Counseling	-.010	.183	.163	.713	1			
Study Skills	.088	.086	-.021	.034	.108	1		
Tutoring	.039	.232	-.047	.175	.017	-.057	1	
Cultural Enrichment Activities	.187	.544	.066	.118	.249	.068	.060	1

Data in Table 23 presents a summary of the regression results. The estimated regression coefficients for various variables are shown. Also presented are the standardized coefficients, the adjusted R^2, t-statistics, the significance levels of variables estimated, and the F value of the model.

As the results in Table 23 indicate, the model is significant $F = 2.427$, $p = .022$. The coefficient of determination is relatively low (.059), indicating that only 5.9 percent of the variation in the academic performance of White subjects in the study may be

attributed to the independent variables in the study. The results show that the independent variables total minutes spent on personal counseling ($p < .01$) and cultural enrichment activities ($p < .10$) were significant. The independent variable cultural enrichment activities had a more relaxed p-value. There was an inverse relationship between personal counseling and the academic performance of White subjects in the study. The following variables were not found to be significantly related to the academic performance of White subjects in this regression model: academic counseling, career counseling, financial aid counseling, study skills training and tutoring.

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. The data in Table 23 reveal that the variables found to be significant in the model with the greatest statistical effect on White subjects' academic performance were personal counseling (-.214) and cultural enrichment activities (.169). However, there was a negative relationship between personal counseling and the academic performance of White subjects in the study.

Table 23

Regression analysis for Independent Variables in the Study for White Subjects (n=159)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	.001	.047	.468	.641
Personal Counseling	-.008	-.214	-2.601	.010*
Career Counseling	-.005	-.142	-1.227	.222
Study Skills	.000	.068	.866	.288
Financial Aid Counseling	.002	.067	.579	.563
Tutoring	2.00E-005	.035	.421	.674
Cultural Enrichment Activities	.001	.169	1.789	.076**

Note. Adjusted $R^2 = .059$; F value = 2.427; $p = .022$

*p < .01, **p < .10

Eligibility

Low-Income Subjects

Because there were too few subjects in many of the eligibility categories, subjects who met either of the following three eligibility statuses were recoded as Low-Income: (1) First-Generation and Low-Income, (2) Low-Income Only, and (3) Disabled and Low-Income. Descriptive statistics for the variables used in the model for Low-Income subjects in the study are presented in Table 24.

Table 24.

Descriptive Statistics for Variables Used in the Model for Low-Income Subjects (n=244)

Variable	M	SD	Minimum	Maximum
Academic Counseling	80.00	56.53	.00	355.00
Personal Counseling	11.63	20.91	.00	165.00
Career Counseling	18.27	21.61	.00	100.00
Financial Aid Counseling	24.69	23.40	.00	130.00
Tutoring	838.15	1214.80	.00	6960.00
Cultural Enrichment Activities	153.40	142.36	.00	600.00
Study Skills	73.95	448.23	.00	2940.00

The eligibility status of participants was analyzed next using a standard multiple regression analysis. Before the main analysis, a simple correlation matrix was computed to assess multicollinearity among the independent variables. Table 25 presents the results of this analysis and indicates there were no tendencies of mulitcollinearity. Table 25 also shows there was a positive relationship between total minutes spent on academic counseling, study skills, tutoring, and cultural enrichment activities and the academic performance of Low-Income subjects in the study. However, these data reveal an inverse relationship personal counseling, career counseling, financial aid counseling and the academic performance of Low-Income subjects in the study.

Table 25

Simple Correlation Matrix for the Independent Variables in the Study for Low-Income Subjects (n=244)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	.088	1						
Personal Counseling	-.131	.218	1					
Career Counseling	-.082	-.041	.237	1				
Financial Aid Counseling	-.038	.163	.176	.662	1			
Study Skills	.065	.052	-.044	.049	.144	1		
Tutoring	.071	.193	.060	.102	.065	-.046	1	
Cultural Enrichment Activities	.145	.530	.136	.056	.322	.033	.172	1

As indicated in Table 26, the model is significant $F = 2.031$, $p = .052$. The coefficient of determination is relatively low (.029), indicating that only 2.9 percent of the variation in the academic performance of low-income subjects in the study may be attributed to the independent variables in the study. The results show that the independent variable total minutes spent on personal counseling and cultural enrichment activities were significant ($p < .05$). However, there was a negative relationship between personal counseling and academic performance of low-income subjects in the study. The following variables were not found to be significantly related to the academic

performance of low-income subjects in this regression model: academic counseling, career counseling, financial aid counseling, study skills training and tutoring.

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. The data in Table 26 reveal that variables found to be significant in the model with the greatest statistical effect on low-income subjects' academic performance were total minutes spent on personal counseling (-.143) and cultural enrichment activities (.160). Personal counseling had an inverse relationship with academic performance.

Table 26

Regression analysis for Independent Variables in the Study for Low-Income Subjects (n=244)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	.000	.030	.389	.698
Personal Counseling	-.005	-.143	-2.124	.035*
Career Counseling	-.001	-.019	-.212	.832
Study Skills	.000	.065	1.007	.315
Financial Aid Counseling	-.002	-.069	-.749	.454
Tutoring	3.57E-005	.055	.847	.398
Cultural Enrichment Activities	.001	.160	2.032	.043*

Note. Adjusted $R^2 = .029$; F value = 2.031; $p = .052$

*$p < .05$

First-Generation Subjects

Because of too few subjects in many of the eligibility categories, subjects who met either of the following three eligibility statuses were recoded as First-Generation: (1) First-Generation and Low-Income, and (2) First-Generation Only.

Descriptive statistics for the variables used in the model for first-generation subjects in the study are presented in Table 26.

Table 27

Descriptive Statistics for Variables Used in the Model for First-Generation Subjects in the Study (n=244)

Variable	M	SD	Minimum	Maximum
Academic Counseling	78.01	57.29	.00	355.00
Personal Counseling	11.39	20.69	.00	165.00
Career Counseling	17.78	20.45	.00	100.00
Financial Aid Counseling	24.61	23.00	.00	130.00
Tutoring	852.80	1193.01	.00	6360.00
Cultural Enrichment Activities	146.07	139.07	.00	600.00
Study Skills	50.10	368.24	.00	2940.00

The eligibility status of first-generation subjects was analyzed next using a standard multiple regression analysis. Before the main analysis, a simple correlation

matrix was computed to assess multicollinearity among the independent variables. Table 28 presents the results of this analysis and indicates that there were no tendencies of mulitcollinearity. Table 28 also shows there was a positive relationship between total minutes spent on study skills, tutoring, cultural enrichment activities and the academic performance of first-generation subjects in the study. However these data reveal an inverse relationship between academic counseling, personal counseling, career counseling, financial aid counseling and the academic performance of first-generation subjects in the study.

Table 28

Simple Correlation Matrix for the Independent Variables in the Study for First-Generation Subjects (n=244)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	-.001	1						
Personal Counseling	-.129	.249	1					
Career Counseling	-.112	.001	.174	1				
Financial Aid Counseling	-.018	.161	.143	.639	1			
Study Skills	.011	.016	-.044	.019	.083	1		
Tutoring	.056	.181.	.071	.064	.076	-.019	1	
Cultural Enrichment Activities	.078	.561	.181	.081	.342	.012	.189	1

As indicated in Table 29, the model is not significant ($p = .169$). The coefficient of determination is relatively low (.014), indicating that only 1.4 percent of the variation in the academic performance of first-generation subjects in the study may be attributed to the independent variables in the study. The results show that none of the independent variables were found to be significantly related to the academic performance of first-generation subjects in this regression model.

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. The data in Table 29 reveal that no variables were found to have a significant statistical effect on first-generation subjects' academic performance.

Table 29

Regression analysis for Independent Variables in the Study for First-Generation Subjects (n=244)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	-.001	.-.052	-.661	.509
Personal Counseling	-.005	-.124	-1.851	.065
Career Counseling	-.006	-.137	-1.601	.111
Study Skills	8.90E-006	.004	.062	.950
Financial Aid Counseling	.002	.053	.586	.559
Tutoring	4.02E-005	.058	.895	.372
Cultural Enrichment Activities	.001	.112	1.360	.175

Note. Adjusted $R^2 = .014$; F value = 1.498; $p = .169$

Gender

Male Subjects

Descriptive statistics for the variables used in the model for male subjects in the study are presented in Table 30.

Table 30

Descriptive Statistics for Variables Used in the Model for Male Subjects (n=103)

Variable	M	SD	Minimum	Maximum
Academic Counseling	89.09	64.00	.00	355.00
Personal Counseling	10.27	22.13	.00	165.00
Career Counseling	18.33	22.32	.00	100.00
Financial Aid Counseling	26.97	25.09	.00	130.00
Tutoring	989.79	1224.97	.00	4773.75
Cultural Enrichment Activities	139.81	133.54	.00	480.00
Study Skills	30.29	283.78	.00	2880.00

A simple correlation matrix was computed to assess multicollinearity among the independent variables. Table 31 presents the results of the analysis of male subjects in the study and indicates there were no tendencies of mulitcollinearity. Table 31 also shows a positive relationship between the variables total minutes spent on study skills, cultural enrichment activities and the academic performance of male subjects in the study. However, these data reveal an inverse relationship between academic counseling, personal counseling, career counseling, financial aid counseling, tutoring and the academic performance of male subjects in the study.

Table 31

Simple Correlation Matrix for the Independent Variables in the Study for Male Subjects (n=103)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	-.022	1						
Personal Counseling	-.317	.285	1					
Career Counseling	-.115	-.124	.018	1				
Financial Aid Counseling	-.099	.081	.053	.720	1			
Study Skills	.093	.152	-.045	-.087	.130	1		
Tutoring	-.010	.099	-.040	.036	-.083	-.068	1	
Cultural Enrichment Activities	.113	.535	-.029	-.104	.080	.062	.005	1

Data in Table 32 presents a summary of the regression results for males in the study. The estimated regression coefficients for various variables are shown. Also presented are the standardized coefficients, the adjusted R^2, t-statistics, the significance levels of variables estimated, and the F value of the model.

As indicated in Table 32, the model is not significant F= 1.994, $p = .064$. The coefficient of determination is relatively low (.064), indicating that only 6.4 percent of the variation in the academic performance of male subjects in the study may be attributed to the independent variables in the study. The results show that the independent variable

total minutes spent on personal counseling was significant ($p < .01$). The remaining variables were not found to be significantly related to the academic performance of male subjects in this regression model

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. The data in Table 32 reveal that the independent variable personal counseling was found to have a significant statistical effect on male subjects' academic performance. However, personal counseling had an inverse relationship with academic performance.

Table 32

Regression analysis for Independent Variables in the Study for Male Subjects (n=103)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	8.02E-005	.006	.046	.963
Personal Counseling	-.012	-.309	-2.975	.004*
Career Counseling	-.001	-.034	-.230	.819
Study Skills	.000	.078	.766	.445
Financial Aid Counseling	-.003	-.078	-.519	.605
Tutoring	-1.70E-005	-.024	-.240	.811
Cultural Enrichment Activities	.001	.099	.842	.402

Note. Adjusted $R^2 = .064$; F value = 1.994; $p = .064$

*$p < .01$

Female Subjects

Descriptive statistics for the variables used in the model for female subjects in the study are presented in Table 33.

Table 33

Descriptive Statistics for Variables Used in the Model for Female Subjects (n=204)

Variable	M	SD	Minimum	Maximum
Academic Counseling	74.53	50.59	.00	260.00
Personal Counseling	11.63	19.06	.00	92.00
Career Counseling	18.07	20.19	.00	75.00
Financial Aid Counseling	23.73	22.57	.00	110.00
Tutoring	836.10	1289.22	.00	6960.00
Cultural Enrichment Activities	153.04	143.45	.00	600.00
Study Skills	73.75	448.01	.00	2940.00

Table 34 presents the simple correlation matrix for female subjects in the study. The table indicates a positive relationship between the variables total minutes spent on academic counseling, financial aid counseling, study skills, tutoring, cultural enrichment activities and academic performance. However, the data reveal an inverse relationship between personal counseling, career counseling and the academic performance of females in the study

Table 34

Simple Correlation Matrix for the Independent Variables in the Study for Female Subjects (N=204)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	.134	1						
Personal Counseling	-.033	.169	1					
Career Counseling	-.049	.055	.311	1				
Financial Aid Counseling	.086	.186	.205	.608	1			
Study Skills	.029	.020	-.040	.096	.138	1		
Tutoring	.138	.241	.087	.146	.096	-.036	1	
Cultural Enrichment Activities	.132	.590	.216	.146	.419	.025	.203	1

Table 35 reveals the regression results for female subjects in the study. The estimated regression coefficients for various variables are shown. Also presented are the standardized coefficients, the adjusted R^2, t-statistics, the significance levels of variables estimated, and the F value of the model.

Table 35 indicates that the model is not significant F= 1.583, p=.142. The coefficient of determination is weak (.020) indicating that only 2.0 percent of the variation in the academic performance of female subjects in the study may be attributed to the independent variables in the study. The results show that the independent variables total minutes spent on tutoring was significant ($p < .10$). The variables academic

counseling, personal counseling, career counseling, financial aid counseling, study skills training and cultural enrichment activities were not found to be significantly related to the academic performance of female subjects in the regression model

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. The data in Table 35 reveal that the independent variable, total minutes spent on tutoring (.126) had a more relaxed significant statistical effect on female subjects' academic performance.

Table 35

Regression analysis for Independent Variables in the Study for Female Subjects (n=204)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	.001	.071	.810	.419
Personal Counseling	-.002	-.044	-.594	.554
Career Counseling	-.006	-.152	-1.643	.102
Study Skills	3.98E-005	.024	.341	.733
Financial Aid Counseling	.005	.144	1.479	.141
Tutoring	7.28E-005	.126	1.740	.083*
Cultural Enrichment Activities	.000	.035	.370	.711

Note. Adjusted $R^2 = .020$; F value = 1.583; $p = .142$

$P < .10$

Classification

Subjects Classified as Freshmen

Descriptive statistics for the variables used in the model for freshmen subjects in the study are presented in Table 36.

Table 36

Descriptive Statistics for Variables Used in the Model for Subjects Classified as Freshmen (n=102)

Variable	M	SD	Minimum	Maximum
Academic Counseling	75.12	59.26	.00	260.00
Personal Counseling	9.88	22.30	.00	165.00
Career Counseling	15.69	19.39	.00	100.00
Financial Aid Counseling	22.65	23.76	.00	130.00
Tutoring	883.54	1185.91	.00	6630.00
Cultural Enrichment Activities	141.47	143.31	.00	600.00
Study Skills	87.79	488.64	.00	2880.00

Table 37 presents the simple correlation matrix for freshmen subjects in the study. The table indicates a positive relationship between the variables total minutes spent on study skills training, tutoring, cultural enrichment activities and academic performance. However, the data reveal an inverse relationship between academic counseling, personal

counseling, career counseling, financial aid counseling and the academic performance of freshmen in the study.

Table 37

Simple Correlation Matrix for the Independent Variables in the Study for Subjects Classified as Freshmen (n=102)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	-.083	1						
Personal Counseling	-.220	.232	1					
Career Counseling	-.089	.118	.108	1				
Financial Aid Counseling	-.156	.220	.167	.722	1			
Study Skills	.046	.108	-.005	.165	.187	1		
Tutoring	.054	.136	.080	.178	-.016	-.022	1	
Cultural Enrichment Activities	.061	.654	.113	.195	.350	.098	.206	1

Table 38 reveals the regression results for freshmen subjects in the study. The estimated regression coefficients for various variables are shown. Also presented are the standardized coefficients, the adjusted R^2, t-statistics, the significance levels of variables estimated, and the F value of the model.

Table 38 indicates that the model is not significant F= 1.570, p=.154. The coefficient of determination is weak (.038) indicating that only 3.8 percent of the

variation in the academic performance of female subjects in the study may be attributed to the independent variables in the study. The results show that the independent variables total minutes spent on personal counseling and cultural enrichment activities were significant ($p < .10$). However, their p-values were more relaxed. The variables academic counseling, career counseling, financial aid counseling, study skills training, and tutoring were not found to be significantly related to the academic performance of freshmen subjects in the regression model

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. However, the data in Table 38 reveal that the independent variables total minutes spent on personal counseling and cultural enrichment activities were found to have a significant statistical effect on freshmen subjects' academic performance. Personal counseling had a negative relationship with academic performance.

Table 38

Regression Analysis for Independent Variables in the Study for Subjects Classified as Freshmen (n=102)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	-.003	-.175	-1.320	.190
Personal Counseling	-.007	-.177	-1.736	.086*
Career Counseling	.002	.044	.295	.768
Study Skills	.000	.075	.748	.456
Financial Aid Counseling	-.009	-.221	-1.415	.160
Tutoring	2.38E-005	.031	.290	.773
Cultural Enrichment Activities	.002	.251	1.813	.073*

Note. Adjusted $R^2 = .038$; F value = 1.570; $p = .154$

*$p < .10$

Subjects Classified as Sophomores

Descriptive statistics for the variables used in the model for sophomore subjects in the study are presented in Table 39.

Table 39

Descriptive Statistics for Variables Used in the Model for Subjects Classified as Sophomores (n=66)

Variable	M	SD	Minimum	Maximum
Academic Counseling	86.65	59.84	.00	355.00
Personal Counseling	12.17	20.98	.00	92.00
Career Counseling	22.47	23.98	.00	92.00
Financial Aid Counseling	29.10	26.18	.00	100.00
Tutoring	854.81	1334.65	.00	6960.00
Cultural Enrichment Activities	168.18	138.22	.00	570.00
Study Skills	92.73	502.13	.00	2940.00

Table 40 presents the simple correlation matrix for sophomore subjects in the study. The table indicates a positive relationship between the variables total minutes spent on academic counseling, career counseling, financial aid counseling, study skills, tutoring, cultural enrichment activities and academic performance. However, the data reveal an inverse relationship between personal counseling and the academic performance of sophomore subjects in the study.

Table 40

Simple Correlation Matrix for the Independent Variables in the Study for Subjects Classified as Sophomores (n=66)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	.087	1						
Personal Counseling	-.234	.127	1					
Career Counseling	.115	-.133	.264	1				
Financial Aid Counseling	.288	.072	.164	.606	1			
Study Skills	.088	.066	-.075	-.059	.135	1		
Tutoring	.266	.014	.014	.190	.160	-.074	1	
Cultural Enrichment Activities	.282	.459	-.004	-.029	.340	-.017	.002	1

Table 41 reveals the regression results for sophomore subjects in the study. The estimated regression coefficients for various are shown. Also presented are the standardized coefficients, the adjusted R^2, t-statistics, the significance levels of variables estimated, and the F value of the model.

Table 41 indicates that the model is significant F = 2.804, p=.014. The coefficient of determination is relatively low (.163) indicating that only 16.3 percent of the variation in academic performance of sophomore subjects in the study may be attributed to the independent variables in the study. The results show that the independent variables total minutes spent on personal counseling and tutoring were significant ($p < .05$). Personal

counseling had a negative relationship with the academic performance of sophomore subjects in the study. The variables academic counseling, career counseling cultural enrichment activities, financial aid counseling, and study skills training were not found to be significantly related to the academic performance of sophomore subjects in the regression model

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. The data in Table 41 show the variables found significant in the model with the greatest statistical effect on sophomore subjects' academic performance were personal counseling (-.273) and tutoring (.047). Personal counseling had an inverse relationship with academic performance.

Table 41

Regression analysis for Independent Variables in the Study for Subjects Classified as Sophomores (n=66)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	9.72E-005	.007	.051	.959
Personal Counseling	-.011	-.273	-2.269	.027*
Career Counseling	.001	.038	.241	.810
Study Skills	.000	.065	.546	.587
Financial Aid Counseling	.006	.190	1.148	.256
Tutoring	.000	.237	2.030	.047*
Cultural Enrichment Activities	.001	.215	1.501	.139

Note. Adjusted $R^2 = .163$; F value = 2.804; $p = .014$

*$p < .05$

Subjects Classified as Juniors

Descriptive statistics for the variables used in the model for junior subjects in the study are presented in Table 42.

Table 42

Descriptive Statistics for Variables Used in the Model for Subjects Classified as Juniors (n=64)

Variable	M	SD	Minimum	Maximum
Academic Counseling	83.73	48.01	.00	180.00
Personal Counseling	15.90	21.42	.00	65.00
Career Counseling	15.86	17.94	.00	65.00
Financial Aid Counseling	25.90	21.59	.00	110.00
Tutoring	863.96	1186.96	.00	4773.75
Cultural Enrichment Activities	145.63	138.79	.00	570.00
Study Skills	.47	3.75	.00	30.00

Table 43 presents the simple correlation matrix for junior subjects in the study. The table indicates a positive relationship between the variables total minutes spent on academic counseling, personal counseling, financial aid counseling, study skills, tutoring, cultural enrichment activities and academic performance. However, the data reveal an inverse relationship between career counseling and the academic performance of junior subjects in the study.

Table 43

Simple Correlation Matrix for the Independent Variables in the Study for Subjects Classified as Juniors (n=64)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	.065	1						
Personal Counseling	.003	.267	1					
Career Counseling	-.142	-.255	.285	1				
Financial Aid Counseling	.014	.026	.147	.608	1			
Study Skills	.070	.155	.039	-.112	-.152	1		
Tutoring	.007	.118	.157	.054	-.115	.341	1	
Cultural Enrichment Activities	.142	.625	.308	-.039	.140	.114	.133	1

Table 44 reveals the regression results for junior subjects in the study. The estimated regression coefficients for various variables are shown. Also presented are the standardized coefficients, the adjusted R^2, t-statistics, the significance levels of variables estimated, and the F value of the model.

Table 44 indicates that the model is not significant F= .525, p=.812. The coefficient of determination is relatively low (.056) indicating that only 5.6 percent of the variation in academic performance of junior subjects in the study may be attributed to the independent variables in the study. The results show that none of the independent variables were significant.

Table 44

Regression Analysis for Independent Variables in the Study for Subjects Classified as Juniors (n=64)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	-.002	-.140	-.771	.444
Personal Counseling	.001	.037	.250	.804
Career Counseling	-.011	-274	-1.444	.154
Study Skills	.012	.062	.442	.660
Financial Aid Counseling	.006	.164	.939	.352
Tutoring	4.23E-006	.007	.048	.962
Cultural Enrichment Activities	.001	.176	1.031	.307

R^2=.062; adjusted R^2= .056; F value = .525; p = .812

Subjects Classified as Seniors

Descriptive statistics for the variables used in the model for senior subjects in the study are presented in Table 45.

Table 45

Descriptive Statistics for Variables Used in the Model for Subjects Classified as Seniors (n=75)

Variable	M	SD	Minimum	Maximum
Academic Counseling	75.20	53.44	.00	226.25
Personal Counseling	8.02	13.62	.00	60.00
Career Counseling	19.69	22.74	.00	100.00
Financial Aid Counseling	23.09	21.87	.00	80.00
Tutoring	942.40	1400.57	.00	6360.00
Cultural Enrichment Activities	143.60	139.78	.00	600.00
Study Skills	40.80	332.48	.00	2880.00

Table 46 presents the simple correlation matrix for senior subjects in the study. The table indicates a positive relationship between the variables total minutes spent on academic counseling, study skills, cultural enrichment activities and academic performance. However, the data reveal an inverse relationship between personal counseling, career counseling, financial aid counseling, tutoring and the academic performance of seniors in the study.

Table 46

Simple Correlation Matrix for the Independent Variables in the Study for Subjects Classified as Seniors (n=52)

Variable	1	2	3	4	5	6	7	8
GPA	1							
Academic Counseling	.247	1						
Personal Counseling	-.024	.202	1					
Career Counseling	-.280	.039	.249	1				
Financial Aid Counseling	-.120	.177	.011	.644	1			
Study Skills	.081	-.081	-.068	-.004	.059	1		
Tutoring	-.054	.490	-.112	.003	.097	-.075	1	
Cultural Enrichment Activities	.074	.433	.116	.018	.290	-.018	.185	1

Table 47 reveals the regression results for subjects classified as seniors in the study. The estimated regression coefficients for various variables are shown. Also presented are the standardized coefficients, the adjusted R^2, t-statistics, the significance levels of variables estimated, and the F value of the model.

Table 47 indicates that the model is significant F= 2.415, p=.029. The coefficient of determination (adjusted R^2), is relatively weak (.118), indicating that only 11.8 percent of the variation in the academic performance of senior subjects in the study may be attributed to the independent variables in the study. The results show that the independent

variables, total minutes spent on academic counseling ($p < .01$) and career counseling ($p < .05$) were significant. The variables, personal counseling, financial aid counseling, study skills training, tutoring, and cultural enrichment activities, were not found to be significantly related to the academic performance of senior subjects in this regression model

To determine the relative importance of the variables in the model, standardized beta coefficients were reported. The data in Table 47 reveal that the variables found significant in the model with the greatest statistical effect on senior subjects' academic performance was academic counseling (.415) and career counseling (-.311).

Table 47

Regression Analysis for Independent Variables in the Study for Subjects Classified as Seniors (n=52)

Variable	Regression Coefficient	Standardized Coefficient	t-Value	Significance
Academic Counseling	.005	.415	2.909	.005*
Personal Counseling	-.002	-.045	-.367	.715
Career Counseling	-.008	-.311	-1.972	.053**
Study Skills	.000	.088	.794	.430
Financial Aid Counseling	.001	.044	.272	.787
Tutoring	.000	-.248	-1.913	.060
Cultural Enrichment Activities	.000	-.059	-.462	.646

Note. Adjusted $R^2 = .118$; F value = 2.415; $p = .029$

*$p < .01$, **$p < .05$

Research Question Five

The final question explored the research question: What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student retention according to ethnicity, eligibility, (low-income, first-generation and disability status) classification and gender? Research question five sought to determine the relationship between the dependent variable student retention of subjects in the study, and the independent variables of the study, total minutes students spent on the services counseling, tutoring, workshops, study skills training, and cultural enrichment activities

according to various student characteristics (classification, gender, eligibility, and ethnicity). The relationship between the independent variables and the dependent variable was analyzed for all subjects by classification, gender, eligibility, and ethnicity using logistic regression analysis. Because the dependent variable, student retention, is categorical in nature and was measured at the nominal level, logistic regression analysis was employed to analyze this variable. The dependent variable, student retention, was coded as dichotomous variables (1=returned, 2=did not return) in order to perform the logistic regression analysis. The independent variables were entered as ratio variables.

As indicated in Table 48, the majority of subjects in the study 93.5% (n=287) returned to school the following academic year. As a result, most of the logistical regression analyses run were not statistically significant. The logistic regression models found to be statistically significant will be presented in this section of the chapter. The logistic regression models found to be statistically insignificant can be found in Appendix C listed as Tables 1-16.

Table 48

Frequency Table for the Retention of Subjects in the Study

Variable	Frequency	Percent
Returned	287	93.5
Did Not Return	20	6.5
Total	307	100

Ethnicity

African-American Subjects

Data was first analyzed for the ethnicity status of subjects in the study. Only African Americans and Whites had enough subjects to be included in the analysis. Only the regression analysis for African-American subjects was found to be statistically significant for ethnicity. Data in Table 49 summarize the results of the logistic regression analysis. From Table 48, a direct estimation of the probability of an event occurring (student being retained) can be made by computing the B (effect coefficient), X (the independents variable), and e (the base of the natural logarithms, approximately 2.718) using the formula: Prob (event) $=1/(1+e^{-Z})$, where $Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$.

In logistic regression analysis, the greater the Wald value the lesser the probability of an event to occur. As illustrated in Table 49, only the independent variable, total minutes spent on cultural enrichment activities (Wald value =6.094 with a significance of .014), predicted student retention.

Table 49

Parameter Estimates for the Logistic Regression Model for African-American Subjects

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	-.001	.013	.013	.909	.999
Personal Counseling	-.027	.036	.548	.459	.974
Career Counseling	.027	.030	.803	.370	1.027
Financial Aid Counseling	-.069	.042	2.780	.095	.933
Study Skills Counseling	-.596	48.085	.000	.990	.551
Tutoring	-.001	.001	1.392	.238	.999
Cultural Enrichment Activities	.015	.006	6.094	.014*	1.015

Note. *$p < .01$

To determine how the logistic regression model best fits, a comparison of the predictions to the observed outcome was done. As illustrated in Table 50, regarding African-American subjects who returned to school, 85 were correctly predicted. Six African-American subjects were misclassified- 5 who did not return and 1 African-American subject who returned. Regarding subjects who returned to school, 98.8% were correctly predicted. Of the subjects who did not return to school, none were predicted correctly. Overall, 93.4%.of the cases were correctly predicted by the model.

Table 50

African-American Subjects Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	85	1	98.8
Did Not Return	5	0	0
		Overall	93.4

Eligibility

First-Generation Subjects

The eligibility status of First-Generation subjects was analyzed next using logistic regression analysis. Because of too few subjects in many of the eligibility categories, subjects who met either of the following three eligibility statuses were recoded as First-Generation: (1) First-Generation and Low-Income, and (2) First-Generation Only.

Data in Table 51 summarize the results of the logistic regression analysis for first-generation subjects in the study. From Table 51, a direct estimation of the probability of an event occurring (student being retained) can be made by computing the B (effect coefficient), X (the independents variable), and e (the base of the natural logarithms, approximately 2.718) using the formula: Prob (event) $=1/(1+e^{-Z})$, where $Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$.

In logistic regression analysis, the greater the Wald value the lesser the probability of an event to occur. As illustrated in Table 51, the independent variable, academic counseling, predicted student retention for first-generation subjects in the study.

Table 51

Parameter Estimates for the Logistic Regression Model for First-Generation Subjects

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	.010	.005	4.229	.040*	1.010
Personal Counseling	-.005	.014	.114	.735	.995
Career Counseling	-.002	.018	.012	.911	.998
Financial Aid Counseling	-.002	.016	.010	.920	.998
Study Skills	.001	.000	1.655	.198	1.001
Tutoring	.000	.000	.611	.434	1.000
Cultural Enrichment Activities	.001	.002	.054	.816	1.001

Note. *$p < .05$

To determine how the logistic regression model best fits, a comparison of the predictions to the observed outcome was made. As revealed in Table 52, of the first-generation subjects who returned to school, 228 were correctly predicted. Sixteen first-generation subjects who did not return were misclassified. Regarding subjects who returned to school, 100% were correctly predicted. Of the subjects who did not return to school, none were predicted correctly. Overall, 93.4%.of the cases were correctly predicted by the model.

Table 52

First-Generation Subjects Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	228	0	100.00
Did Not Return	16	0	0
		Overall	93.4

CHAPTER 5

Summary, Conclusions and Discussion, Implications and Recommendations

Summary

The primary purpose of this study was to identify and examine the service variable combinations provided by the SSS TRIO program at the University of Arkansas that had a statistically significant relationship with program participants' academic performance and retention rates.

The following research questions guided this study:

1) What is the frequency of use of UA SSS services by the subjects of the study and the frequency of use of the total number of minutes subjects spent on each service?

2) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance?

3) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student retention?

4) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance according to ethnicity, eligibility, (low-income, first-generation and disability status), classification and gender?

5) What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student retention according to ethnicity, eligibility, (low-income, first-generation and disability status), classification and gender?

Participants of the study included all students who participated in the program during the academic year 2003-2004. There were a total of 307 participants. The research study examined four different categories of population characteristics: Ethnicity, gender, eligibility and classification.

Data for this study were collected during the Spring 2005 academic year. A computerized recording form was used for data collection. Variables of interest were

copied in the electronic data collection form from the Student Support Service Program's Student Access database. This database was maintained by the program to store students' demographics, record of service usage and contact information. This software is unique because it records various program services in minutes for each program participant which was useful in analyzing the data. The services (academic, financial aid, career and personal counseling, tutoring, study skills and cultural enrichment activities) served as independent variables. The following is a summary of major findings of the study.

Research Question One

What is the frequency of use of UA SSS services by the subjects of the study and the frequency of use of total number of minutes subjects spent on each service?

1. The frequency of usage of service data revealed the subjects in the study used academic counseling services most frequently, 92.8% (n=285) and study skills least frequently, 6.8% (n=21).

   The data of the frequency of the total number of minutes subjects spent on each service revealed the following for each independent variable of the study:

2. Academic Counseling-The majority of the subjects of the study 41% (n=126) spent 1-60 minutes in this service. The least number of subjects of the study 2.6% (n=8) devoted 181 minutes or more in academic counseling.
3. Personal Counseling- Data indicated the majority of the subjects in the study 34.2% (n=105) spent 1-60 minutes on personal counseling services, while the minimum number of subjects, .3% (n=1), spent 121-180 minutes in personal counseling.

4. Career Counseling- Data show that the majority of the subjects 54.1% (n=166) devoted 1-60 minutes to career counseling services, while the minimum number of subjects 3.6% (n=11) spent 61-120 minutes on career counseling services.
5. Financial Aid Counseling-Data revealed the largest number of subjects 64.2% (n=197) spent 1-60 minutes on financial aid counseling. The least number of subjects .3% (n=1) spent 121-180 minutes on financial aid counseling.
6. Cultural Enrichment Activities-Data indicate the majority of subjects, 28.7% (n=88) of the subjects devoted 20-120 minutes to cultural enrichment activities, while the least number of students 1.3% (n=4) spent 481-600 minutes on cultural enrichment activities.
7. Tutoring Services- Data revealed the greatest number of subjects in the study, 15.3% (n=47), used tutoring services 601-1200 minutes, while the least number of students 3.3% (n=10) used tutoring services 3001-3600 minutes.
8. Study Skills Training- Data showed that the majority of subjects in the study, 7.2% (n=22), spent 15-600 minutes on study skills training. The least number of subjects 2% (n=6) spent time on study skills training that ranged from 2401 minutes to 3000 minutes.

Research Question Two

What combination of service variables provided by UA SSS had a statistically significant relationship with student academic performance?

- Personal counseling and cultural enrichment activities had a statistically significant relationship with subjects' academic performance with beta coefficients of (-.144) and (.148) respectively at an alpha level of .05.

- Personal counseling had a negative relationship with student academic performance.

Research Question Three

What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student retention?

- Academic counseling (Wald value =2.754, p=.097), had a statistically significant relationship with student retention at an alpha level of .10.
- Findings also showed of the subjects, who returned to school, 287 were correctly predicted. Twenty subjects who did not return were incorrectly predicted. Regarding subjects who returned to school, 100% were correctly predicted. Of the subjects who did not return to school, none were predicted correctly. Overall, 93.5%.of the cases were correctly predicted by the logistic regression model.

Research Question Four

What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance according to ethnicity, eligibility (low-income, first-generation and disability status), classification, and gender?

Ethnicity Findings

Findings for African-American subjects

- Cultural enrichment activities had a statistically significant relationship with the academic performance of African-American subjects in the study. The beta coefficient was (.253) at an alpha level of .10.

Findings for White subjects

- Personal counseling and cultural enrichment activities had a statistically significant relationship with the academic performance of White subjects with beta coefficients of (-.214) and (.169) and at alpha levels of .01 and .10 respectively.
- There was a negative relationship between personal counseling and the academic performance of White subjects in the study.

Eligibility Findings

Findings for Low-Income Subjects

- Personal counseling and cultural enrichment activities had a statistically significant relationship with low-income subjects' academic performance with beta coefficients of (-.144) and (.148) respectively at an alpha level of 05.
- There was a negative relationship between personal counseling and the academic performance of low-income subjects in the study.

Gender Findings

Findings for Male Subjects

- Personal counseling (-.309) was found to have a statistically significant relationship with the academic performance of male subjects with a beta coefficient of (.309) at an alpha level of 05.
- There was a negative relationship between personal counseling and the academic performance of male subjects in the study

Findings for Female Subjects

- Tutoring was found to have a statistically significant relationship with the academic performance of female subjects with a beta coefficient of (.126) and at an alpha level of 10.

Classification Findings

Findings for Subjects Classified as Freshmen

- Personal counseling (-.177) and cultural enrichment activities (.251) were found to have a statistically significant relationship with the academic performance of freshmen subjects performance with beta coefficients of (-.177) and (.251) respectively at an alpha level of 10.
- Personal counseling had an inverse relationship with the academic performance of subjects classified as freshmen.

Findings for Subjects Classified as Sophomores

- Personal counseling and tutoring had a statistically significant relationship with the academic performance of sophomore subjects with beta coefficients of (-.273) and (.047) respectively at an alpha level of 05.
- Personal counseling had an inverse relationship with the academic performance of subjects classified as sophomores.

Findings for Subjects Classified as Seniors

- Data revealed academic counseling (.415) and career counseling (-.311) statistically significant relationship with the academic performance of subjects classified as seniors with beta coefficients of (.415) and (-.311) and at alpha levels of .01 and .05 respectively.

- Career counseling had an inverse relationship with the academic performance of subjects classified as seniors.

Research Question Five

What combination of service variables provided by UA Student Support Services had a statistically significant relationship with student academic performance according to ethnicity, eligibility (low-income, first-generation and disability status), classification, and gender?

- The majority of subjects in the study 93.5% (n=287) returned to school the following academic year. As a result, most of the logistical regression analyses run were not statistically significant. Only the logistical regression models found to be significant were presented.

Ethnicity Findings

Findings for African-American Subjects

- Cultural enrichment activities (Wald value =6.094 with a significance of .014), had a statistically significant relationship with student retention for African-American subjects in the study with an alpha level of .01.
- Regarding African-American subjects who returned to school, 85 were correctly predicted. Six African-American subjects were misclassified- 5 who did not return and 1 African-American subject who returned. Regarding subjects who returned to school, 98.8% were correctly predicted. Of the subjects who did not return to school none were predicted correctly. Overall, 93.4%.of the cases were correctly predicted by the model.

Eligibility Findings

Findings for First-Generation Subjects

- Academic counseling had a statistically significant relationship with the student retention for first-generation subjects in the study with an alpha level of .05.
- Regarding first-generation subjects who returned to school, 228 were correctly predicted. Sixteen first-generation subjects who did not return were misclassified. Regarding subjects who returned to school, 100% were correctly predicted. Of the subjects who did not return to school none were predicted correctly. Overall, 93.4%.of the cases were correctly predicted by the model.

Conclusions and Discussion

Descriptive results revealed that all of the services were used by subjects in the study. However, the most popular service was academic counseling. This conclusion is supported by the finding that 92.8% (n=285) of the subjects in the study used this service. The majority of subjects, 41% (n=126) who used academic counseling spent 1-60 minutes on the service. Data from the latest national study (U. S. Department of Education, 1997) revealed that there was a linear relationship between the level and intensity of student participation in SSS services and positive outcomes. The benefit depended on whether the student received those services that were most clearly related to positive outcomes and on the number of hours of those services received.

This program addressed a wide range of students' academic and non-academic needs by offering a variety of services. According to the latest national study (U. S. Department of Education, 1997), SSS programs that addressed such student needs saw the most positive outcomes.

SSS and Academic Performance

Personal counseling and cultural enrichment activities were the service variable combinations found to have a statistically significant relationship with the academic performance of all subjects in the study. The results of the multiple regression analysis indicate that cultural enrichment involvement had a positive relationship with the academic performance of subjects in the study. Personal counseling had a negative relationship with the academic performance of subjects in the study. The independent variables in the study, total minutes devoted to academic counseling, personal counseling, career counseling, financial aid counseling, study skills, tutoring and cultural enrichment

activities combined entered the regression model. Only personal counseling and cultural enrichment activities accounted for 3.1% of the variance associated with academic performance. Therefore, other variables not investigated in this study could explain the variance associated with academic performance.

Cultural enrichment or student involvement was found to have a statistically significant relationship on the academic performance of several subpopulations of subjects in the study. These findings support Astin's (1984) theory of student involvement which proposed that student development is directly related to the amount of student involvement. This finding also supports the mounting evidence that extracurricular involvement and interaction with peers can play a significant role in both intellectual and personal development during college (Pascarella, Terenzini, 1991; Pascarella, Terenzini, 2005; U. S. Department of Education, 1997). Pascarella and Terenzini (2005) reviewed and synthesized the research in this area from 1989 through the end of 1999 and concluded that students who are more psychologically engaged in activities and tasks that "reinforce and extend the formal academic experience" (p. 119) are more likely to learn. They made further observations that a number of scholars have suggested peer influence has a significant effect on student learning. This suggests that since much learning is socially based, social and extracurricular involvements are significant factors of student learning. It should be noted that Pascarella and Terenzini's (2005) review of literature found that the most positive impacts for student involvement were found for: (1) nonclassroom interactions with peers and faculty that extend and reinforce students' actual experience; (2) interactions with racially and culturally diverse

peers; (3) and involvement in academically integrated service learning experiences which enhance subject matter knowledge.

Research also indicate that while first-generation students were less likely to be involved in extracurricular activities and noncourse-related interactions with peers, they tended to show stronger gains from these involvements than did their counterparts in the study (Pascarella, Pierson, Wolniak, & Terenzini, 2004).

The SSS program of study sponsors some cultural events for students and also refers students to on and off campus events. These events could have assisted students in meeting social and academic needs; thereby, increasing student learning.

Personal counseling, though statistically significant, was found to have an inverse relationship with the academic performance of all subjects and several subpopulations of subjects in the study. After a literature review, no published studies could be found which show that personal counseling had any impact on students' academic performance. Perhaps this inverse relationship could indicate that subjects' who used personal counseling services were those already experiencing academic difficulty. Although they received personal counseling, their academic performance did not increase or perhaps in some cases may have decreased. It should also be noted that the negative relationship between personal counseling and academic performance could also be explained by errors in documenting contacts within the program. Abbott (2004) found a negative correlation between personal counseling and retention. After further investigation into the issue, the program realized that many casual visits from students were documented as personal counseling sessions because the contacts did not fit into academic, career, tutoring or other categories. On the other hand, the current findings related to personal

counseling may be an indication that students need more assistance with psychological and emotional concerns.

Ethnicity

Although the p value levels were more relaxed ($p < .10$), the results of the analysis of the relationship between amount of time spent on service variables and academic performance according to ethnicity, revealed cultural enrichment activities were service variables that had a statistically significant relationship with the academic performance of African-American and White subjects in the study. Research indicates that student involvement has positive gains on college students' student development, personal development, and cognitive development in general. However, studies also indicate that student involvement has positive gains on the student development of African-American college students. Findings from earlier studies (DeSousa & King, 1992; DeSousa & Kuh, 1996, Flowers, 2004; Littleton, 2002) reveal the magnitude of particular student involvement experiences for African-American student development. Flowers' (2004) findings indicated that in-class and out-of-class experiences positively impacted student development for college students. The study also found that the magnitude of the positive effects of student involvement on academic and social development was more pronounced for some student involvement experiences of African-American college students (e.g., library experiences, course learning experiences, personal experiences) than it was for other student involvement experiences (e.g., experiences in the union, experiences, with athletic and recreation facilities, participation in clubs and organizations). The results of the current study indicate a

continual need for the program to encourage African-American subjects' involvement in more academically related campus activities.

Eligibility

Regarding the relationship between the amount of time spent on service variables and academic performance according to eligibility, personal counseling and cultural enrichment activities were the combination of services found to have a statistically significant relationship with the academic performance of low-income students. However, personal counseling and cultural enrichment accounted for only 2.9% of the variance associated with academic performance. Therefore, other variables not investigated in this study could explain the variance associated with academic performance. This finding also supports Astin's (1984) theory of student involvement which proposed that student development is directly related to the amount of student involvement. Moreover, these findings are significant considering the current scarcity of research which focuses on the academic performance of low-income students in college (Walpole, 2003). Low-income students face several barriers and challenges once enrolled in college (Mortenson, 2001a; Paulsen & St. John, 2002; Walpole, 2003). The U. S. Department of Education's National Center for Education Statistics has identified seven risk factors associated with reduced likelihood of persisting through college and earning a degree: being independent, attending part-time, working full-time while enrolled, having dependents, being a single parent, delaying entry to college, and not having a traditional high school diploma. All low-income students have more risk factors than their middle- and upper-class counterparts (Corrigan, 2003).

The results from studies indicate low-income students had lower grade point averages compared to their high-income counterparts (Holmstrom, 1973; Paulsen & St. John, 2002; Walpole, 2003). Holstrom (1973) examined the educational progress of low-income college students. The sample consisted of 185,845 first-time full-time freshmen in fall 1967 and a sub sample consisted of 63,510 students in 1971. Results of the study indicated low-income students made slightly better high school grades than did other-income students. Low-income students made slightly lower grade-point averages in college than did other-income students. High school grade-point average was a positive predictor of degree completion in four years. Paulsen & St. John (2002) found that although the type of grades received had no effect on the persistence of high-income students, low-income students who earned A grades were more likely to persist. Academic performance has been found to be one of the most important indicators of academic integration, which promotes persistence (Pascarella & Terenzini, 1991).

Personal counseling was again found to have a statistically significant relationship with the academic performance of low-income subjects' in the study; similarly, it showed an inverse relationship. As stated earlier perhaps low-income students who access services have preexisting academic difficulties. This is supported by research from The U. S. Department of Education's National Center for Education Statistics which identified seven risk factors associated with the reduced likelihood of low-income students persisting (Corrigan, 2003). Perhaps these risk factors also contribute to academic difficulties. Low-income students may seek personal counseling as a result of these risk factors. Further in depth qualitative studies should be conducted to further

understand the low-income student status and its impact on the academic performance of subjects in this study.

Gender

Regarding the amount of time spent on services and academic performance according to the gender of the subjects, tutoring was found to have a more relaxed statistically significant relationship with the academic performance of females. While no published studies could be found regarding the impact of tutoring by gender of college students, Dvorak (2000) noted that tutoring presents a learning mode that could fill women's learning needs. Tutoring promotes a process of peer interaction as well as active engagement with the material to be learned. Moreover, since women make up the majority of students at many universities (Dvorak, 2000), it is imperative that programs recognize the needs of this population of students.

Classification

When examining the results of the relationship between the amount of time spent on services and academic performance according to classification of the subjects, cultural enrichment activities and personal counseling were found to have a statistically significant relationship with the academic performance of freshmen subjects' in the study. Only 3.8% of the variation in academic performance can be attributed to cultural enrichment activities and personal counseling. This suggests other variables not investigated in this study could explain the association. One of the objectives of the SSS program is to encourage program participants to become involved in on-campus activities and events. Considering that student involvement has been shown to increase student learning and cognitive development of college students, it is critical to get freshmen

engaged and academically involved during their first years of college. In recent studies, researchers have highlighted the importance of first semester GPA in predicting graduation and retention rates (Gao, Hughes, O'Rear, & Fendley, 2002). The findings of this study suggest that cultural enrichment activities had a positive impact on freshmen subjects' academic performance. Perhaps this will lead to higher persistence rates among this cohort of students.

When examining the results of the relationship between the amount of time spent on services and academic performance according to classification of the subjects, tutoring and personal counseling were found to have a statistically significant relationship with the academic performance of sophomore subjects' in the study. Only 16.3% of the variation in academic performance can be attributed to tutoring and personal counseling. This suggests other variables not investigated in this study could explain the association. The Student Support Services program at the institution of study provides individual/one-to-one peer tutoring. Each SSS student who requests tutoring is paired with the same tutor for an entire semester. The form most closely resembling SSS' style of tutoring is dyadic cross-year fixed-role peer tutoring. However, the tutoring is cross-age and is typically one-to-one.

One-to-one tutoring has been regarded as the most effective method of teaching (Bloom, 1984; Cohen, Kulik, & Kulik, 1982). The tutor can respond to one student's needs as opposed to responding to several others simultaneously (Bloom, 1984; Slavin, 1991). Furthermore, one-to-one tutoring can optimize the impact of a variety of validated instructional practices and techniques (Hock, 1999).

The findings of this study are consistent with earlier studies (Boylan, Bliss, Bonham, and Saxon, 1995; U. S. Department of Education, 1997). Findings from Boylan, Bliss, Bonham, and Saxon (1995) report on the National Study of Developmental Education, concluded that the literature suggest tutoring has consistently been found to have a positive impact on college students' course grades, overall grade point averages, persistence and graduation, and students' attitudes towards instruction. While this could explain the finding that tutoring has a positive impact on the subjects' academic performance, it does not explain why this occurs for only the subjects in the study classified as sophomores. Perhaps sophomore students experienced academic difficulty during their freshman year, and are seeking tutorial assistance during their sophomore year to improve their academic performance. This finding supports an earlier study (Pascarella, Pierson, Wolniak, & Terenzini, 2004) that showed despite first-generation students taking academic loads, and the fact that the study included controls for individual-level precollege cognitive development, secondary school grades, and academic motivation, first-generation students had lower grades through the third year of college than did their peers whose parents had both graduated from college.

When examining the results of the relationship between the amount of time spent on services and academic performance according to classification of the subjects, career counseling and academic counseling were found to have statistically significant relationship with senior subjects' academic performance. Only 11.8% of the variation in academic performance can be attributed to the independent variables in the study. This suggests other variables could explain the association. Career counseling had an inverse relationship with the academic performance of subjects who were classified as seniors in

the study. While no studies could be found that support this finding, Perry, Cabrera and Voyt (1999) found career maturity is significantly associated with GPA, academic integration, faculty contact, encouragement and other student outcomes. Perry et al. defined career maturity as "the possession of a clear and stable picture of one's goals, interests, personality and talents" (p. 43). The researchers concluded that an increase in career maturity levels has the possibility of bringing about positive outcomes for student and the college. Most importantly, students with a high level of career maturity are likely to engage in the learning process with greater purpose. This should bring about increased levels of academic integration, more frequent contact between students and faculty and higher levels of academic performance. Considering this, perhaps the inverse relationship between career counseling and academic performance could indicate that senior subjects who are already experiencing academic difficulty seek career counseling because they possess low levels of career maturity. This conclusion is supported by findings which indicate compared to their peers whose parents graduated from college, first-generation college students tend to be at a distinct disadvantage with respect to basic knowledge about postsecondary education (e.g., costs and application process), level of family income and support, educational degree expectations and plans (Pascarella et al., 2004). Pascarella et al. also found that relative to students, whose parents were both college graduates, first-generation college students had significantly lower levels of end-of-second and end-of-third year degree plans. This means that many first-generation students enter their senior year without clearly defined degree plans. If they have unclear degree plans, then perhaps they have unclear career goals as well and are seeking career counseling as an intervention.

Academic counseling was also found to have a statistically significant relationship with the academic performance of senior subjects of the study. This finding supports earlier studies (Engle, Reilly, & Levine, 2004; Trippi & Cheatham, 1991) which showed academic counseling had a significant impact on the academic improvement and retention of at-risk students. Engle et al. (2004) investigated the impact that a 12-week retention program had on participants' retention, GPA, self-reported study skills and self-esteem. The 12-week retention program was designed to assist participants with test-taking, study and career skills through individual and group counseling. The results indicated 69 percent of the program participants earned a cumulative GPA $\geq$2.0 by the end of the program compared to 43 percent of the control group.

It is possible that subjects classified as seniors sought academic counseling in their senior year as a last resort effort to improve failing grade point averages. The academic performance of a student who is a senior becomes extremely important during their senior year. First-generation students enroll in college with several disadvantages. Nunez and Cuccaro-Alamin (1998) showed first-generation college students (FGC) had difficulty becoming academically and socially integrated in their college environments. For example, FGC students were more likely to be older, have lower incomes, married and have dependents, to enroll in postsecondary education part-time, and more likely to take remedial classes than their non-first-generation peers. FGC students also have false expectations about college, lack of clear career goals, are academically unprepared, do not get involved in campus activities and fail to interact with other students and faculty (Billson & Terry, 1982; Terenzini, Springer, Yaeger, Pascarella & Nora, 1996).

Moreover, researchers have identified FGC students as those who do not have adequate study habits; consequently, they have lower first-semester grades, are more likely to drop out the first semester, or fail to return for the second year (Brooks-Terry, 1988; Riehl, 1994; Terenzini, et al., 1996). It is possible that these inadequacies have persisted into the FGC students' final year of college. Research results suggest first-generation students benefit from receiving academic counseling because it provides for them assistance in meeting many of their academic challenges (McConnell, 2000; Somers, Woodhouse, Cofer, 2004). The purpose of academic counseling is to assist students in improving study and test-taking skills for the specific purpose of improving academic performance. It also involves assessing the psychological, interpersonal, and academic needs of students and recommending course scheduling (Sharkin, 2004; Wlazelek & Coulter, 1999).

SSS and Student Retention

The results of the logistic regression analysis used to determine the relationship between student retention of subjects and total minutes spent on the services, revealed that although the *p* value was more relaxed ($p < .10$), the independent variable, academic counseling had a statistically significant relationship to student retention for all subjects in the study. With regard to eligibility, academic counseling ($p < .05$) was also found to have a statistically significant relationship with the academic performance of first-generation subjects in the study.

These findings support earlier studies (Boyd, Hunt, Hunt, Magoon, & Van Brunt (1997a; Boyd, Friesen, Hunt, Hunt, Magoon, Van Brunt, 1996; Engle, Reilly, Levine, 2004; Sharkin, 2004; Trippi & Cheatham, 1991) that academic counseling has some

impact on retention. Furthermore, previous studies find that first-generation status has a negative effect on students' demographics, secondary academic preparation, college choice process and selection, enrollment, experiences, outcomes, persistence and degree attainment (York-Anderson & Bowman, 1991; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996; Berkner & Chavez, 1997; Horn & Nunez, 2000; Warburton, Bugarin, & Nunez, 2001; Ishitani, 2004; Pascarella, Pierson, Wolniak, & Terenzini, 2004). Since college places greater academic demands on college students than high school, college students must possess the ability to adapt to these changes (Mitchell, 1997). As mentioned earlier, research results suggest first-generation students benefit from receiving academic counseling because it provides them with assistance in meeting many of their academic challenges (McConnell, 2000; Somers, Woodhouse, Cofer, 2004). Terenzini, Rendon, Upcraft, Millar, Allison, Gregg, Jalomo (1994) note that while student involvement has been shown to have a positive impact on student retention, first-generation students may hesitate to become involved in campus life if they lack the confidence of competing successfully academically.

It is important to remember that the goal of SSS is: (1) to increase the college retention and graduation rates of low-income, first-generation college students and students with disabilities, and (2) to facilitate their transition from one level of postsecondary education to the next (U.S. Department of Education, 2004). This program had a 93.5% retention rate during the academic year 2003-2004, while during the same academic year, the University of Arkansas's retention rate was 68.7% (Office of Institutional Research, 2005).

With regard to ethnicity, the logistic results for African-American subjects were found to be statistically significant. The independent variable, total minutes spent on cultural enrichment activities (Wald value = 6.094 with a significance of .014) had a statistically significant relationship with student retention. This finding is consistent with those reported by Littleton (2002) who conducted semistructured interviews with 24 African-American students, of junior or senior classification, who were in good academic standing at their academic institution. Littleton found that nearly half of the students interviewed reported that their student involvement experiences helped them to persist in college. Pascarella and Terenzini's (2005) review of literature also produced findings that suggest "the level of student integration in any of the components of an institution's academic and social systems can be a critical factor in students' persistence decisions" (p. 426). These findings are consistent with other researchers (Astin, 1993; Braxton, Sullivan, & Johnson, 1997).

Implications

The findings from this study indicate that in combination the variables total minutes devoted to the services cultural enrichment and personal counseling were found to have statistically significant with academic performance for all subjects in the study. Personal counseling, cultural enrichment activities, career counseling, tutoring and academic counseling were found to have a statistically significant relationship with the academic performance of specific subpopulations of subjects in the study.

Personal counseling had an inverse relationship with academic performance for all combinations of services found to be statistically significant. This could possibly indicate subjects in the study experienced psychological and emotional issues which had

a negative impact on their academic performance. Current findings support the need for the SSS program to collaborate with or refer students with such issues to on or off-campus counseling services. It should also be kept in mind that the personal counseling results could be explained by documentation errors.

With regard to student retention, academic counseling predicted student retention for all subjects in the study. However, when examining the subjects according to certain student characteristics such as ethnicity, eligibility, gender, and classification, specific ethnicity and eligibility characteristics predicted student retention. With regard to ethnicity, the regression analysis for African-American subjects was found to be statistically significant. The independent variable, total minutes spent on cultural enrichment activities predicted student retention. With regard to eligibility, the regression analysis for first-generation subjects was found to be statistically significant. The independent variable, total minutes spent on academic counseling predicted student retention.

This study's findings indicate cultural enrichment positively influences the academic performance of all subjects in the study, specifically for low-income students', and positively influences the retention of African-American students. These findings support Astin's (1984) Theory of Student Involvement which proposed that student development is directly related to the amount of student involvement. This finding also supports the mounting evidence that extracurricular involvement and interaction with peers can play a significant role in both intellectual and personal development during college (Pascarella, Terenzini, 1991; Pascarella, Terenzini, 2005; U. S. Department of Education, 1997).

The study's findings also indicate that this information may suggest possible programmatic interventions that may be preferable for certain subpopulations of students. For example, cultural enrichment positively influences the academic performance of all subjects in the study, specifically for low-income students', and positively influences the retention of African-American students. Knowing what services positively influence student outcomes for certain subpopulations of students can support program planning and service delivery. This information is also economically relevant, given the limited SSS resources and rising costs of planning and implementing programs and services.

Moreover, the findings from this study could foster collaboration between SSS and other on-campus departments. For example, considering the cultural enrichment findings of this study, SSS and Multicultural Student Affairs could work together in developing a program which would encourage more student involvement among African-American students. Another possibility is that psychological and counseling services could be made aware the results of this study and could assist in the assessment of students' psychological issues and concerns. Likewise, career counseling departments could be made aware of the inverse effect that career counseling had on the retention rate of senior subjects in the study. Perhaps they could assist in identifying and assessing students who have not declared majors or who have unclear career goals. These assessments could support program planning for these students.

The findings from this study could serve to inform theory, research, policy and effective professional practice in Student Affairs. It could also provide additional insight for Student Affairs representatives and SSS programs regarding the educational outcomes and college experiences of underrepresented and at-risk populations of students.

Furthermore, this study should aid university officials in meeting their retention, racial and cultural diversity commitments. Student Support Services has been demonstrated to be effective at retaining populations of at-risk students. The SSS program at the University of Arkansas had a 93.5% retention rate during the 2003-2004 academic year, while during the same academic year, the University of Arkansas' retention rate 68.7% (Office of Institutional Research, 2005). This program could serve as a model retention program for higher education. Strategies that work for first-generation, low-income, disabled students are likely to be successful for the general student population (Thayer, 2000). Moreover, considering the 2005 proposed budget cuts that threatened to eliminate two popular programs, it is imperative that all TRIO programs evaluate and assess the services offered to justify continued institutional and legislative support.

The findings and conclusions drawn from this study should aid SSS personnel in working more effectively and efficiently in addressing the needs of the population of students they serve. It is hoped that other SSS programs will use the methodology employed in this study to assess services offered for the purpose of becoming more effective in meeting program goals and objectives.

Recommendations

1. A more in-depth qualitative study is recommended to explore reasons certain services were and were not found to have a statistically significant relationship with specific subpopulations of subjects' academic performance and retention.
2. It is recommended that the SSS program of this study investigate the inverse relationship found between personal counseling and academic performance in this study. Abbott (2004) found a negative correlation between personal counseling and retention. After further investigation into the issue, the program realized that many casual visits from students were documented as personal counseling sessions because the contacts did not fit into academic, career, tutoring or other categories. On the other hand, the current findings related to personal counseling may be an indication that students need more assistance with psychological and emotional concerns. Due to the lack of clarity of these results, it is also recommended that future studies should employ qualitative research for a more in depth analysis of the personal counseling results found in this study.
4. It is recommended that SSS considers identifying program participants who have unclear career or academic goals, and failing grades early in their academic career and providing them career and academic counseling. These findings also merit further qualitative studies to more clearly reveal reasons for these results.
5. For future studies it is recommended that a time series study is conducted in order to examine over an extended period of time the relationship between the variables analyzed in the current study. One of the limitations of this study is that data were collected and analyzed for only one academic year.

6. It is recommended that SSS annually conduct true impact analysis using the methodology of this study as a model in order to justify continued institutional and legislative support.
7. It is recommended that this program serve as a model retention program for the University of Arkansas. The program appears to be effective at retaining its program participants. The program's overall retention rate for the academic year 2003-2004 was 93.5%. Strategies that work for first-generation, low-income, disabled students are likely to be successful for the general student population (Thayer, 2000).

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Appendix A

Sample Computerized Recording Form

Sample Computerized Recording Form

StudentID	GPA	Class	Gender	Elig	CareerCoun	Retention	CurrentGradLv
004477227	3.6862	5	2	2	15	1	5
002806657	2.253	4	1	2	20	2	4
002112892	2.2231	5	1	3	40	2	5
004934695	2.1212	2	2	3	10	1	2
004455215	2.1428	3	2	3	20	2	3
004535111	3.0526	3	2	1		1	3
002654733	3.8297	4	2	3	40	1	4
007701934	3.6333	2	2	2	67.5	1	2
005533864	3.0623	3	1	1	40	1	3
004597664	3.387	4	1	1		1	4
001658638	3.425	5	2	1		1	5
002382301	2.1724	5	2	1		1	8
007824874	4	1	1	1		2	2
004369564	2.0937	3	2	1	30	1	3
001567802	0.8	2	1	1		2	2
005031028	3.0512	3	1	3	40	1	3
003074171	2.2	5	2	1	60	1	5
004660528	2.875	5	1	5		1	5
006701817	3.4814	2	2	1		1	2

Ethnicity	FinAidCoun	StudySks	AcadAdv	PersCoun	CultEnrich	Peer Tut (1-on-1)
1	30		45		120	
5	50		170	30	120	12
5	40		205		90	3352
5	10		70			
4	20		50		60	
5			45		90	840
5	110		130		180	
5	57.5	2880	67.5	17.5	240	
4	55		55		120	
4	15		165		450	
5			132.5		240	2672
2			30		60	
4						600
3			30		60	540
4			30	30		
5	100		40			22
3			30	30	120	
5		60	165		240	55
5	15		97.5	37.5	240	420

Appendix B

STUDENT SUPPORT SERVICES PROGRAM
ANNUAL PERFORMANCE REPORT
SECTION V—RECORD STRUCTURE FOR PARTICIPANT LIST

Appendix B

STUDENT SUPPORT SERVICES PROGRAM
ANNUAL PERFORMANCE REPORT
SECTION V—RECORD STRUCTURE FOR PARTICIPANT LIST
OMB Approval No: 1840-0525
Expiration Date: 01/31/2008

Field No	Field Name	Database Column Name	Valid Field Content
1	PR/Award Number	PR	Number in Block 5 of the project's Grant Award Notification **NOTE:** Include only the eleven digit PR/Award Number that begins with P042A. Do not include the suffix for the fiscal year in this field.
2	Batch Year	BatchAY	2003 for Project Year 2003-2004
3	Social Security Number	SSN	001010001 to 999999999 Blank= No response NOTE: Please format the SSN in nine digits greater than 0 without using any characters (letters, dashes) in the number (e.g., 123456789)
4	Student's Last Name	LastNM	0 to 9 Uppercase A to Z .(period) "(apostrophe) -(dash) Blank = No response If non-blank, will be justified with an uppercase A-Z in first position.
5	Student's First Name	FirstNM	0 to 9 Uppercase A to Z .(period) "(apostrophe) -(dash) Blank = No response If non-blank, will be justified with an uppercase A-Z in first position.
6	Student's Middle Initial	MI	Uppercase A to Z Blank = No response

Field No	Field Name	Database Column Name	Valid Field Content
7	Student's Date of Birth	DOB	Format is MMDDCCYY MM = 01-12 DD = 01 – 31 YY = 00 – 99 00000000 = No response Please note: Blank is not a valid value. Please use 00000000 if the date is unknown.
8	Gender	GenderCD	1 = Male 2 = Female
9	Race/Ethnicity	EthnicityCD	1 = American Indian or Alaska Native 2 = Asian 3 = Black or African-American 4 = Hispanic or Latino 5 = White 6 = Native Hawaiian or other Pacific Island 7 = More than one race reported 0 = No response NOTE: The race/ethnicity categories used here are the only categories officially approved by OMB for this data collection. For those students where more than one race has been reported, you may use "7" for "More than one race reported."
10	Eligibility	EligibilityCD	1 = Low-Income and First-Generation 2 = Low-Income only 3 = First-Generation only 4 = Disabled 5 = Disabled & Low-Income 0 = No response
11	First School Enrollment Date	FirstEnrollDT	Format is MMDDCCYY MM = 01-12 DD = 01-31 CC = 19-20 YY = 00-99 00000000 = No response Please note: Blank is not a valid value. Please use 00000000 if the date is unknown

Field No	Field Name	Database Column Name	Valid Field Content
12	Project Entry Date (cohort Identifier)	ProjEntryDT	Format is MMDDCCYY MM = 01-12 DD = 01-31 CC = 19-20 YY = 00-99 00000000 = No response Please note: Blank is not a valid value. Please use 00000000 if the date is unknown
13	Date of Last Program Service	LastSerDT	Format is MMDDCCYY MM = 01-12 DD = 01-31 CC = 19-20 YY = 00-99 00000000 = No response Please note: Blank is not a valid value. Please use 00000000 if the date is unknown

Field No	Field Name	Database Column Name	Valid Field Content
14	Participant Status	PartCD	1 = New Participant (for reporting period) 2 = Continuing 3 =Prior Yr. Participant (Still enrolled but not receiving SSS services) 4 = Prior Yr. Participant (No longer enrolled at grantee institution) 0 = No response **NOTE:** A **new participant** is one served by the project for the first time in this reporting period. A **continuing participant** is one who was served by the project for the first time in another reporting period who also received project services during this reporting period. **A prior-year participant still enrolled at grantee institution** is an individual who received project services in a previous reporting period and was enrolled at the grantee institution during the current reporting period, but did not receive project services on a continual basis during the current reporting period. **A prior year participant not enrolled at the grantee institution** is an individual who received project service in previous reporting periods and was enrolled at the grantee institution during the previous reporting period, but was not enrolled at the grantee institution during the current reporting period.

Field No	Field Name	Database Column Name	Valid Field Content
15	Academic Need	NeedCD	01 = High School GPA 02 = SAT scores, verbal 03 = SAT scores, math 04 = ACT scores 05 = Predictive indicator 06 = Diagnostic tests 07 = College GPA 08 = High school equivalency 09 = Failing grades 10 = Out of the academic pipeline for 5 or more years 11= Other 00 = No response **NOTE:** Since many students may qualify for project services based on more than one category, please select from the list provided only the main category used to determine the individual's need for project services. If need use "11—Other" for categories of academic need used by your project but not on the list of options. **Predictive indicator** is a composite variable for estimating the potential success of a student in college using a variety of factors that may include indicators such as high school GPA, SAT or ACT test scores, high school preparedness, etc. Please use the "other" category sparingly.
16	Enrollment Status (during the reporting year)	EnrollCD	1 = Full-time 2 = ¾ time 3 = ½ time 4 = Less than ½ time 5 = Varied enrollment status 6 = Not enrolled 0 = No response **NOTE:** Use "5—Varied enrollment status" for students who may attend full-time in one semester or quarter of the academic year and ¾ or ½ time in another semester or quarter of the academic year.

Field No	Field Name	Database Column Name	Valid Field Content
17	College Grade Level (Entry into project)	EnterGradeL	01 = 1st yr., never attended 02 = 1st yr., attended before 03 = 2nd yr./sophomore 04 = 3rd yr./junior 05 = 4th yr./senior 06 = 5th yr./other undergraduate 00 = No response NOTE: Use codes 03, 04, 05,and 06 only for students who have the required number of credits and GPA to be classified at the institution as sophomore, junior, senior, and other undergraduate respectively.
18	College Grade Level (Current-at the end of the project year)	CurrentGrade LV	01 = 1st yr., never attended 02 = 1st yr., attended before 03 = 2nd yr./sophomore 04 = 3rd yr./junior 05 = 4th yr./senior 06 = 5th yr./other undergraduate 07 = Graduated with Associates Degree 08 = Graduated with Bachelor's Degree 09 = 1st yr. graduate/professional 10 = 2nd yr. graduate/professional 11 = 3rd yr. graduate/professional 12 = Beyond 3rd yr. graduate/professional 00 = No response/Unknown **NOTE:** A project must track and thus report on the current college grade level of each current and prior year participant for as long as they are enrolled at the grantee institution.

Field No	Field Name	Database Column Name	Valid Field Content
19	End of Year EnrollmentStatus	EndEnrollCD	01 = Academic dismissal 02 = Dismissal for non-academic reasons 03 = Withdrew for financial reasons 04 = Withdrew for health reasons 05 = Withdrew for academic reasons 06 = Withdrew for personal reasons 07 = Transferred to another institution 08 = Transferred from 2-year institution to 4-year institution 09 = Graduated with Associate's degree 10 = Graduated with Associate's degree and transferred to a 4-year institution 11 = Graduated with Bachelor's degree 12 = Beyond 3rd yr. graduate/professional 13 = Continuing student 00 = No response
20	GPA Scale	GPAScale	1 = 4 point scale 2 = 5 point scale 3 = Other 0 = No response **NOTE:** Valid one digit grade point average scale code. Complete for all new, continuing, and prior year participants still enrolled at grantee institution.
21	Cumulative GPA	CumGPA	0.000 to 5.000 9.999 = Not applicable Blank = Unknown NOTE: Valid one digit grade point average scale code. Complete for all new, continuing, and prior year participants still enrolled at grantee institution.
22	Academic Standing	AcamStandCD	1 = Good standing 2 = Not in good standing 0 = No response NOTE: Use your institution's definition of good academic standing. Complete for all new, continuing, and prior year participants still enrolled at grantee institution.

Field No	Field Name	Database Column Name	Valid Field Content
23	Degree/Certificate Completed	DegreeCD	1 = Certificate/Diploma for occupational, educational program (less than two-year program) 2 = Certificate/Diploma for occupational technical, or educational program (at least two-year program) 3 = Associate Degree (two years) 4 =1st Bachelor's Degree 5 = 2nd Bachelor's Degree 6 = Teaching Credential Program 7 = Graduate or Professional Degree 8 = Not completed program of study 0 = No response NOTE: Indicate highest degree completed. For students who have not yet completed their program of study, use 8.
24	Amount of Financial Aid Needed	FinAidReqAMT	00000 to 99999 (e.g. 05000 for $5,000) Blank = Not applicable or unknown or prior participant NOTE: Provide the dollar amount (whole dollars only) of the financial need of each participant as determined by the financial aid office.
25	Amount of Financial Aid Offered	FinAidOfferAMT	00000 to 99999 (e.g. 05000 for $5000) Blank= Not applicable or unknown or prior participant NOTE: Provide the dollar amount (whole dollars only) of the financial need of each participant as determined by the financial aid office.
26	Amount of Unmet Need	FinAidUnmet	00000 to 99999 (e.g. 05000 for $5000) Blank= Not applicable or unknown or prior participant NOTE: Provide the amount of unmet need (whole dollars only) as determined by the financial aid office.

Field No	Field Name	Database Column Name	Valid Field Content
27	Amount of Grant Aid Awarded	SSSGrantAid	00000 to 99999 (e.g. 05000 for $5000) Blank= Not applicable or unknown or prior participant NOTE: Provide the amount of grant aid awarded (whole dollars only) for the academic year.
28	Reasons Full Financial Aid Not Offered/Awarded	FinAidRejCD	01 = Student refused loan 02 = Insufficient Federal grant aid 03 = Insufficient College Work Study aid 04 = Insufficient institutional aid 05 = Student failed to make adequate academic progress 06 = Student refused College Work Study aid 07 = Student not enrolled full-time 08 = Student not eligible for financial aid 09 = Insufficient loans 10 = Student did not apply 11 = Student applied too late 12 = Student defaulted on Federal student loans 13 = Student withdrew 14 = Student failed to provide requested information 15 = Other 16 = Not applicable 00 = No response

Appendix C

Not Statistically Significant Logistic Regression Tables For Subjects in the Study

Appendix C

Not Statistically Significant Logistic Regression Tables
For Subjects in the Study

Table 1

Parameter Estimates for the Logistic Regression Model for White Subjects

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	.008	.008	1.076	.300	1.008
Personal Counseling	-.003	.016	.027	.869	.997
Career Counseling	-.018	.026	.476	.490	.982
Financial Aid Counseling	.003	.020	.021	.885	1.003
Study Skills	.001	.000	1.435	.231	1.001
Tutoring	.000	.000	.049	.824	1.000
Cultural Enrichment Activities	-.004	.004	1.213	.271	.996

Table 2

White Subjects Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	149	0	100.0
Did Not Return	10	0	0
		Overall	93.7

Table 3

Parameter Estimates for the Logistic Regression Model for Low-Income Subjects

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	.006	.005	1.686	.194	1.006
Personal Counseling	.009	.011	.583	.445	1.009
Career Counseling	-.014	.019	.521	.470	.986
Financial Aid Counseling	-.008	.017	.212	.645	.992
Study Skills	.000	.000	1.031	.310	1.000
Tutoring	.000	.000	1.109	.292	1.000
Cultural Enrichment Activities	.002	.002	.713	.398	1.002

Table 4

Low-Income Subjects Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	228	0	100
Did Not Return	16	0	0
		Overall	93.4

Table 5

Parameter Estimates for the Logistic Regression Model for Male Subjects

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	.018	.009	3.657	.056	1.018
Personal Counseling	-.003	.017	.025	.875	.997
Career Counseling	.026	.034	.558	.455	1.026
Financial Aid Counseling	-.021	.033	.422	.516	.979
Study Skills	-.235	48.277	.000	.996	.791
Tutoring	-.001	.001	1.148	.284	.999
Cultural Enrichment Activities	-.005	.005	1.015	.314	.995

Table 6

Male Subjects' Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	98	0	100
Did Not Return	4	1	20
		Overall	96.1

Table 7

Parameter Estimates for the Logistic Regression Model for Female Subjects

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	.003	.006	.169	.681	1.003
Personal Counseling	-.004	.017	.053	.818	.996
Career Counseling	-.012	.019	.403	.526	.988
Financial Aid Counseling	-.004	.017	.058	.809	.996
Study Skills	.000	.000	1.266	.261	1.000
Tutoring	.000	.000	.108	.743	1.000
Cultural Enrichment Activities	.003	.002	1.082	.298	1.003

Table 8

Female Subjects Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	189	0	100
Did Not Return	15	0	0
		Overall	92.6

Table 9

Parameter Estimates for the Logistic Regression Model for Subjects Classified as Freshmen

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	.006	.009	.433	.511	1.006
Personal Counseling	.007	.015	.199	.655	1.007
Career Counseling	.005	.031	.024	.876	1.005
Financial Aid Counseling	-.015	.028	.282	.595	.985
Study Skills	.001	.001	1.838	.175	1.001
Tutoring	.000	.000	.936	.333	1.000
Cultural Enrichment Activities	.001	.004	.095	.758	1.001

Table 10

Freshmen Subjects Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	94	0	100
Did Not Return	8	0	0
		Overall	92.2

Table 11

Parameter Estimates for the Logistic Regression Model for Subjects Classified as Sophomores

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	.161	46.716	.000	.997	1.174
Personal Counseling	-.072	283.012	.000	1.000	.930
Career Counseling	.084	293.425	.000	1.000	1.087
Financial Aid Counseling	-.025	325.970	.000	1.000	.975
Study Skills	-.002	11.264	.000	1.000	.998
Tutoring	-.002	7.705	.000	.999	.998
Cultural Enrichment Activities	-.046	43.879	.000	.998	.955

Table 12

Sophomore Subjects Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	65	0	100
Did Not Return	0	1	100
		Overall	100

Table 13

Parameter Estimates for the Logistic Regression Model for Subjects Classified as Juniors

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	-.004	.012	.127	.721	.996
Personal Counseling	.021	.024	.740	.390	1.021
Career Counseling	-.034	.042	.662	.416	.967
Financial Aid Counseling	.004	.029	.016	.901	1.004
Study Skills	-.649	1339.766	.000	1.000	.522
Tutoring	.000	.000	.105	.746	1.000
Cultural Enrichment Activities	-.001	.004	.022	.883	.999

Table 14

Junior Subjects Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	58	0	100
Did Not Return	6	0	0
		Overall	90.6

Table 15

Parameter Estimates for the Logistic Regression Model for Subjects Classified as Seniors

Variable	B	S. E.	Wald	Significance	Exp(B)
Academic Counseling	.027	.019	1.892	.169	1.027
Personal Counseling	-2.328	406.109	.000	.995	.097
Career Counseling	.020	.034	.350	.554	1.020
Financial Aid Counseling	-.022	.039	.318	.573	.978
Study Skills	-.243	49.207	.000	.996	.784
Tutoring	-.001	.001	1.547	.214	.999
Cultural Enrichment Activities	.005	.004	2.032	.154	1.005

Table 16

Senior Subjects Classification Table for Retention through Goodness of Fit with All Variables-The cut value is .50 Predicted

Observed	Returned	Did Not Return	Percent Correct
Returned	70	0	100
Did Not Return	3	2	40
		Overall	96.0

ABSTRACT

This study identified and examined the service variable combination(s) provided by Student Support Services (SSS) TRIO program that had a statistically significant relationship with program participants' academic performance and retention. SSS is a federally funded program designed to increase the retention and graduation rates of undergraduate first-generation, low-income, disabled college students.

While SSS has played a significant role in the retention of disadvantaged students, scarce empirical research exist which examine the combination of SSS services that affect students' academic performance and retention. Considering SSS programs will probably not experience large increases in federal support in the future and given the limited resources available to projects (Eisener, 1997), the purpose of this study was to determine the most efficient combination of services that had a statistically significant relationship with program participants' academic performance and retention.

The target population for this study included 307 students who participated in the program for the 2003-2004 academic year. Multiple and logistic regression analyses were used to examine the relationship between the total minutes devoted to services provided by SSS and program participants' academic performance and retention rates.

The findings from this study indicate that in combination the variables total minutes devoted to the services cultural enrichment and personal counseling were found to have statistically significant with academic performance for all subjects in the study. Personal counseling, cultural enrichment activities, career counseling, tutoring and academic counseling were found to have a statistically significant relationship with the academic performance of specific subpopulations of subjects in the study.

Personal counseling had an inverse relationship with academic performance for all combinations of services found to be statistically significant. With regard to student retention, the program had a 93.5% retention rate. Academic counseling predicted student retention. However, certain services predicted student retention for specific subpopulations of students. Implications and recommendations for SSS programs and higher education are presented.