A STUDY OF RETENTION AMONG SCHOLARSHIP FOOTBALL PLAYERS IN THE ATLANTIC COAST CONFERENCE

by

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(ABSTRACT)

The primary purpose of the study was to estimate a retention model that predicted graduation and college grade point averages for scholarship football players. Several nontraditional factors, such as each player's career maturity, their use of academic support services, and institutional characteristics were included in the model. Astin's Involvement Theory, Spady's Dropout Prediction Model, and Tinto's Integration Theory served as anchors for the study.

The assigned respondent from each athletic department of the nine institutions of the Atlantic Coast Conference provided the data for the study. Each respondent completed a survey that asked for information concerning the individual players and their institutions. A total of 216 football players were included in the study.

The information provided by the institutions was used to quantify ten independent variables that were hypothesized to influence retention. Eight of these variables pertained to characteristics of the individual football players; the other two variables were specific to the institutions. Path analysis was used to estimate the retention model.

The results indicated that of the four endogenous variables questioned, mature career attitude, use of academic support services, and atmosphere toward academics had a significant affect on retention. In the reduced model, mature career attitude was the strongest predictor of graduation, with use of academic support services second. Mature career attitude was also the strongest predictor of college grade point average.

From the research findings several recommendations are made. It is suggested that athletic departments develop or identify an assessment test that measures career maturity and administer it to the football recruits. A specific counseling program should be established to assist those players who lack career maturity. It is also suggested that the Atlantic Coast Conference prepare a videofilm to address the career maturity issue. This video would include a discussion of the percentage of college players who successfully enter the professional ranks and interviews with college stars who were unsuccessful in pursuing a professional football career.

Another recommendation is for each institution to require every player to actively participate in the academic support program. It is of utmost importance that the institutions send a strong message to the players that the main function of the university is for every student to successfully fulfill degree requirements.

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CHAPTER ONE

INTRODUCTION

The Director of Admissions has the responsibility to sign, seal, and deliver the next incoming class. With ten thousand applications to consider, there are many difficult decisions to make. It is common practice for an institution's research department to design a prediction equation based on statistics that assists in the selection process (M. C. Maxey, personal communication, May 18, 1994). By including such variables as grade point average, standardized test scores, and class rank, it is possible to predict a freshman's grade point average for the first year in school. While the process is rather complicated, only an average of 67% of all students who initially enrolled in the Fall of 1986 at the member schools in the Atlantic Coast Conference received their diplomas within a six year span (NCAA, 1993).

The Director of Athletics of a Division I program oversees the operation of at least sixteen athletic teams. In addition to maintenance of facilities and personnel duties, the position includes the supervision of coaches who are responsible for recruiting the next class of athletes. In many ways, the directors of admissions and athletics have similar goals. There is one unique difference, however. The Director of Admissions has fulfilled his responsibilities once that student has enrolled. The Director of Athletics, on the other hand, has the responsibility to supervise the athletic environment of that student for the next four to five years.

Throughout the nation, special groups of students are admitted into the various institutions of higher education so that they may contribute their athletic talents to their respective athletic teams. Outstanding high school athletes are recruited to improve the various colleges' and universities' stature on the football field. A great deal of effort and money is directed toward improving the playing skills of these athletes. Unfortunately, for reasons that are often outside of athletics, only 65% of the football players who enrolled initially in the Fall of 1986 at the Atlantic Coast Conference institutions graduated within a six year period. Consequently, neither the teams nor a number of individuals have reached their academic and athletic potential.

Although there are similarities with other students, scholarship football players are affected by additional factors that influence retention. The personal characteristics of the players before they enroll and the athletic environment that consumes so much of their time and energy have not previously been considered. Is it possible to identify nontraditional factors that will result in a better prediction model? Is it also possible to change the environment so that more football players graduate? The focus of this study was to answer both of these two interrelated questions.

Justification

This is a study designed to assist admissions officials and athletic directors to accomplish a very critical task. The selection and rejection of applicants affects not only the individual, but also society as well. It is common practice for college admissions offices to use statistical methods to determine the possibility of an

applicants' success by calculating a predicted grade point average. When that prediction is inaccurate, fewer students stay in school and receive their degree. A retention model that includes critical factors that influence graduation will assist administrators to design policies and strategies that will facilitate retention among athletes. The benefits of a well educated community include lower crime rates, lower welfare costs, increased tax revenues, higher tolerance among different cultural groups, and better use of technology, thereby resulting in higher productivity (Psacharopoulos & Woodhall, 1985).

The individual who enrolls in college, only to drop out before graduating also loses. Numerous studies have shown a strong correlation between earning a degree and higher lifetime earning potential for the individual (Psacharopoulos & Woodhall, 1985). Graduates experience earnings that rise steeper and peak later in life than those with less education. In addition, college graduates enjoy more satisfying jobs, and demonstrate better parenting skills. Thus, better prediction of student success will result in benefits for the individual.

The admission of every student is an investment on the part of the institution. It is an expensive mistake when a student decides to pack his or her belongings before the school year ends. A dormitory bed is left empty, yet the college's expenses are not lowered significantly. A classroom seat is left empty, with the salary of the professor unchanged. Obviously, the better the predictions at the admissions stage, the easier for the institution to meet its financial obligations that rely both on student enrollment and their persistence.

The athletic department of a Division I institution may enroll up to twenty-five football players annually, according to the 1993-94 NCAA Manual (Bollig, 1993). As a result, considerable time, money, and effort is spent recruiting and enrolling the nation's best high school football players. During the four or five years of practicing and playing, most players become stronger, improve their athletic skills, obtain a better understanding of the game, and become more valuable to their team. Thus, a team that retains 80% of a recruiting class will have twenty players competing during their last year of eligibility. A school that retains only 60% will have only fifteen eligible. Obviously, it is advantageous to have as many older, more knowledgeable, more mature players as possible. Efforts to improve existing retention programs or add new ones that retain several more players each year could result in more wins on the football field.

Graduation rates for scholarship athletes have brought a great deal of negative attention to the once untouchable college campus. National and local news articles have placed a spotlight on graduation rates of football players who attend Division I institutions. In the September 12, 1994, issue of Time Magazine a comparison was made of the football teams' graduation rate with the rates of the respective student bodies for the nation's top twenty-five teams. In the June 22, 1994, issue of the Roanoke Times & World News a list of the graduation rates for all college football players during the last fourteen years appeared. Although the graduation rates of Division I football players has risen since 1987, the graduation rate in 1994 is still only 57.9%.

The study has been designed to focus on football players since they constitute the largest group of scholarship recipients in any one sport. In order to study retention on a regional basis, the members of the Atlantic Coast Conference were targeted. Thus, the procedural problem was to determine the relationship between intercollegiate football players' characteristics/demographics and their environment on retention at institutions in the Atlantic Coast Conference.

Purpose of the Study

The primary purpose of this study was to estimate an Athletic-Retention Prediction Model. In addition, the following ancillary purposes also were addressed:

1. Synthesize the extant literature.
2. Identify player characteristics that affect retention.
3. Identify environmental factors that affect retention.
4. Determine the relationships among the related factors.
5. Determine the weight of each factor.

Conceptual Framework

One anchor of this study was Astin's Student Involvement Theory (Astin, 1984). Involvement, in this theory, "refers to the amount of physical and psychological energy that the student devotes to the academic experience" (p. 297). This energy is placed in a variety of elements, which may range from the investment of energy to write a one page paper to the exertion over an entire football season.

For every element, the student invests levels of involvement that may vary periodically. This expenditure of energy can be assessed from both a quantitative and a qualitative point of view. Thus, a football player who attends a two hour practice session for the purpose of watching game films on Monday exerts considerably less energy than he would be expected to expend during Saturday's game.

The theory states that a high degree of quantitative and qualitative involvement in an activity will result in a higher level of development and learning achievement. Thus, the student who studies many quality hours for the biology exam should receive a high grade on the examination. The quarterback who comes to practice everyday, listens carefully to the instruction of the coaches, and executes the drills properly should develop the skills to be a better football player. Generalizing to the entire educational experience, the student who becomes involved in the college's activities, including academics, is more likely to develop mentally, physically, and socially, and ultimately graduate.

This study also was guided by a model of the dropout process developed by Spady (1971). Several factors play a significant role in a student's dropout decision, one of which Spady refers to as "structural relations." This includes a student's extracurricular involvements, dating habits, and faculty contacts, with the understanding that friendship support is a result of these relations. Due to the necessity to attend practice on a regular basis, the student athlete is forced to develop relations with teammates and coaches.

Another anchor of this study was based on Tinto's Integration Theory (1975). Retention of undergraduates is influenced by a number of factors, some of which occur before initial enrollment, while other factors only occur during their college years. In Tinto's third stage, students are integrated into the social fabric of the academic community through classroom and extra-curricular activities. Athletic participation often builds a strong bond between student-athletes and their respective institutions. The Tinto theory predicts that the stronger this integration, "the greater the student's individual goal and institutional commitment."

It is important to understand Astin's "involvement" concept, "structural relations" from Spady, and "social integration" from Tinto's theory as they apply to the experiences of student-athletes. Typical intercollegiate athletes enrolled at Division I schools either live with teammates off-campus, or, more commonly, in dormitories that house athletes. They eat breakfast, lunch, and dinner with teammates and spend about three hours daily with the same groups of people during football practice. Once the season starts, the time commitment for the student-athletes become even greater. For away games, the time spent together stretches even farther. The most significant adults in their lives are the coaches, who they see at least six days a week for three to four months consecutively. Further, football players meet for several weeks in August prior to commencement of the Fall term and before other students arrive on campus. During these preseason practices, there are no distractions from football--no classes to attend, no papers to write, nor are there examinations that require preparation. It is no surprise that the interpersonal and group dynamics that

occur between the athletes and their coaches have a significant influence on each individual's decision to stay in school. Strong bonds are often built among student-athletes, institutions, and teammates who experience similar processes.

Research Questions

The purpose of the study was addressed by answering several central research questions. These broad-based questions were supported by additional specific questions.

1. What are the literature based findings related to the retention of college student athletes?

   Are there any factors related to retention that are not found in the literature?

2. Are there any effects due to background characteristics of the scholarship football players on retention?

   a. Is there a significant effect of career maturity among football players on their retention in college?

   b. Does the use of academic support services have a significant effect on retention among football players?

3. Are there any effects due to institutional characteristics on retention?

   a. Does quality of academic support services affect retention?

   b. Does the attitude of coaches toward academics affect retention among football players?

Assumptions

The following assumptions were necessary to establish a prudent starting point for the study:

1. Several models (Astin, Spady, Tinto) have hypothesized that extracurricular activities contribute to the social integration of a student into the educational community. This study assumed that participation in athletics was a significant factor for social integration.
2. This study assumed that graduation from college is an important objective for all athletes. Only 2% of college football players have a financially successful career in professional sports (Underwood, 1980). Thus, for the vast majority of student-athletes, graduation was a critical factor in future employment.
3. This study assumed that football players who did not graduate with a bachelor's degree after six years in college would never graduate. If a player has not received a degree after attending an institution at no cost for five years, it is highly unlikely that a player will return to college and pay his own way after six years.

Delimitations

1. The study was delimited to information provided by the higher education institutions of the Atlantic Coast Conference and the National Collegiate Athletic Association.

2. Retention was studied only for the football players who initially enrolled in college in the Fall of 1986.

3. Retention data was delimited to football players who were offered and accepted grants-in-aid for their athletic abilities at member schools of the Atlantic Coast Conference. "Walk-ons" who were offered a scholarship after their initial semester also were included; those players who never received an athletic scholarship were excluded.

4. The study was delimited to retention of scholarship athletes as a whole; no comparisons were made among the higher education institutions of the Atlantic Coast Conference.

Limitations

1. Coaches employed by each ACC institution may have different attitudes toward recruiting. Some may have recruited student-athletes above some minimum standard of academic abilities; whereas others may have recruited strictly on the basis of athletic ability, with little or no concern for academic credentials. Those teams which have more representatives from the lower end of the academic spectrum may experience regression toward the mean.

2. Athletes at some schools have experienced changes in their head coaches or athletic directors during their college career, while others did not. The philosophy of concern for retention on the part of these significant adults may have been a strong indirect factor that is difficult to measure.

3. The collection of data may have followed different procedures among the several institutions. In order to ensure that measurements were consistent among institutions, conversations with representatives from each school were made.

4. Some factors may be difficult to measure because the person most knowledgeable about the factor was no longer accessible.

Definitions

1. A scholarship football player (i.e., football player, player, student-athlete, and athlete) is defined operationally as an athlete on the football team who has been offered financial aid due to his athletic ability, as stated in the NCAA Manual, 1993-94.

2. Extracurricular activities is defined as any formal or organized programs that students may participate in as a result of being enrolled in the institution. These may include, but are not limited to intramural and intercollegiate athletics, fraternities and sororities, and clubs and student organizations.

3. Academic support services is defined operationally as a group of services offered to intercollegiate athletes only to assist and direct them toward graduation. These services often include, but are not limited to, tutoring, academic advising, and academic monitoring.

4. Retention is defined operationally as graduation from a four-year institution.

5. An at-risk student is defined operationally as any college student who is at-risk of withdrawing from school due to the problems associated with low family income and/or poor high school academic performance.

Organization

This study is organized into five chapters. Chapter one presents an overview of the study. A review of the extant literature is provided in Chapter two.

The methodology of the study is described in chapter three. This includes the population, the model, the independent and dependent variables, data collection procedures, and data analysis. Chapter four presents the results of the study through the data analysis.

Chapter five consists of the conclusions and recommendations of the study. A section of this chapter is devoted to implications for future research.

CHAPTER TWO

LITERATURE REVIEW

A review of the extant literature is organized into five sections in this chapter. Section one explains the three studies that provided a framework for the present study. First, Astin's Involvement Theory is discussed along with several other pieces of his work (1975, 1982, 1984). This is followed by Spady's Dropout Model (1970) and Tinto's Integration Theory (1975, 1982, 1987).

Section two reports the findings of other research that evaluates the various theories. The third section examines a number of other related models. The general student population is the focus of the research and models described in these two sections.

Section four reviews studies that divide and compare the student population into subsets of athletes and nonathletes. In the fifth section, the factors that influence the retention of athletes are examined.

Anchors of the Study

Astin's Involvement Theory

As described earlier, Alexander Astin's Student Involvement Theory (1984) is an important anchor of this study. Although the theory is directed toward college students in general, it is also applicable for scholarship football players enrolled at Division I schools.

A researcher in the field of college student development for over twenty-five years, Astin has drawn some conclusions that summarize the numerous studies that he has conducted over the years. These conclusions constitute his Student Involvement Theory. Before describing these conclusions in detail, it is important to review several of Astin's earlier works that were instrumental in the development of his latest theory.

Astin studied a variety of environmental factors that affect the retention of two and four-year colleges and described his findings in Preventing Students from Dropping Out (1975). One factor he studied was financial aid. Although Astin did not focus specifically on scholarship athletes, scholarships and grants were a target of his study. Scholarship recipients in general persisted in college at a slightly higher rate than those who did not receive a scholarship. Among freshman men, the receipt of scholarships and grants from state government and institutions resulted in a dropout reduction of 8% (p. 57).

The affect of residence and campus environment also were studied by Astin (1975). He found that a student who moves away from home and into the dormitories as a freshman is more likely to remain in school than those who continue to reside with their parents. For men, living in any environment (dormitory, single room, or apartment) other than at home enhances their retention probability. Astin hypothesized that, "For men, getting away from the home environment may facilitate greater involvement in campus and academic life" (p. 94). In Division I football, it is standard practice for players to live in university housing as a freshman and some

form of institutionally controlled housing thereafter. Thus, directors of college football programs unintentionally may be following the philosophy of Astin.

Astin studied the effect of participation in varsity athletics (1975). According to his study, participation reduced the probability of dropout by 1% for white males, 5% for white females and both male and female African-Americans who attended predominantly white colleges. It is interesting to note that in the Fall of 1986, 40% of the freshman scholarship football players at Division I-A schools were African-American males (NCAA).

Referred to as his "Theory of College Persistence", Astin stated that "a student's tendency to drop out of college is inversely related to the degree of direct involvement in the academic and social life of the institution" (pp. 175-176). He referred to the residential environment and participation in extracurricular activities as examples of this involvement.

In Minorities in American Education, Astin (1982) discussed the factors that enhance and impede the retention of minority college students. Academic preparation, demographic characteristics, and environmental factors were some of the areas studied.

The best predictor of college Grade Point Average (GPA) was the student's high school GPA. Being a female and having good study habits were found to be positive predictors. Neither of the two aptitude tests (SAT's and ACT's) contributed significantly to the prediction of college grades for African-Americans and Chicanos.

Parental income was another factor that Astin studied. He identified a positive relationship between income and both college GPA and graduation rates for minority students. For whites, he discovered a positive relationship between income and personal satisfaction, but not with retention. In most cases, the Astin studies found positive relationships between parent's education and persistence. A positive relationship was found between persistence, defined as graduation or still enrolled, and parents education for African-Americans, whites, Chicanos, and American Indians.

Astin studied a variety of environmental factors and their effects on graduation rates. Graduation rates for all minority and whites were better at four-year institutions than at two-year institutions. He also found that minority students who initially enrolled in two-year colleges were less likely to earn a bachelor's degree than those who initially started at a four-year institution. Not unexpectedly, students who must work at a job outside the campus were more likely to drop out of school.

Astin (1982) discussed the hierarchy of institutions of higher education and suggested that minority students are not evenly distributed across these groups. Minorities are highly concentrated in the lower tiers of this hierarchy, namely the community college and the less prestigious public four-year colleges. These lower-tier institutions operate with smaller budgets, lower salaried professors, and smaller endowments, and have lower quality facilities. Thus, minorities have access to higher education in a general sense, but do not enjoy equal access by type of institution.

Minorities are more likely to attend "commuter colleges", allowing them to continue to work and to attend at lower tuition costs. These accommodations result in the continuation of their nonacademic life, allowing them to participate in the educational process. But, this allowance does not permit a total immersion into the academic community. By being on campus just one hour a day to attend class, the commuter student often is unable to participate in the extracurricular activities, both formal and informal, that result in greater involvement. Without the incentive to become more thoroughly involved, the commuter student is less likely to bond with the institution, and thus is more likely to dropout at a higher rate than the residential student.

Astin (1984) defined involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 297). In essence, a high level of involvement would be characterized by a student who puts a lot of effort into studying and participating in college activities. The low involvement student studies very little and does not take part in any college affiliated programs. According to Astin, involvement requires doing; not just thinking about it.

The Astin theory has five underlying postulates. First, involvement deals with the use of physical and psychological energy that is directed toward a variety of activities. Energy may be directed toward a general goal, such as getting good grades, or one that is very specific, like the completion of an English paper.

Second, involvement occurs along a wide spectrum of activity. One student may invest a higher level of involvement in an activity than another student, and these

levels of involvement will probably vary over time. Third, the involvement may vary both quantitatively and qualitatively. For example, a student may study five hours for a biology examination (quantitative), but due to a loud television and talkative roommates, very few sections of the student's biology notes were memorized (quantitative).

Fourth, the level of learning and growth is positively correlated with the quantity and quality of the student's involvement in that particular field of study. In other words, students who use good study techniques while preparing for a specific examination are more likely to learn more than those students who spend very little time studying. Fifth, the success of an institutional program or policy is "directly related to the capacity of that policy or practice to increase student involvement" (p. 298).

Spady's Dropout Model

A second anchor for this study is a theoretical model for undergraduates developed by William Spady. In Dropouts from Higher Education: Toward an Empirical Model (1970), Spady proposed a model, and evaluated the model through the use of a longitudinal study. The Spady model is shown in Figure 2.

Each student enrolls in college with a unique family background. Spady believed that a student's pre-college experiences affect the individual's actions and reactions to the stresses and strains of college life. Family background is divided into the following two categories: (1) The "cosmopolitanism" (p. 41) category refers to

the socioeconomic status, religion, ethnic origin, and level of urbanization of the family; and (2) "family relationships" deals with the emotional support, stability, and cohesiveness of the family.

When the student arrives on campus, his or her unique set of characteristics, based on family background, fit into a wide spectrum of interaction within the college environment. At one end of the spectrum there is an extremely high degree of compatibility between the attributes of the student and significant other individuals who reside in the same college environment. At the other end of the spectrum there is a poor match between the student and other people. Spady refers to this concept as "normative congruence" (p. 39). Thus normative congruence, combined with friendship support, determine the level that the student is integrated into the social system.

Integration into the academic system is the other one-half of the environment. The students' academic aptitude and their pre-college education define their academic potential, which greatly affects their grades and intellectual development. According to Spady, how well students do in the college classroom will also affect their level of social integration. The combination of students' integration into both systems determine levels of satisfaction toward the institution; and, in turn, influence students' decisions to either remain or withdraw from school.

Spady follows his explanation of the model with a study done with the freshman class of 1965 at the University of Chicago. Data were collected at the beginning of their initial enrollment, again at the beginning of their sophomore year,

and finally after four and a half years. He used the multiple regression statistic to analyze the contribution of the independent variables on the dependent variables. Spady came to the following conclusions:

1. For men who dropped out during the first year, the most important factor was their grade performance. For women, commitment to the institution was clearly the most important factor.

2. In terms of whether or not they graduated, grades were the most important factor for both sexes.

3. Structural relations, defined as extracurricular activities, dating patterns, and contacts with professors, combined with friendship support had a direct, significant effect on the decision to drop-out for both sexes.

4. Normative congruence for both sexes also had a direct, significant effect on their drop-out decisions.

Tinto's Integration Theory

Vincent Tinto's Integration Theory also served as an anchor in this study. In Dropout from Higher Education: A Theoretical Synthesis of Recent Research (1975), Tinto described the decision to drop out "as a longitudinal process of interactions between the individual and the academic and social systems of the college..." (p. 94). From this process, Tinto designed a theoretical model that is described in the paragraphs below and is diagrammed in Figure 3.

Stage One: Preentry Attributes

Tinto designed a longitudinal model that consisted of a series of stages in which the student interacts with the college environment. The first stage is established before the student enters the first classroom. Each student arrives on campus with a set of individual attributes, such as age, sex, race, and ability, an elementary and secondary educational experience, and a unique family background. These characteristics influence the student's perceptions and reactions to college life, and thus affect his or her decision to remain in school or leave. From their educational experiences, students bring a vast collection of knowledge, social attitudes, academic expectations, and family history. Their socioeconomic status, parents' education, and the quality of the family's relationships also provide relevant factors in their retention decision. These mold the parents' interest and expectations for their child's success in college (1975).

Stage Two: Goals and Commitments

The second stage of the Tinto model deals with the student's initial level of commitment. The first part of this commitment involves the student's own personal goals toward completion. The greater are the students' intentions to graduate from college, the more likely that the student will persist. This is influenced to a large degree by the student's previous education and the family background (1975). Tinto further explained this stage in Leaving College (1987). The individual's intentions and commitments are formed by these characteristics. He described intentions as "the

level and type of education and occupation desired by the individual" (p. 115). Commitments not only include the individual's desire to meet individual goals, but also the commitment to the institution of initial enrollment.

Stage Three: Institutional Experiences

The critical third stage occurs when the individual deals with numerous interactions with the institution (1975). Tinto divides these interactions into two systems, academic and social. As a result of the interactions, students become integrated into the institution at different degrees.

Integration into the academic system is viewed in several contexts. The student responds to tests, homework assignments, and papers and receives grades, and these provide an easy method of measuring the student's level of integration. However, Tinto cautioned that the students' intellectual development is also an important part of the integration process. Whereas grades signify the institution's judgement of the student, intellectual development signify the student's evaluation of the institution.

The second system within the third stage of the model is the social integration which involves the degree of integration and the match between the student and various social settings. These social settings include, but are not limited to peer groups, and include extracurricular activities, e.g. athletics, fraternities/sororities, and meetings with faculty and administrative staff of the institution. The stronger the

relationships with friends and positive rapport with faculty and other members of the college community, the more likely that the student will remain in school.

Tinto further organizes the third stage in Leaving College (1987) by dividing the academic and social systems into formal and informal components. The formal academic component deals with class assignment, grades, and in-class interactions between faculty and student. The informal component also is very important. How the faculty relates to the student in one-on-one meetings either discussing course requirements or giving advice is equally critical to the retention decision. The interactions with tutors, academic advisors, and other institutional administrators also play a role.

The social system has its formal component and includes involvement with college sponsored activities, e.g. student government or intercollegiate athletics, and increases the likelihood of persistence. Obviously, the informal social integration also is a factor. The ending of a relationship with a girlfriend or boyfriend has been the cause of many decisions to leave school (1987).

Stage Four: Subsequent Goals/Commitments

As described above in the second stage, the student's commitments are part of the background experiences that are brought into the model before initial enrollment. The academic and social integrations in the third stage also may affect the commitment level of the student in terms of personal goals toward graduation and toward the institution. Consequently, subsequent commitment to personal goals and

to the institution constitute another stage in this longitudinal process. Integration into the academic and social systems of the institution can affect these fourth stage commitments (1987).

Positive integration into the academic system may increase the chances of retention. When the student experiences positive feedback from an examination or from a conversation with a professor, this may raise his level of personal goal commitment. Other positive interaction with a professor or institutional administrator may result in the feeling that the institution is concerned about his wellbeing. This results in an increase in the student's institutional commitment.

Conversely, if the academic system is not a good match with the academic abilities of the student, a dramatic decrease in commitment may occur (1987). If the course material is too difficult, the student may be overwhelmed, resulting in a lowering of personal goals. At the opposite extreme, the student finds the coursework not sufficiently challenging and becomes bored. In both instances the student lowers his personal goals and this results in dropping out. If the student's grades are extremely low, the institution forces dismissal, resulting in another form of dropout.

Tinto suggested that social integration often affects the institutional commitment of a student. The intercollegiate athlete often builds a stronger commitment to the institution, resulting in persistence. Strong social integration, however, can prove to be detrimental to personal commitments when it conflicts with academics. An example occurs when a student develops friendships with others who place a great deal of energy in the social aspects of the institution to the detriment of

their academic concerns. Late nights socializing result in sleeping through classes the next day. Personal commitments toward academic success are then lowered. The raising or lowering of commitments then affects their decisions to either remain or withdraw from school.

In summary, Tinto's model theorizes that the student enters college with a number of attributes that shape his intentions and goals. Institutional experiences interact with these characteristics and the student becomes integrated into the academic and social systems of the college. Because of each student's unique background and college experiences, integration takes place at many levels. The level of integration in the academic and social systems may change the student's intentions and goals over time. The strength of these intentions and goals throughout the student's tenure in college influences his or her decision to continue at the institution or leave.

The model has proven to be an effective tool in predicting whether or not students will drop out of college. A number of studies have tested and supported Tinto's theory; these will be discussed later in this chapter. The Tinto model has its shortcomings, some of which Tinto describes in Limits of Theory and Practice in Student Attrition (1982). His initial model does not consider the affect of finances on the retention decision. When the student's experiences are not positive, the value of the education is questioned. Consequently, the student analyzes the costs and benefits of attending college more critically. When this occurs early in the undergraduate process, the student is more likely to leave the institution.

The student who leaves one institution may leave higher education altogether or may transfer to another institution. Although relative cost is one reason that a student transfers from one institution to another, there are many other reasons that prompt a student to change institutions. The model fails to explain or predict these behavior changes (1982). Tinto also cautions that the model does not consider group-specific reasons for dropping out. A variety of studies have shown that the longitudinal process of the undergraduate experience is quite different for minorities. Minority-specific differences are not addressed in the Tinto model.

In the writings of Astin, Spady, and Tinto, one concept remains both central and uniform. **All three researchers agree that the degree to which students become part of the college environment has a great influence on their probability of remaining in school.** Whereas Astin refers to "involvement", Spady and Tinto refer to "integration". Many of the subsequent studies have built on Tinto's model (Lyons, 1991; Munro, 1981; Pascarella, Smart & Ethington, 1986; Pascarella & Terenzini, 1977; Pascarella & Terenzini, 1983; Johnson, 1980; Staman, 1979; Terenzini, Pascarella, Theophilides & Lorang, 1985; Terenzini & Wright, 1987).

In order to present the studies in an organized manner, Tinto's model has been presented in the different stages. The first relationship reviewed is between subsequent goals/commitments and persistence, followed by the effects of the third, second, and first stages.

Subsequent Goals/Commitments and Persistence

Subsequent goals/commitments are the personal goals toward graduation and commitment to graduating from the institution after the student has spent some time at the institution. As stated above, based on the student's social and academic integration, the level of personal goal commitment and institutional commitment may have changed. In a study conducted at a large public four-year university, Terenzini et al. (1985) found that the influence of both personal goal commitment and institutional commitment on persistence was significant. They also found that the affect of institutional commitment on persistence was three times stronger than personal goal commitment. In a study performed by Pascarella and Terenzini (1983) at a large private four-year university, the same conclusions were made. In both studies, persistence was defined as continuation into the second year of college.

Several other studies found support for the relationship between one of the two types of commitment with persistence, but not both. Using a sample from a national database of students entering four-year colleges, Munro (1981) determined that personal goal commitment has the strongest effect on persistence. Munro did not find a significant relationship between institutional commitment and persistence. Pascarella, Smart, and Ethington (1986) came to a different conclusion concerning institutional commitment. With a national sample of students who started their college careers at two-year institutions, they reported that institutional commitment significantly influenced persistence, but only for men. In this situation persistence

was measured in two ways, those who had completed their bachelor's degree within nine years and those who were still pursuing the degree after nine years.

Academic and Social Integration and Subsequent Goals/Commitments

Tinto hypothesized that positive integration into the academic system of the institution influences the personal goals directed toward graduation. Both Tinto and Spady stated that social integration affects the institutional commitment. Lyons (1991) and Fox (1986) found evidence to support both hypotheses in studies done at public four-year colleges. Pascarella and Terenzini's research (1983) in a large private four-year institution also supported these ideas. Pascarella, Smart, and Ethington (1986) determined that social and academic integration both significantly influence institutional commitment. Their study did not include personal goal commitment as a variable.

Terenzini et al. (1985) reported mixed findings in a study done at a large public four-year institution. Whereas, academic integration did contribute to the explanation of personal goal commitment, social integration did not contribute to institutional commitment.

In contrast, Munro (1981) found no significant association between academic integration and personal goal commitment and no significant relationship between social integration and institutional commitment. Instead, Munro concluded that both students' aspirations and perceived parental aspirations had a strong affect on their personal goal commitments.

Academic and Social Integration and Persistence

Mixed results were found in studies that sought an association between academic and social integration with persistence. Pascarella, Smart, and Ethington (1986) concluded that both types of integration significantly affected completing a bachelor's degree. Pascarella and Terenzini (1977, 1983) arrived at similar conclusions where persistence was measured by those who returned for their sophomore year. Several other studies revealed different results. Terenzini et al. (1985) did not find a significant relationship between academic integration and persistence. Connecting evidence was found between social integration and persistence at the large public four-year university, however, the effect was negative. Research conducted by Russell (1980) found neither academic nor social integration related to persistence. This study used data from eleven institutions, both two-year and four-year.

When describing Academic Integration, Tinto (1987) discussed grades and a variety of other factors. Some of these included the type of feedback the student received from a professor, the match between the student's academic abilities and the institution's expectations, and the intellectual development of the student. In an attempt to measure Academic Integration, researchers used several indicators. One indicator appeared more often than any others, college grade point average. Pascarella, Smart, and Ethington (1986) defined Academic Integration as, "the sum of two items: (1) average undergraduate grades, coded 1="D or less" to 6="A- or more; and (2) membership in a scholastic honor society, coded "1=no, 2=yes" (p.

53). In this calculation, it is apparent that college grades are the most important factor. Pascarella and Terenzini (1977) defined Academic Integration with a combination of grade point average and students' perceptions of their academic program. In a later study, Pascarella and Terenzini (1983) measured Academic Integration with six indicators, one of which was grade point average. Terenzini et al. (1985) operationally defined Academic Integration with four variables, one of which was cumulative freshman grade point average. Munro (1981) measured Academic Integration with the use of two items, grade point average and the students' satisfaction with intellectual development. In the previous paragraph, researchers drew conclusions about the relationship between Academic Integration and Persistence. To some degree, they were also drawing conclusions between college grade point average and retention, variables used in their study.

Initial Intentions and Commitments

Many of the studies tested the effect of initial intentions and commitments on persistence. Pascarella, Duby, Miller, and Rasher (1981) and Staman (1979) found a significant influence in commuter-oriented four-year institutions. Mattox (1984) had similar results at a residential four-year school. In contrast, other studies found no significant relationship at residential four-year schools (Munro, 1981; Pascarella & Terenzini, 1983; Terenzini et al., 1985). Pascarella, Smart, and Ethington (1986) reported no significant influence of initial intentions and commitments on persistence

at the bachelor's level for those who initially began their studies at two-year institutions.

Pre-College Characteristics

Currently, many colleges use a prediction equation to assist in the selection process of admissions. Pre-college characteristics such as high school grade point average (GPA), high school rank, standardized test scores, and race are often included in this formula. Tinto hypothesized that pre-college attributes are not as important as the integration that occurs during the students' college years. Nonetheless, some researchers have found significant relationships between several pre-college characteristics and persistence. Using four-year degree completion as the dependent variable, Pascarella, Smart, and Ethington (1986) found that for men, high school GPA had a significant affect on retention. For women, socioeconomic status had a significant effect on persistence. In this case, socioeconomic status was calculated as a combined score of parents' education and parental income. Using a stratified random sample of college freshman from four-year public, private, large, and small colleges, Ryan (1990) reported that high school GPA was the best predictor of college GPA and that father's education was also a significant predictor.

In contrast, some researchers did not find a direct significant influence of these characteristics on persistence. In a longitudinal study, Lyons (1991) reported no significant difference between freshman enrollees and fourth year persisters based on gender, race, age, or SAT scores. Terenzini et al. (1985) concluded there was no

significant difference between dropouts and persisters due to family background, individual attributes, or pre-college schooling. This group of seven background characteristics included the traditional predictors of SAT scores, high school rank, and parents' education. Pascarella and Terenzini (1983), reviewed the affect of similar background characteristics and also found no significant contribution to persistence. In addition to the background characteristics mentioned above, their study included race as part of individual attributes and calculated family background as a combination of parents' education and family income. Munro (1981) arrived at the same conclusions, and found no significant influence on dropout decisions that were based on similar background characteristics.

Support for Tinto's model

When specific relationships between different stages in Tinto's model were reviewed, some studies validated the expected relationships while others did not. However, in terms of general acceptance, most of the studies reviewed supported Tinto's ideas (Lyons, 1991; Terenzini & Wright, 1987; Terenzini et al., 1985; Pascarella, Smart, & Ethington, 1986; Pascarella & Terenzini, 1977, 1983; Staman, 1979). Far fewer studies failed to support the general theories of the Tinto model (Munro, 1981; Russell, 1980).

Other Models

Although many related studies referenced the works of Tinto, Astin, and Spady, several other models are worthy of review. Bean and Metzner (1985, 1987) developed and tested a conceptual model directed toward nontraditional students. They found that the dropout decision is related to four groups of variables. Background characteristics, such as high school performance and educational goals, constitute the first group of variables and also affect the academic performance in college, which is considered the second group of variables. The third variable, intent to leave, is affected by psychological outcomes such as satisfaction, stress, and academic outcome. The fourth group, referred to as environmental variables, is a factor that has not been included in the other models. This factor includes finances, number of hours that they are forced to work, family responsibilities, and opportunities to transfer to other institutions. With the rising number of older, part-time, commuter students, colleges would be wise to consider the reasons why nontraditional students drop out. At a study conducted at a large commuter university, Bean and Metzner (1987) found strong support for their model.

In earlier research, Bean (1980) designed a causal model that related student persistence to work turnover. A number of characteristics similar to the work environment, entitled organizational determinants, directly affect on the student's level of satisfaction. In turn, satisfaction influences the student's commitment to the institution, which affects their decision to remain or leave. Bean's study supported his theory, and found that institutional commitment was a significant influence on

persistence for both sexes. For women, institutional quality and routinization also had an affect on their dropout decision. Routinization, satisfaction, and communication of rules also were significantly related to persistence for male students.

McCauley (1988) investigated the significance of eight variables on the persistence of African-American students who were enrolled in predominantly white institutions. The traditional variables of SAT scores and high school rank in addition to age and extracurricular activities were not significant factors of persistence. However, race, family status, sex, and academic major were factors that did have a significant affect on retention.

Anderson (1985) described a model in which a variety of forces pressure students at different levels. Titled Force Field Analysis, this theory states that, in addition to these forces on the individual, the demands of course requirements, professors' expectations and the resources and services vary from institution to institution. The dropout decision is a complex one, influenced by many factors. External influences may be positive, such as strong parental support and good teachers or of a negative nature, such as transportation problems or work requirements that conflict with their classes. The student is affected by internal forces that may be positive (strong career aspirations, self-confidence, and enjoyment of learning) or negative (value conflicts, self-doubt, or procrastination). The Anderson model shares the inclusion of work-related activities and external environmental factors with the models developed by Bean (1980) and Bean and Metzner (1987).

Catalano (1985) designed a similar model, with different forces exerting pressure on the student. Catalano entitled his model the Motivation-Retention Model and is composed of both positive and negative motivators that either attract the student toward or away from remaining in college.

Aitken (1982) designed and tested a four equation model of retention that included academic satisfaction, academic performance, living satisfaction, the level of involvement in extracurricular activities, and external factors. Data from a large four-year public university strongly supported the model and found a significant relationship with a majority of the variables.

Vorhees (1987) evaluated the validity of three models at the community college level. These studies tested the significance of a number of demographic variables on persistence. Gender, purpose for enrolling, and intent to return to school were found to have a direct effect on persistence; however, high school grades, the number of informal meetings with professors, and the number of hours studying did not have a direct effect. In another study done at a community college by Fralick (1993) found that students who had a definite goal or college major, worked full-time, were satisfied, and enjoyed superior high school grades were found to positively influence students' persistence. However, neither gender nor ethnicity appeared to have a direct affect on persistence.

Comparing Athletes With Nonathletes

How do athletes compare with nonathletes in the classroom? This question has been asked and answered by a number of studies for many years. Tuttle and Beebee (1941) compared the grade point averages of varsity letter winners with the male population enrolled in Liberal Arts and Commerce at the University of Iowa more than fifty years ago. Their research indicated that the letter winners averaged slightly lower than the nonathletes during a three year period. Their study also compared grade performance among several varsity teams. Baseball, football, and basketball players had the lowest grade point averages of all sports as well as the most concentrated schedules and number of intercollegiate competitions.

Comparisons of athletes and nonathletes were a popular area of research during the 1970's. Numerous studies were conducted that compared educational attainment, as measured by college grade point averages and graduation rates. Some researchers found that athletes performed better than nonathletes (Parsons, 1970; Snyder, 1979), while others found that nonathletes did better (Kiger & Lorentzen, 1988; Purdy, Hufnagel & Eitzen, 1981; Purdy et al., 1982; Spivey & Jones, 1975). Still other researchers found no significant difference between the two groups (Davis & Berger, 1973; Stuart, 1985). Several researchers included ethnicity in the conduct of their research. Spivey and Jones (1975) concluded that both white and African-American athletes did significantly worse than their nonathlete counterparts. Earl (1969) arrived at the same conclusions for whites, African-Americans, and Hispanics, but found no difference for American Indians.

Hanks and Ekland (1976) studied the affect of several independent variables on educational attainment. They determined that athletics did not significantly affect their grade point averages. Sack and Thiel (1979) compared academic attainment after completion of their bachelor's degree with the social and income mobility between football players and nonathletes at Notre Dame. Nonathletes were significantly better than football players only in the area of earning graduate or professional degrees. Both athletes and nonathletes experienced significant upward social mobility. The study also reported that first string players increased their income mobility to a greater extent than second and third string players.

Shapiro (1984) conducted a longitudinal study at Michigan State University, in which he compared graduation rates of athletes with nonathletes. In the 1950's MSU athletes graduated at a much higher rate than the nonathletes; in the early 1970's the two groups were about the same due to a considerable decline in graduation rates of athletes.

Several studies concluded that the lower college grades and graduation rates for athletes were due to less preparedness from high school. In a ten year study at Colorado State University, Purdy, Eitzen, and Hufnagel (1982) found that athletes had poorer high school grades, lower class rank, and lower SAT scores. Kiger and Lorentzen (1988) also reported that athletes at Utah State University arrived on campus with both lower high school grades and ACT scores.

Factors That Influence the Retention of Athletes

In earlier sections of this chapter, factors that influence the retention of the general student population also were discussed. This section will focus on factors that influence the retention of intercollegiate athletes.

Traditional Factors

Several traditional factors of persistence have been challenged in studies of athletic retention. In a four year study of freshman football players at a Division I university, Cook and Mottley (1984) concluded that high school GPA was not a significant predictor of college GPA. ACT scores for natural science, social science, and mathematics were found to be good predictors of college success. In contrast, Sedlacek and Adams-Gaston conducted a similar study of freshman athletes at the University of Maryland and reported that SAT's were a poor predictor of first year college grades.

In contrast, Purdy, Eitzen, and Hufnagel (1982) determined that SAT scores, high school GPA, and high school class rank were significant predictors of college graduation for athletes. Similarly, Brigham (1981) found a strong correlation between male athletes' ACT scores, high school GPA's, and high school ranks, and their respective college GPA's.

Another study (Ervin, Saunders, Gillis & Hogrebe, 1985) compared college athletes based on two SAT groups and two groups of high school GPA's. The SAT research divided the athletes into those who had scored below a cumulative score of

700 and those with a score of 700 or better. The high school GPA study looked at those athletes under 2.5 on a 4.0 scale with those who had a 2.5 or better. For both groups, the dependent variables were GPA for developmental studies courses in English, mathematics, and reading comprehension and the number of developmental courses that were required by athletes. The athletes with the higher SAT scores received significantly higher grades than those with SAT scores under 700 and the athletes with the higher high school GPA's did significantly better than those with GPA's under 2.5. SAT scores did significantly influence the number of developmental courses required, but high school GPA did not.

This cued the researchers to explore another factor: the number of high school academic courses taken. They found that the number of academic courses was significantly related to SAT scores but not to grades. Consequently, the greater the number of academic courses taken, the higher the SAT scores, and the fewer the number of developmental courses required.

Athletic Ability

A football player's ability to score touchdowns or block effectively has not been a part of any prediction equation for retention. A number of studies, however, indicate that there is a relationship between athletic ability and retention. In a study covering twenty-five years at Michigan State University (Shapiro, 1984), it was reported that letterwinners (81%) graduated at significantly higher rates than nonletterwinners (58%) in four major sports. In addition, those athletes who

participated in two or more sports (80%) graduated a greater percentage of the time than those who participated in just one sport. Using another method of measuring athletic ability, Cook and Mottley (1984), determined that the number of games played was a significantly predictor of college GPA. Earlier, a study at North Texas State University (Coakley, 1982) found that among eligible players, starting football players had higher grades than those who did not play on a regular basis.

Ryan (1990) reported mixed results concerning graduation. Although not a significant predictor, general athletic participation at all levels of competition (Division I, II, and III) had a positive correlation with graduating in four years. Competing on the Division I level also was positively correlated; but for men participating in football or basketball there was a negative correlation with completing the requirements for a bachelor's degree. In terms of college GPA, athletes on scholarship, football players, African-American athletes, and the combination of football and basketball players all had grades lower than the average for the general student population.

Purdy, Eitzen, and Hufnagel (1982) reviewed athletic ability through two different methods: (1) earning a varsity letter, and (2) the amount of athletic grant-in-aid. Although letterwinners had grades that were similar to nonletterwinners, they graduated (41%) at a much higher rate than the nonletterwinners. Surprisingly, those on full athletic scholarships not only had lower grades than those on partial or non-scholarship recipients, but significantly fewer of those on full scholarships graduated, 26% compared to 38%. Perhaps those who enrolled with full scholarships assumed

that their degree was guaranteed, while those who earned a letter, did so by working harder on the field and in the classroom. It is important to note that these comparisons were made without controlling for SES, race, and other background variables.

Reaching the high level of college athletics itself is a measure of athletic ability. Participation in intercollegiate athletics was determined to be a significant predictor for earning a degree, according to Ryan (1989). In an earlier study, Otto and Alwin (1977) arrived at similar conclusions by using years of college as the dependent variable.

Race

Race, another traditional predictor of academic success, has been investigated in research of intercollegiate athletics. Numerous studies have concluded that African-American athletes had lower college GPA's than their white counterparts (Cook & Mottley, 1984; Kiger & Lorentzen, 1988; Purdy et al., 1982; Ryan, 1990; Spivey & Jones, 1975). Kiger and Lorentzen (1988) also indicated that nonathletic minorities did as well academically as the nonathletic whites.

Colleges and universities have received criticism for placing a high priority on winning in revenue sports and placing very low priority on the academics of the athletes who win those games. Particular attention has been directed at the exploitation of African-American athletes, the researchers using graduation rates as evidence. In 1975, Spivey and Jones wrote an article titled Intercollegiate Athletic

Servitude: A Case Study of the Black Illini Student-Athletes, 1931-1967. The Spivey-Jones research was very controversial and addressed a heated issue of its day. In their study, only 35% of African-American scholarship athletes received their undergraduate degree, compared to 53% for white scholarship athletes. The researchers noted that the African-American athletes differed markedly from the white athletes in ACT scores and high school class rank. The African-Americans had significantly better class rank, yet scored much lower on the ACT's. With about half of the African-American athletes from the Chicago metropolitan area, the researchers hypothesized that part of the reason for the low graduation rate was due to the lower standard of education available at intercity high schools.

Underwood (1980) unveiled some shocking information to mainstream America in his Sports Illustrated article, "Student-Athletes". In addition to a variety of scandals, the writer described several cases of low retention rates for scholarship athletes. Underwood described a study of the graduation rates of African-American athletes in the University of California system during the years 1971 through 1978. Between 70 and 80% did not graduate. One unnamed institution reported that only 10 of 91 scholarship African-American athletes who attended between 1968 and 1979 received their degrees. Cramer (1986) discovered that of a group of 200 African-American athletes who attended the University of Georgia, only 15 had graduated. North Carolina State University's classes of 1976 through 1978 started with fifteen basketball players and eighty football players, the majority of whom were African-American. From this group, only two of the football players graduated; none

graduated from the basketball team. Weistart (1987) stated that only 4% of African-American basketball players graduated from the University of Georgia during a several year span. A review of the comparison studies may suggest that athletes, in general, graduate and receive grades comparable to other students. But the studies that divide these data by race all indicate that minority athletes do not persist in college at the level of whites. Underwood (1980) also found that minority athletes were more likely to be enrolled in courses that did not contribute toward the completion of a degree than white students.

Mature Career Attitude

Youngsters playing football in little league are told to work hard on the practice field so that one day they can play in the National Football League. Unfortunately, too many college players carry this dream to the detriment of their academics and do not prepare for realistic careers. Career maturity is not measured or considered in any of the prediction models reviewed. Yet, several studies support the idea that such a measure could be a valuable factor the prediction of retention among scholarship athletes.

Blann (1985) examined the maturity of two levels of athletes and nonathletes concerning their educational and career aspirations. The high-level athletes attended two Division I institutions where athletic scholarships were available. The low-level athletes competed for two Division III colleges where no athletic scholarships are awarded. The nonathletes also attended the same schools. Using the Student

Developmental Task Inventory (SDTI), Blann found significant differences between the two levels of athletes. The low-level athletes were more mature concerning their career plans than the high-level athletes. Twenty-eight percent of the high-level males planned to play professional sports; 10% of the low-level males had such high aspirations. Obviously, most of these athletes had unrealistic goals, since less than 2% of all college players make a career in professional football and basketball (Underwood, 1980). Comparing upperclass students (juniors and seniors) with underclassmen (freshmen and sophomores) indicated a significant increase in career maturity. Nonathletes were significantly more mature than the athletes as underclassmen. Career maturing must have occurred for the athletes after their second year, as their level of maturity was almost at the same level as the nonathletes as upperclassmen. One caveat of the last two conclusions is that those underclassmen with low maturity may have dropped out and consequently, did not participate in the study as upperclassmen.

Another study (Sowa & Gressard, 1983) used the SDTI to measure career maturity at a public Division I university. This study arrived at similar conclusions in the comparison of athletes and nonathletes. Nonathletes scored significantly higher in educational and career planning than the athletes.

Although not a formal part of Penn State University's admissions formula, having the proper attitude toward academics is one of the factors considered in the recruitment of scholarship football players (Pincus, 1991). "Choosing the right kids" is an important element of a successful athletic program, according to coach Joe

Paterno (p. 10), a coach with an extraordinary record of graduation rates of scholarship athletes who attended Penn State University.

Institutional Environment

Almost all the studies related to retention focus on characteristics of the student. Many of the models suggest that the institutional environment plays a role in the dropout decision. The affect of the environment plays a role in the models of Astin, Spady, and Tinto, as well as several others (Aitken, 1982; Anderson, 1985; Bean, 1980; Bean & Metzner, 1987; Catalano, 1985; Fralick, 1983). Sedlacek and Adams-Gaston (1989) determined that being involved in the community and having a strong support person were significant predictors of first semester grades.

Several writers have stated their opinions concerning the necessary ingredients of a successful retention program for the general student population. Tinto (1987) asserted that an institution's underlying philosophy toward retention is of critical importance. If the values of the faculty and staff place a high priority on commitment to students, the formal activities will reflect that concern. Specific strategies suggested are frequent and meaningful contact of professors and students, early assessment of educational deficiencies, career and academic counseling, and an effective orientation program. Creamer, Naff, and Akins (1982) also prescribed a well communicated philosophy of commitment to students, stating that the support of the institution's president and other administrative leaders is crucial in the successful implementation of a retention program.

Several practitioners have recommended the ingredients of a successful academic support program for athletes. Walter and Smith (1986) at the University of Michigan described a retention program that includes a summer orientation with reading and writing tests, assignment of at-risk students to the Skills Center, monitoring of academic progress, tutoring, and required study hall hours. Academics are strongly emphasized and academic rules are strictly enforced by the head coaches and their staffs. Retention of student-athletes has improved as a result of the program. Shiflett and Galante (1985) at the University of Florida designed a retention program based on information received from a survey completed by the members of the Southeastern Conference. In addition to academic advising and monitoring, tutoring, and required study hours, the researchers discovered a need for vocational guidance that served as a springboard for choosing an academic major and the need for workshops that focus on the preparation of athletes for a career other than football. Their study included a list of thirty-seven required seminars, each one consisting of approximately one hour in length.

At Wichita State University, athletes diagnosed as at-risk enroll in a summer course that focuses on communication skills (McFarland & Yeargan, 1981). Just before classes commence in the Fall, an orientation program includes short workshops on time management, study skills and note taking. Similar to the programs at Michigan and Florida, Wichita State offers tutoring, academic monitoring and advising by a professional counselor, and required participation in study hall. Although results were limited at the time of publication, McFarland and Yeargan

(1981) reported that only three of the twenty-four at-risk students were having academic difficulties. Malone and Malone (1988) endorsed the philosophy that student-athletes must come to the realization that they are students first and athletes second at John Jay College. This Division III school in New York provides services similar to those described above for their nonscholarship athletes.

Zingg (1982) also stated the philosophy of the institution toward the student-athlete. He indicated that first, the athlete must be recognized as a person, then as a member of the academic arena with a specific set of requirements and duties. Third, that student is an athlete. Counseling should be directed toward the understanding that a student's athletics does not lower his academic obligations. In addition to the strategies suggested above, Zingg (1983) recommended that an institutions' number of scholarship offerings be related to their graduation rate. With this idea, colleges would work extremely hard at improving the retention of athletes.

There are other researchers who suggest that academic responsibilities should be handled by academicians, not athletic administrators. Simon (1991) believed that faculty should tutor athletes in the same manner as other students. Academic counseling and course selection should also be removed from the athletic department. Underwood (1980) cited many incidents in which athletes received course credits for classes they never attended, or attended irregularly, and institutions where athletes were encouraged to remain eligible while making little or no progress toward graduation. Again, the suggestion is made that academic decisions concerning eligibility and progress toward a diploma should be removed from the athletic

department. Additionally, Underwood recommended that the number of scholarships should be dependent upon graduation rates and that athletic participation may be permitted only after academic progress has been demonstrated.

Despite the awareness of the affect of the college culture on the student, none of the findings reviewed for this study attempted to quantify the environment. Research has been directed toward finding areas of weakness on the part of the student, but rarely has focused on the negative influences created by the institution. In the classroom, on the practice field, and on the playing field, students are evaluated on a daily basis. Unfortunately, the institutions rarely reflect or evaluate their policies and procedures that affect the college athlete.

Colleges and universities cannot control every aspect of a student's life on campus. But, there are a number of student-campus interactions that do affect retention and can be evaluated. Several studies have analyzed the unique culture of intercollegiate athletics and the nonathletic programs that influence the players. Adler and Adler (1985) conducted a longitudinal study of the academic involvement of basketball players in a Division I setting. The players entered college with expectations of academic success followed by graduation. Because of time commitments to practice, travel, and other athletics related functions, the players had limited time to devote to studying. Assistant coaches administered many of the academic duties normally handled by students. These coaches declared majors for the athletes, signed them up for courses, and contacted professors to monitor academic progress. As a result, the athletes were not in contact with faculty or other members

of the academic staff. The players got the impression that the athletic department would see that their academic concerns would be taken care of and that preferential treatment would move them toward graduation.

Traditionally, student-athletes live in dormitories separate from the rest of the student body and have little opportunity to interact with nonathletes. Over time, this system has eliminated different academic interests of the individuals and molded a group that emphasized primarily the importance of staying eligible to play. The student-athletes have become detached from the academic system, and consequently, many do not graduate.

Many Division I institutions have established programs within the athletic department to provide advising, tutoring, and other services to meet the academic needs of the athletes. Sherman, Weber, and Tegano (1986) surveyed the athletic directors of Division I-A football programs to determine which factors of the support services were instrumental in improving graduation rates. They concluded that the following elements were essential for a successful academic support program: (1) adequate budgeting for a wide range of services with qualified professionals, (2) academically weak students must be identified early and assisted from the beginning, (3) the head coach must "emphasize the importance of academic achievement to all scholarship athletes" (p. 179), and (4) athletes should not be encouraged to take easy courses and/or curricula that lead nowhere.

Gurney, Robinson, and Fygetakis (1983) analyzed the quality of personnel and the different services offered at academic support programs in Division I athletic

departments. In 1982, only 30% of the responding institutions with at least one staff member had a professional counselor with experience, and 27% of the institutions employed coaches to counsel students. The typical services offered in order of frequency were academic monitoring, academic advising, tutoring, study tables, direct student-athlete scheduling, career counseling, personal counseling, remedial reading, and test assessments. All these services existed in over 40% of the institutions; no other services existed in more than 25% of the colleges. In addition, about two-thirds of the schools identified at-risk students. From this study, it appears that many athletic departments realized the necessity of these programs in 1982, but were unwilling or unable to hire qualified professionals.

CHAPTER THREE

METHODOLOGY

The purpose of Chapter Three is to formulate a framework for the identification of factors that influence retention and the collection of data on football players concerning these factors. This chapter also contains information about the population, the independent and dependent variables, the model, data collection procedures, instrumentation, and data analysis.

Population

Currently, there are nine members of the Atlantic Coast Conference (ACC), a group of Division I universities in states as far south as Florida and as far north as Maryland. These institutions are the following:

Florida State University; Tallahassee, Florida

Georgia Institute of Technology; Atlanta, Georgia

Clemson University; Clemson, South Carolina

Duke University; Durham, North Carolina

North Carolina State University; Raleigh, North Carolina

University of North Carolina; Chapel Hill, North Carolina

Wake Forest University; Winston-Salem, North Carolina

University of Virginia; Charlottesville, Virginia

University of Maryland, College Park, Maryland

The ACC has been in existence since 1953, and although the member schools have changed slightly, the membership has been stable relative to most other athletic conferences. In the last twenty years the only changes have been the additions of Georgia Tech and Florida State. Each institution fields a football team with a roster that varies from 85 to 100 players, the vast majority of whom are on scholarship. Therefore, the population of this study consists of the scholarship football players of the member institutions of the Atlantic Coast Conference.

The collection of data was directed toward those football players who entered initially as freshman during the 1986-87 school year and the institutional environment during those years. Institutions that are members of the National Collegiate Athletic Association (NCAA) are required to collect graduation data annually and these data were the most recent published information available. The NCAA has defined the calculation of graduation rates with the allowance of six years for the athletes to earn their degree. This information is sent to the NCAA and published annually.

Independent and Dependent Variables

Independent Variables

A preliminary review of the literature indicates that four traditional factors usually influence the retention of students. These variables are defined below:

1. High school rank is a scale variable that will be based on each football player's final high school class rank.

2. SAT, a scale variable, is each football player's score on the Scholastic Aptitude Test.

3. Race is a categorical variable with the following groups: American Indian, Asian/Pacific Islander, Black, Hispanic, White, and Other.

4. Socioeconomic status is a scale variable that is based on the annual family income of the player.

The first three factors listed often are used by college admissions officers to predict applicants' likelihood of successfully completing college. The fourth factor, socioeconomic status, has been found to have an affect on retention. Data for the four variables for every football player in the population were provided by the athletic departments of the member institutions. A fifth exogenous variable, athletic ability, is discussed and defined below.

The literature also provided a variety of nontraditional characteristics that may affect the retention of student-athletes. All but the first characteristic served as endogenous variables. The characteristics to be used in this study and their descriptions are listed below:

1. Athletic ability is a variable that was provided by the member institutions' sports information offices. The measure of an athlete's ability to participate and contribute on the college level was calculated by dividing the total minutes that an individual played by the number of seasons he participated. Each player was then placed on a scale ranging from one to six. Specialists, such as punters and kickers,

make this measure somewhat problematic. Further discussion of this issue is addressed in Chapter Five.

2. The athletes' use of academic support services is a variable that was provided by a staff member of the academic support services at each institution. A scale was devised that ranges from full use of the services at one end of the spectrum to no use at the other end. A staff member from the academic support services department who worked with this group of student-athletes was asked to rate each players' use of these services, based on the respective player's level of time and effort.

3. A mature career attitude is a variable that measures the extent to which each student-athlete chooses and prepares for a realistic career. A staff member from academic support services was asked to rate each players' mature career attitude. In order to insure reliability, detailed instructions were provided (See Exhibit E, Column #9).

4. The quality of academic support services is an environmental factor that affects the retention of football players. Data concerning such services were collected through the use of a questionnaire completed by the academic support services department at each institution. (See Exhibits A through E.) This variable was composed of the components described below:

a. The academic counselors that work regularly with the players is a component that measures the quality and number of the counselors at each institution. The answers to three questions were summated into a rating scale.

b. The quantity of support services is a point system based on the respondent's answers to whether or not the following services were provided:

(1) Academic Monitoring

(2) General Academic Advising

(3) Tutoring

(4) Study Hours

(5) Career Counseling

(6) Personal Counseling

(7) Test Assessment

c. Proactive measures/mandatory courses is a point system based on the respondent's answers to a series of questions that dealt with test assessment, early identification and placement of at-risk students into developmental courses, and required courses for football players.

5. The atmosphere toward academics is a variable that measures the attitude of the coaches toward academics and its importance in relation to football. Based on responses from the athletic support services department, the indicators of this variable compared football players' course load and rigor of courses to those of nonathletes. Other related issues, including the concern of the university and athletic administration about the academic success of football players, also were studied.

6. A review of the studies testing the Tinto model found evidence to support the use of college grade point average (college GPA) as an independent variable. Consequently, this variable served as the dependent variable in one version of the

model and as an independent variable, influencing graduation rates, in the second version.

Dependent Variables

There were two dependent variables, both of which were provided for each student-athlete by the athletic departments of the member institutions.

1. GRADUATION, defined as receipt of a bachelor's degree, is a dichotomous variable that allows each student-athlete six years to fulfill the requirements for graduation.

2. COLLEGE GPA is a variable that measures each student-athlete's final grade point average as of the last semester attended. All institutions in the ACC use a four point scale for grade point averages, with an "A" receiving a 4, a "B" receiving a 3, a "C" receiving a 2, and a "D" receiving a 1.

Development of the Model

The purpose of this study was to develop an Athletic-Retention Prediction Model. The initial model (Figure 3) was based on the theories of Astin, Spady, and Tinto's theories, the findings of other studies, and the thoughts of practitioners in the field. In general, the model was designed to determine the effects of the characteristics of scholarship football players and the institutional environment on the retention of the players. In terms of the individual players, the model examines the effect of their career attitude maturity, use of academic support services, and college

grade point average. In terms of the institutional environment, the model determines the effect of the quality of the academic support services and the atmosphere toward academics in the athletic department. The variables used in the model and the rationale for their inclusion are described in the paragraphs below.

Background Variables

Several pre-college attributes were used as control variables. In this study, high school rank, SAT, race, socioeconomic status (SES), and athletic ability were selected as the background variables. In the Spady model (Figure 1), ethnic background and SES are both part of the pre-college attributes. The Tinto model (Figure 2) and subsequent studies also included race, family background, academic ability and high school education as background variables. The comparison of retention of minority athletes with white athletes has also shown a significant difference. As mentioned in the above paragraph, the choices of background characteristics as independent variables for this study had to be narrowed due to data availability. In studies performed with athletes, Purdy, Eitzen, and Hufnagel (1982), Brigham (1981), and Ervin et al. (1985) supported the significance of the first four background variables. A review of those studies that compared athletic ability among teammates also supported the inclusion of athletic ability into the model. Those players with more ability both graduated at higher rates than those who did not (Purdy, Eitzen & Hufnagel, 1982; Shapiro, 1984) and received higher college grades (Coakley, 1982).

Mature Career Attitude

Having a mature career attitude is another variable that fits into the schematics of the models and is supported by several research studies. Astin noted that involvement may be measured at different quantitative and qualitative levels. The fourth postulate stated that learning is positively correlated with quantity and quality of the student's involvement. Determining each player's career maturity is one method of measuring the qualitative level of involvement. In the Spady (Figure 1) and Tinto (Figure 2) models, integration into the academic system is an important component. The student who has a high degree of career maturity is likely going to become a part of the academic community more so than the student with lower career maturity. After being in college for a period of time, subsequent personal goals concerning graduation affect on a student's retention, according to Tinto. This stage of the model also is represented by career maturity. Several studies found a difference between the career maturity of scholarship athletes and students without scholarships (Blann, 1985; Sowa & Gressard, 1983).

Use of Academic Support Services

The use of academic support services by the football players is a way of including the second part of Astin's first postulate into the model. The use of psychological energy directed toward academics can be measured through this scale variable. Integration into the academic system, components of the Spady and Tinto models, can also be measured with the use of academic support services.

College Grade Point Average

College GPA is a variable in the Spady model and one of several measures of Academic Integration in other studies. According to Spady, grade performance had a direct effect on the dropout decision and an indirect effect through social integration. In tests of the Tinto model, Academic Integration had a significant affect on persistence. In many of these studies (Munro, 1981; Pascarella, Smart & Ethington, 1986; Pascarella & Terenzini, 1977, 1983; Terenzini et al., 1985) college GPA was one of several indicators of Academic Integration.

Quality of Academic Support Services

Astin's fifth postulate stated that the success rate of any program at an institution is directly related to the institution's efforts to increase student involvement in that area. Thus, an institution's retention rate is related to the efforts to improve involvement in retention related activities. Measuring the quality of academic support services at each institution is a means of including this postulate into the model. Earlier research describes high quality academic support services at different institutions (McFarland & Yeargan, 1981; Shiflett & Galante, 1985; Walter & Smith, 1986). Although these reports are not based on experimental studies, they strongly endorsed the importance and positive value of the programs.

Atmosphere Toward Academics

The athletic department's atmosphere toward academics is another measure of an institution's practice to increase student involvement into academics, i.e. Astin's fifth postulate. Although this variable is not a distinct component of his model, Tinto (1987) expressed the opinion that the institution's philosophy toward retention had a strong affect on retention. This is supported by the work of Creamer, Naff, and Akins (1982), Malone and Malone (1988), Molnar (1993), Sherman, Weber, and Tegano (1986), and Zingg (1982).

Data Collection Procedure

The packet sent to the member institutions included three items: (1) an explanatory letter sent from Eugene Corrigan, Commissioner of the ACC, (2) the survey pamphlet, and (3) a self-addressed stamped envelope. The primary purposes of this packet were to determine which factors influence retention and to collect data on the football players and the environmental factors that affected their retention. The packets were mailed directly to the athletic directors of the member institutions.

The explanatory letter introduced the researcher and the basic tenets of the study to the athletic directors of the member institutions (Exhibit A). Atlantic Coast Conference stationery and the commissioner's signature gave the study considerable credibility. The letter from the Commissioner consisted of the following sections:

a. An explanation of the questionnaire and the data collection to follow.

b. A description of the individual(s) who will be best suited to answer the questionnaire and collect the required data.

c. An assurance that both individual and institutional confidentiality will be respected.

d. A statement concerning a follow-up phone call to explain and clarify any part of the study.

The main purpose of the follow-up phone call to each athletic director was to discuss who is best suited to answer the questionnaire and who was assigned to collect the data. The athletic director chose the individual that he believed was the person most knowledgeable about the academic progress of the football players. At many schools it was the director of the academic support services, a program established to assist athletes in their pursuit of degrees. This person also was responsible for arranging tutoring, monitoring grades, and insuring that athletes are taking classes that will fulfill their degree requirements. Once the determination was made, the athletic director forwarded the questionnaire to the appropriate employee(s).

The survey pamphlet consisted of two parts: (1) a memorandum to respondents of the survey, and (2) the actual survey. The memorandum described the study and sections of the survey in greater detail, and explained the potential benefits of the study to the institution (Exhibit B). This memorandum appeared on the inside cover of the pamphlet.

The rest of the pamphlet was the actual survey. The first part of the survey was designed to collect data on nontraditional factors of retention. The second part of

the survey asked questions about the academic support services available to the institution's student-athletes and the atmosphere toward academics. The third and final part of the survey sought data on each football player who enrolled in the Fall of 1986. These data included background information, such as their high school rank, ratings of athletic ability and use of support services, and whether or not they graduated.

In an effort to eliminate non-responses, the following strategies were used:

a. A follow-up letter was sent to the respondent one week after the initial phone conversation, in which the participants were thanked for their assistance and provided a phone number to call if there were any questions.

b. A self-addressed stamped envelope with the address of commissioner of the conference was used to raise the feeling of obligation to the ACC.

c. Follow-up phone calls were made to the respondents as needed to clarify questions and encourage the respondents to complete and return the survey.

Pilot Study

Before sending out the survey pamphlet to the ACC institutions, a draft was pilot-tested with the academic advisor of the athletic department at Virginia Tech. The intent of the pilot test was to clarify, modify, add, delete, or alter the questionnaire so that it would measure what it was supposed to measure. The respondent was able to provide advice and made suggestions that clarified several

sections and, in general, offered suggestions that resulted in substantial improvements to the instrument.

Instrumentation

Following the memorandum, the survey began on the second page of the pamphlet and was composed of three parts. Part I was used to determine which factors influence retention (Exhibit C). This part included three subparts. Subpart A asked the respondent to judge how important three nontraditional factors affected retention at his institution through the use of a rating scale that ranged from extremely influential (6) to no influence (1).

Subpart B sought other factors that the respondents had become aware of through interaction with the student-athletes. The respondents also were asked to indicate whether or not the institutions were currently monitoring these factors. Subpart C asked that all factors be prioritized, including those suggested by the respondents.

The next part of the survey sought information concerning the academic support services at each institution (Exhibit D). Part II consisted of four subparts. Subpart A was directed toward determining the quality and number of the counselors at each institution. The answers to three questions on the questionnaire were summated into a rating scale. The first question was used to determine the number of staff members who were assigned as counselors. The second and third questions were

designed to measure the educational and professional experience of those persons assigned as counselors.

Subpart B asked the respondents to indicate which services were offered at each institution. Several specific questions focused on the assessment of skills and how quickly their institution responded to the identification of students who were academically at-risk.

Subpart C sought to identify other programs and courses that were offered at each institution. The respondents were asked to review a list of possible courses and programs and indicate which were available. Additional space was provided for the respondents to describe other programs that may be unique to their institution.

Subpart D attempted to rate the atmosphere toward academics. The purpose of this section was to quantify their attitude of the athletic department toward academics. A number of statements were made comparing the course load and rigor of classes taken by student-athletes relative to those of nonathletes. Related issues also were addressed. The respondents were asked to give their opinions about Subpart D through the use of two Likert-type scales.

The third and final part of the survey requested data regarding the freshman football players who entered in September of 1986 (Exhibit E). A data sheet with rows and columns provided spaces for measures of athletic ability, high school performance, and other characteristics for each individual player. Respondents for Part III were staff persons in the academic support services departments who possessed indepth knowledge of the players.

Data Analysis

The first step of the analysis was the application of descriptive statistics. Frequencies, percentages, means, and standard deviations were calculated for the retention factors. Correlation coefficients were calculated and reviewed to find relationships between and among the independent and dependent variables.

The second step of the analysis employed multiple regression methods. Path analysis was used to test the proposed model and provided direct and indirect effects of a variable on another variable.

Path analysis included the following regressions:

1. Mature career attitude was regressed on high school rank, SAT, race, SES, and athletic ability.

2. The use of academic support services was regressed on high school rank, SAT, race, SES, athletic ability, and mature career maturity.

3. Quality of academic support services was regressed on mature career attitude, use of academic support services, and the five exogenous variables.

4. Atmosphere toward academics was regressed on mature career attitude, use of academic support services, and the five exogenous variables.

5. College GPA was regressed on the use of academic support services, the quality of the services, the atmosphere toward academics, mature career attitude, and the five exogenous variables.

6. Graduation was regressed on College GPA, the use of academic support services, the quality of the services, the atmosphere toward academics, mature career attitude, and the five exogenous variables.

CHAPTER FOUR

RESULTS

The purpose of the fourth chapter is to describe the results of the data analyses. The primary focus of these analyses was directed toward answering the research questions raised in Chapter One. The analyses is divided into the following sections:

1. A description of the population.
2. A description of the institutions' academic support services.
3. A description of estimates of significant effects on college grade point average and graduation rates.

Several of the variables were based on a group of responses from the survey. The explanation of how these composite variables were computed and the codings for all the variables are provided in Appendix A.

Description of the Population

A total of 216 football players entered the nine Atlantic Coast Conference institutions in the Fall of 1986. A profile of these players is shown in Table 1. Almost 54% of the football players were white and the remaining 46% were African-American. Measuring the players' athletic ability on a scale of one (lowest) to six (highest), two categories accounted for almost half (45.8%). About 24.5 percent of the players received a rating of "five", thereby showing a high level of athletic

ability. More than one-fifth (21.3%) of the players received a "one". This score is associated with players of relatively low athletic ability who may have never played for the institution. The mean score for athletic ability was 3.4.

The players' socioeconomic status was divided into six categories. Two categories accounted for almost one-half (45%) of all the players (Table 1). Category three, representing family income between $24,000 and $35,999 per year, accounted for 21.9 percent of the players and category four, $36,000 to $47,999, accounted for 23.1 percent. A mean of 3.36 represents an average income of $34,272 per year.

Football players graduated in a wide range in terms of high school rank. A twenty category ranking system was used with each category representing a 5% range in class rank. Almost one-half (45.9%) of the players graduated in the top 20% of their high school class. About 80% of the players graduated in the top half of their high school class. The mean class rank within the twenty categories was 6.274. This represents a class rank at the 28.9 percentile, meaning that the average player graduated in the top one-third of his high school graduating class.

SAT scores also covered a broad spectrum, from a combined low score of 480 to a high of 1290. The mean combined score was an 875. Fifty percent of the players fell within the range of 720 and 1010.

Football players received a mean score of 3.4 on a scale of one to six for their mature career attitude. The academic advisors at the member institutions placed one-half the players in the two extreme categories. Thirty percent received a rating a "one", the lowest rating, and 21% received a rating of "six". It is unfortunate that

almost one-third of the players were in the lowest category. This represents players who did nothing to prepare for a career other than football or those who unrealistically believed that they would make the professional ranks.

A mean score of 3.04 was calculated for the players' use of academic support services. The assignment of rankings was more evenly distributed for their use of services than for their career maturity. The lowest rating of "one" was again the category chosen most often. About 24% of the players were rated as not taking advantage of any of the services that were being offered. The other 5 categories were evenly represented, with category 3 having 12% of the players, category 4 with almost 18%, and category 6 with about 17%. A player rated as a 6 would have attended study hall regularly, had shown a keen interest in learning, and had participated in many optional workshops and seminars directed toward career preparation.

Almost two-thirds (65.4%) of the football players graduated from their respective institutions. The range of COLLEGE GPA was very wide, with a low of 0.6 to a high of 3.65. The mean college GPA was 2.2262.

Description of the Institutions' Services

The survey collected a wide range of information from the 9 member institutions concerning the academic support services offered. The following paragraphs discuss the responses to the survey in detail. Appendix B provides the raw data.

Factors that Affect Retention

One purpose of the study was to assess how important the literature-based factors were to student retention perceived by the academic advisors. Respondents were asked to rate 3 factors on a scale from "Extremely Important" (6) to "No Influence" (1). Having a mature career attitude was considered the most important factor, with an average score of 5.33. Only one respondent rated this factor lower than a "5" on the 6 point scale. Use of academic support services and athletic ability yielded exactly identical scores with an average of 4.67.

The respondents were asked to prioritize the same 3 factors, with a "1" representing the most important factor and a "2" representing the second most important factor. Again, having a mature career attitude received the highest rating. Four of the institutions ranked this factor as the most important, and 2 others ranked it second. Overall, the use of academic support services was prioritized second, with 2 institutions choosing this factor first and 4 institutions ranking it second. Athletic ability was ranked third by the respondents.

Additionally, another objective of the research was to identify other factors that may not have appeared in the literature (Research Question #2). Other factors that were suggested by the respondents were class attendance (listed by 2 respondents), institutional rules, curricula, social acceptance, personal issues, and personality.

Academic Support Services

The number of full-time academic counselors working with the football players ranged from 5 counselors at 2 institutions to 1 counselor at 1 institution. Seven of the schools (78%) had at least 3 full-time counselors and 4 of them (44%) had at least 4 counselors employed on a full-time basis. It is interesting to note that the institution with only 1 counselor had the highest graduation rate of 90%. The number of part-time counselors ranged from 4 counselors at 1 institution to 0 at 2 of the institutions. Five of the universities had 1 to 2 part-time counselors. Again, it was the institution with the highest graduation rate that had no part-time counselors.

In a study performed in 1982 (Gurney, Robinson & Fygetakis, 1983), 45% of all Division I schools who responded to the survey had no staff members assigned to academic support services. It is interesting to note that in 1986, 100% of the ACC institutions had personnel with advanced degrees working in this area.

The educational levels of the counselors also were examined. Every institution had at least 1 full-time counselor with a master's degree. Six of the institutions had at least 2 full-time counselors with a master's and 6 institutions had at least 1 member of the full-time staff with a doctorate. Reviewing the part-time staff, every counselor had at least a bachelor's degree and 4 of the institutions hired master's level part-time counselors. Again, these figures are an improvement compared to the Gurney, Robinson, and Fygetakis (1983) study in which less than 30% of the institutions surveyed had at least 1 staff member with a master's degree or a doctorate.

The list of support services was expansive. Every one of the institutions provided academic monitoring, academic advising, tutoring, and mandatory study hall. Personal counseling was offered at 8 of the institutions, career counseling was offered at 7, and test assessment was provided by 6 of the institutions. Of the 6 that provided test assessment, all 6 tested for learning disabilities, and 5 tested in the areas of math and reading skills. Four of the institutions tested writing skills and 3 tested study skills.

The survey requested information concerning the proactive measures that the institutions took to provide the at-risk players with services. Only 4 of the respondents tested the athletes at or before the beginning of the freshman year and only 4 institutions automatically placed the players into developmental courses. Five of the respondents reported that the developmental programs started in mid-August or early September and one started in late September.

The institutions were asked to indicate the courses and programs within the academic support services that were available for the players. Five of the respondents stated that their institutions offered at least 2 courses, but only 2 institutions required the players to take the courses. Several of the courses offered to student-athletes through the academic support services were in the areas of study, math, writing, and reading skills, resume writing, and drug awareness. In terms of non-credit programs, only 2 institutions offered programs of various lengths in several of the skill areas and just 1 of those required attendance.

In an effort to quantify the information, values were assigned to the various services. An explanation of the calculations for each institution's quality of academic support services is provided in Appendix A. The values for the 9 institutions ranged from a low of 18.18 and a high of 56 (Table 2). The mean score for the institutions was 40.47.

Atmosphere Toward Academics

The atmosphere toward academics was measured using a Likert-type scale, with response options ranging from 1 (negative atmosphere) to 4 (positive atmosphere). Appendix A provides an explanation of the calculations of each athletic department's attitude toward academics. The scores for the institutions ranged from a low of 2.77 to a high of 3.77, with a mean of 3.21 (Table 2).

Relationships Among the Variables

Correlations

The correlations among the variables are shown in Table 3. Many of the independent variables had moderate to high associations with GRADUATION, yet only 2, use of academic support services ($r = 0.6772$) and college GPA ($r = 0.6442$), were significant ($p < 0.05$). No other correlations were significant with GRADUATION. Three of the 11 independent variables were significantly associated with COLLEGE GPA as a dependent variable. Mature career attitude had the highest

correlation with COLLEGE GPA, (r = 0.7319), SAT scores was second (r = 0.5683), and atmosphere toward academics was third (r = 0.3728).

The quality of academic support services was significantly associated with 3 variables. It is interesting to note that the quality of the services is negatively correlated with SES (r = -0.522) and use of academic support services (r = -0.4656). The students from higher family incomes attended the institutions where fewer services were offered compared to those students from lower income families. Similarly, the players who used the services to a greater extent were more likely to attend the institutions that offered fewer services. The positive correlation with high school rank (r = 0.4855) indicates that the better the quality of the services, the lower the rank of the students. Conversely, the better students attended the institutions that offered fewer quality services.

Atmosphere toward academics was significantly associated with only 1 variable: race (r = -0.3593). The negative correlation indicates that the more positive the attitude toward academics at an institution, the greater the number of white athletes enrolled at that institution.

Mature career attitude was significantly associated with 4 variables. Not surprising was the relationship indicating that career maturity was positively associated with SAT scores (r = 0.4673) and SES (r = 0.4432). A negative correlation with high school rank (r = -0.4682) was also expected since a higher class rank score represents a lower rank in one's graduating class. One surprise was the

significant relationship between mature career attitude and athletic ability (r = 0.1822).

Use of academic support services was significantly associated with just one other variable. The correlation with mature career attitude was extremely high (r = 0.8584).

The relationship among the variables was examined for descriptive purposes and does not imply significant effect of one variable on another. These correlations indicated association, but do not indicate causation.

Model Estimation

In order to estimate the model, a series of regression equations were calculated using the computer program "Number Cruncher" (Hintze, 1982). Both of the dependent variables were regressed on all of the 9 independent variables in the model, illustrated in Figure 3. Each of the 4 endogenous variables were regressed on the 5 exogenous variables and any endogenous variables that preceded it. First, mature career attitude was regressed on the 5 exogenous variables, SES, race, SAT's, high school rank, and athletic ability. Second, use of academic support services was regressed on mature career attitude and the 5 exogenous variables. Third, atmosphere toward academics was regressed on mature career attitude, use of academic support services, and the 5 exogenous variables. Next, quality of academic support services was regressed on mature career attitude, use of academic support services, and the 5 exogenous variables. Then, the dependent variable COLLEGE GPA was regressed

on the 9 independent variables. Finally, GRADUATION, the second dependent variable, was regressed on the nine independent variables and college GPA.

The results of the calculations are presented in Figure 4 and Table 4. These path coefficients represent the standardized partial regression estimates in terms of standard deviations. When the independent variable increases by 1 standard deviation, the dependent variable is predicted to change by the amount of the standardized regression coefficient, holding all other independent variables constant. The coefficients in parentheses in Figure 4 represent those paths that are significant ($p < 0.05$).

Reviewing the nine lines directed toward COLLEGE GPA in Figure 4, 3 had significant direct effects. Mature career attitude, with a coefficient of 0.50, has the strongest effect on COLLEGE GPA. This indicates that if mature career attitude were to increase by 1 standard deviation, COLLEGE GPA is expected to increase by one-half a standard deviation. Only 1 exogenous variable, SAT's, has a significant direct effect on COLLEGE GPA (0.31). Atmosphere toward academics, an institutional characteristic, is the third strongest variable to have an impact (0.22). The 9 independent variables accounted for 67% of the total variance in COLLEGE GPA, listed in the R Square section of Table 4.

Quality of services was the next variable to be analyzed. Of the 7 independent variables regressed on quality, 3 were statistically significant. The 2 with the strongest effects, use of academic services (-0.35) and SES (-0.29) were negative. The third, high school rank (0.24), also leads to the same conclusion that the better

students (i.e., those with higher SAT's, lower H.S. Rank, and those who use the support services more) attend those institutions that have lower levels of academic services. This means that institutions with greater academic reputations admit students with better high school rank, and these are also generally students who come from families with higher incomes, representing a higher socioeconomic status.

The 7 independent variables account for 44% of the variance in quality of academic services. Only 1 variable, race (-0.38) had a statistically significant affect on atmosphere toward academics. This suggests that white athletes attended institutions with a more positive atmosphere toward academics. Combined, the 7 independent variables accounted for only 18% of the variance in this institutional characteristic.

Two variables had a significant direct effect on use of academic services. Not surprising was the large impact of mature career attitude (0.85). The only exogenous variable to have an effect on use of services was athletic ability (0.10). One explanation for this could be the better athletes were encouraged to use the services more than those who were playing infrequently. The antecedent variables accounted for 75% of the variance of use of services. When the 5 exogenous variables were regressed on mature career attitude, 4 were found to have a significant effect. The strongest influence was high school rank (-0.28). The lower, or better the rank, the higher the career maturity. The other important variables in descending order were SES (0.26), athletic ability (0.25), and SAT's (0.22). These results suggest that athletes with higher SES, better athletic ability, and with better performances in high

school rank and SAT were more likely to have a mature career attitude. Thirty-eight percent of the variance in mature career attitude is explained by the 5 exogenous variables.

The second dependent variable, GRADUATION, was regressed on all 9 independent variables stated above and college GPA (Figure 5). Use of academic services (0.46), was the strongest significant influence on whether or not an athlete graduated and college GPA also had a moderately strong impact (0.26). Combined, the 10 variables accounted for 53% of the variance in GRADUATION.

Model Revision

After reviewing the path coefficients, the independent variables without a significant influence on subsequent variables were eliminated from the regression equations. The purpose of the reduced models was to provide more parsimonious explanations by removing those variables that were not statistically significant. The reduced models are illustrated in Figures 6 and 7. This section of the chapter discusses the recalculated effects and compares the results with other research.

The reduced model for COLLEGE GPA (Figure 6) shows the 3 variables that had a significant direct effect. Note that the strongest influence, mature career attitude, increased to a standardized estimate of 0.62. SAT, the only exogenous variable, had a moderate influence (0.25) and atmosphere (0.12) had a small influence.

Reviewing the other retention studies done with college athletes, none of the research was directed toward measuring similar endogenous variables. Several did investigate similar exogenous variables. Cook and Mottley (1984) found that achievement tests could predict college grades with college football players. Using ACT scores, their research indicated that the Mathematics (0.30), Natural Science (-0.29), and Social Science (0.08) tests were significant predictors. The strongest predictor was Race (-0.31). Another exogenous variable, athletic ability (0.13) had a small influence.

In another study using college athletes, Ryan (1990) determined that high school grades was the strongest predictor of college grades. Munro (1981) came to the same conclusion with a general student population and Astin (1982) found similar results with minorities. Pascarella, Smart, and Ethington (1986) reported that high school academic achievement, composed of high school grades and class rank, was the strongest influence on college grades in a general student population.

Comparing the amount of variance in COLLEGE GPA explained by the models (R Squared), there was a reduction from 67% for the original model to 61% for the reduced model.

The next variable examined in the reduced model was quality of services, one of the endogenous variables. When the nonsignificant variables were eliminated, 3 independent variables significantly affected quality of services. SES had a large affect (-0.35), and H.S. Rank (0.27) and use of academic services (-0.22) had moderate influences. This suggests that athletes from higher income levels and those who

graduated at the top of their high school classes attended institutions with fewer quality services. More reputable institutions with more rigorous admissions standards did not provide as many specialized services for athletes. In addition, those students who used more services attended those institutions that offered fewer quality services. It is interesting to note that the influence of use of services lowered dramatically from the full model, from -0.35 to -0.29. The effect of SES increased from -0.29 to -0.35. These 3 variables accounted for 42% of the variance in quality of services.

Atmosphere toward academics, the second institutional variable, had just 1 variable, race, that had a significant affect (-0.15) in the reduced model. This means that white athletes attended institutions with a more positive attitude toward academics than African-American students. Conversely, the institutions attended by the majority of black athletes seem to have lower attitudes toward academics.

Mature career attitude and athletic ability had significant direct effects on use of academic services in the reduced model. Mature career attitude's influence on use of services was the strongest impact in the entire model at 0.85. This indicates that those players who were considered mature toward career preparation were the same players using the services. Athletic ability continued to have a small influence at 0.08. This suggests that, to a small degree, the better athletes took greater advantage of the services than those players with less athletic ability. In agreement with the adage "Everyone loves a winner", the players who are receiving the accolades for their athletic accomplishments are being encouraged to use the services more due to

their popularity. Career maturity and athletic ability accounted for 75% of the variance in use of services.

Similar to this study's use of academic services, Ryan (1990) asked students, one-half athletes and one-half nonathletes, whether they received career counseling. Good predictors of this variable were high school grades and "students who were highly satisfied with their professorial interactions" (p. 85). Unfortunately, athletic participation was not included in this study.

All four background variables were significant influences on mature career attitude in the reduced model. High school rank again had the strongest impact (-0.29), meaning that high school rank was the best predictor of mature career attitude. The lower, or better, the student-athlete's rank in school, the more mature he was toward preparing for a career. Athletic ability (0.25), SES (0.25), and SAT's (0.20) all continued to have moderate effects on mature career attitude. These 4 variables accounted for 38% of the variance of career attitude, the same level as the full model.

The reduced model for GRADUATION (Figure 7) had 2 significant independent variables. Use of academic support services had a stronger effect in the reduced model with a standard coefficient of 0.51, one of the strongest effects in the entire model. College GPA (0.29), the second significant variable, also had a significant and moderately strong effect on GRADUATION. Spady (1970) concluded that college grades were the strongest predictor of graduation. Several studies that tested the Tinto model (1975) concluded with similar results. In research done by Munro (1981), Pascarella, Smart, and Ethington (1986), Pascarella and Terenzini

(1977, 1983), Academic Integration, measured with the use of college grades, had a significant influence on graduation. These studies were done with random samples drawn from general college populations.

No exogenous variables representing background characteristics affected GRADUATION. This was consistent with the findings of Lyons (1991), Munro (1981), and Terenzini et al. (1985). Pascarella, Smart, and Ethington (1986) found 1 exogenous variable, high school grades, that was a significant predictor for male college students.

The amount of variance explained by the independent variables in the final model was 0.54. This explains a much greater percentage than studies done with general student populations by Pascarella & Terenzini (1983) 23%, Pascarella, Smart, and Ethington (1986) 20%, and Munro (1981) 15%. Cook and Mottley's study with college football players calculated an R Squared of 24% and Sedlacek and Adams-Gaston's variables in a study with revenue and nonrevenue athletes explained 20%.

Total Effects

Analyses of the data up to this point has taken into consideration only the direct effects of the independent variables on GRADUATION and COLLEGE GPA. The purpose of this section of the chapter is to explain and identify the total effects of the endogenous variables.

The direct effects of the independent variables were previously calculated through multiple regression. The indirect effect of an independent variable is that

part which is transmitted through other variables. The sum of the direct and indirect effects equals the total effect. Table 5 lists the 3 effects of the different variables on Graduation, College GPA, Use of Academic Support Services, and Mature Career Attitude.

The most important variable in explaining GRADUATION was mature career attitude, with a total effect of 0.613. Note that this calculation is the result of indirect effects through use of academic support services and College GPA. The second leading variable was use of academic support services (0.51) and the third was College GPA (0.29). With no intervening variables between GRADUATION and these 2, their effects were only direct in nature. High school rank, with indirect effects, had the fourth largest total effect, and SAT, with similar indirect paths, had the fifth largest impact. Five of the 7 variables that had an effect on Graduation were due to indirect effects. Three of those with indirect effects were exogenous variables: high school rank, SAT, and athletic ability.

The most important variable in explaining College GPA was also mature career attitude, with a direct effect of 0.62. SAT had the second strongest total effect (0.374), a combination of direct and indirect effects. The indirect effect was transmitted through mature career attitude. The third most important variable was high school rank (-.180), with indirect effects also mediated through mature career attitude. Athletic ability, the fourth largest effect, also had indirect effects mediated through mature career attitude. Atmosphere toward academics was the fifth most

important, based on its direct effect, and race was the sixth, with its indirect effect through atmosphere.

Mature career attitude had an extremely strong impact on use of academic support services (0.85). A direct effect, this was the strongest influence in the model. High school rank (-0.247) and SES (0.213) both had moderate indirect effects through mature career attitude.

CHAPTER FIVE

SUMMARY, RESEARCH DISCUSSION, AND RECOMMENDATIONS

The purpose of the fifth chapter is to explain briefly what the study was designed to accomplish, what the research found, and what direction future action and research should take. The first section of the chapter summarizes the purpose and the methodology of the study. This is followed by a discussion of the research findings. The third section of the chapter presents implications for institutions of higher education, and the final section makes suggestions for future research.

Summary

The primary purpose of the study was to estimate a retention model that predicted graduation and college grade point averages for scholarship football players. The work of 3 educational researchers served as anchors for the study. In Astin's Student Involvement Theory (1984), the level of involvement in academic pursuits determined the level of development and achievement. Spady (1971) designed a dropout prediction model that included extracurricular activities and faculty contacts as influencing factors. In Tinto's Integration Theory (1975), student retention was greatly influenced by the degree of integration into the social and academic community.

The athletic departments of the 9 institutions of the ACC provided data for the study. A wealth of information concerning the football players who matriculated in

the Fall of 1986 and the academic support services provided for the athletes was collected with the use of an extensive survey. This survey was sent from the Office of the Commissioner of the ACC directly to the athletic directors of each institution.

The information provided by the institutions was used to quantify 10 independent variables that were hypothesized to influence retention. Eight of these variables pertained to characteristics of the individual football players; the other 2 variables were specific to the institutions. Retention was examined with the use of the following 2 dependent variables: (1) whether or not the student-athlete graduated with a bachelor's degree, and (2) the college grade point average of each student-athlete.

Research Findings

A total of 216 freshman football players enrolled in the 9 member institutions in September, 1986. The mean SAT score was 875 and the high school class rank was at the 28.9 percentile. Fifty-four percent were white and 46% were black. The players were ranked on a scale of 1 (lowest) to 6 (highest) in several categories. The mean score for athletic ability was 3.370, the mean score for mature career attitude was 3.359, and the mean score for the use of academic support services was 3.036. The mean annual family income for the athletes was $34,272. Almost two-thirds (65.4%) of the football players graduated in 6 years and their mean college grade point average was 2.23.

A wide range of information was collected from the member institutions about the academic support services for athletes. Having a mature career attitude was rated

as the most important factor for student retention, according to the respondents. The average number of full-time counselors working at the institutions was 3.33, and every institution had at least 1 counselor with at least a master's degree. Every institution provided academic monitoring, academic advising, tutoring, and mandatory study hall.

Each institution responded to a series of statements related to the atmosphere toward academics. The 14 Likert-style statements were ranked on a scale of 1 (negative atmosphere) to 4 (positive). The mean institutional score was 3.21, with a range of 2.77 to 3.77.

Path analysis was used to estimate the Athletic Retention Model. College grade point average was regressed on all 9 independent variables and each independent variable was regressed on any other independent variable that preceded it. Graduation was regressed on College GPA in addition to the 9 other independent variables. The models were reestimated by eliminating the nonsignificant paths and total effects were calculated by summing the direct and indirect effects. The findings as they relate to the research questions are described below.

The Influence of Mature Career Attitude on Retention

The first research question determined if there were significant differences in retention due to career maturity. Mature career attitude had the strongest impact on COLLEGE GRADE POINT AVERAGE (Figure 6) and the largest total effect (Table 4). In terms of GRADUATION, mature career attitude had the largest total effect,

due to its indirect effects. Football players with high career maturity were more likely to earn higher grades in college and to graduate than those with low career maturity.

The Influence of Use of Academic Support Services on Retention

The second research question determined if there were significant differences in retention due to the use of academic support services. Through the final path analysis model it was determined that the use of academic support services had the second largest impact on GRADUATION (0.51). Only one variable, mature career attitude, had a stronger impact. Thus, use of academic support services did make a significant difference.

The Influence of Quality of Academic Support Services on Retention

The third research question determined if there were significant differences in retention due to the quality of academic support services. In the reduced models, quality of services did not have an affect on either GRADUATION or COLLEGE GPA. The institutions that offered more services attracted more players who had not done well academically and those from lower income levels. Unfortunately, these players did not use the services sufficiently to offset their academic limitations. Consequently, retention rates were lower at the institutions that offered the most services. Therefore, there was no evidence that quality of academic support services significantly affected either GRADUATION or COLLEGE GPA.

The Influence of Atmosphere Toward Academics on Retention

The fourth research question determined if there were significant differences in retention due to the attitude of coaches toward academics. In terms of COLLEGE GPA, atmosphere toward academics had a small significant direct effect in the model (0.12) which means that controlling for students' background characteristics and effort, the institutional atmosphere toward academics indeed does affect grades. In addition, atmosphere had a small indirect affect on GRADUATION (0.035). The institutions which had a more positive attitude toward academics affected the graduation rates among athletes positively. More athletes graduated where institutions emphasized learning.

Implications

A major benefit of retention studies is the opportunity to provide information that can assist institutions of higher learning in their efforts to raise graduation rates. The directors of athletics have an incentive to find methods or ideas that encourage student-athletes to remain in college and complete their degrees. Older players provide experience and leadership on the playing field and former players with degrees can serve as role models for current and future players.

Having a mature career attitude was the strongest predictor of college grade point average and graduation which, in turn, is a function of students' socioeconomic status, high school performance, and athletic ability. It is suggested that athletic departments develop or identify an assessment test that measures career maturity.

This test should be administered to football players before they begin their first semester of classes. Too often limited scholarships are offered to athletes who neither prosper on the playing field, nor take advantage of educational opportunities. If a career maturity assessment test is used for every football recruit and a counseling program based on the results is established, an institution's football team graduation rate may rise. Consequently, more older, experienced players will remain on the team. This counseling program, focused on those players who scored poorly on the career maturity instrument, would start when the players first arrive on campus.

It is also suggested that the ACC prepare a videofilm that would address the career maturity issue. Shown to every freshman football player, this video should include information concerning the percentage of college players who make a professional football team and the percentage of those players who play for the National Football League (NFL) for 4 years, the minimum number of years of participation required to earn a pension. It is also suggested that the video include interviews with outstanding college stars who did not make the professional ranks. Several of these interviews should be with players who graduated and developed successful careers outside of athletics, and several should be with players who did not graduate and were unable to secure meaningful employment.

The video should include former players with name recognition. The message needs to be very clear that the vast majority of players do not earn a living in professional football, and that career preparation through academic pursuits is the best alternative. Endorsement by the athletic directors would be necessary for the video to

be required among all ACC members. Taking such proactive measures would maintain the ACC's reputation as a leader in educational integrity.

The strongest direct predictor of graduation was the use of academic support services. It is recommended that athletic departments follow a 3 step process to ensure that student-athletes use the services. First, the athletic department should communicate the benefits of these services in the first week that athletes are on campus and frequently reiterate the benefits thereafter. The players must realize that the path to financial independence is more likely through education than through professional athletics. This message must be communicated persuasively and often. Coaches, in their role as recruiters, have encouraged the dreams of professional football careers for so many players. With the realization that the prospect of becoming a professional football player has been used as a recruiting and motivating tool, the education message will be a challenging one. There needs to be a stronger emphasis on education once the recruits become student-athletes.

Second, the athletic department should require athletes to actively participate in all services. Attendance at study hall is not enough; participation means active involvement. Third, progress of each athlete should be monitored closely. Similar to most people, players do not do what you expect, they do what you require and monitor.

Another significant predictor of college grades and graduation was atmosphere toward academics. The attitude of the athletic administration and the football staff toward academics is unquestionably a critical factor for the football player. These

young adults are looking for guidance in their attempt to balance their efforts on the playing field and in the classroom. The message sent from the significant adults whom they respect and view in an authoritarian role carries a great deal of weight in their individual decisions. It is of utmost importance that the entire athletic department send a clear message that the main function of the university is for every student to work toward a degree. This can be done through several practices. First, if at-risk students are admitted into the institution, assessment tests should be administered before they enroll in their first class. Academic advisors should be aware of weaknesses in the areas of mathematics, reading, writing, and study skills. Any learning disabilities should also be identified. Second, in the selection and hiring of athletic coaches, each candidate's philosophy toward academics and their ability to communicate the importance of academics should be considered. Third, academic advisors should build rapport with football coaches so that players will recognize that athletics and academics are both important. In urgent academic situations, football coaches should assist academic advisors to motivate athletes academically. Fourth, players should be required to complete homework assignments on trips to away games.

Suggestions for Future Research

After engaging in the data collection process, several limitations of the study were identified. It is suggested that future research take these shortcomings into consideration when planning other related studies. First, the number of minutes

played by each football player was assumed to be a good measure of athletic ability. This may be accurate for almost every position except for the punter, kicker, and other specialty positions. The starting punter's minutes played are inversely proportional to the quality of his team's offensive unit; the better the team, the less time he is on the field. In addition, even a punter or place kicker on a terrible team will only see a few minutes of playing time per game. Perhaps a better measure of athletic ability is to rate the players on a scale from one (low) to six (high). Another option is to eliminate the specialists from the study.

Second, the answers received concerning atmosphere toward academics did not have much variability. It is possible that the respondents chose the expected answer or they were unwilling to select the answer that represented their true feelings. It is strongly recommended that future research investigate the influence of atmosphere toward academics, but with a different and more elaborate instruments.

Further research concerning the factors that influence retention of college athletes is definitely warranted. A large amount of literature has reported the factors relating to the retention of the general student population, but very little research has been devoted to the student-athlete.

This study considered the effect of institutional characteristics on the individual players. Other research has stated the importance of the institutions' programs on retention, yet few have attempted to measure the value of those programs. None of the studies measured the quality of academic support services designed for college athletes. In this study there was no evidence that the quality of academic support

services significantly influenced retention. This is a disturbing finding. Thus, it is strongly suggested that future research study the influence of academic support services on retention and if similar results are found, determine why they are not making a difference.

This study used cross-sectional data. Conclusions were drawn based on information about the freshman class of September, 1986. A longitudinal study is recommended that highlights the changes from the beginning years of academic support services to their current status. With data collected from a number of consecutive years, research may be able to determine the effectiveness of the support programs as they affect graduation rates.

One area that certainly has an affect on retention is the coursework taken by the players. Many questions need further examination such as, are certain majors more conducive to graduation than others? How rigorous are the courses taken by athletes? Is there a significant difference in retention due to level of rigor of the coursework?

This study investigated the retention of scholarship football players. Although large in number, football players represent only a portion of intercollegiate athletes. There may be significant differences between the retention of football players and the retention of other sports. It is evident that future research has many questions to answer in the realm of college athletics.

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APPENDIX A

DATA PREPARATION

The surveys were returned from the member institutions of the Atlantic Coast Conference via the Commissioner's office between mid-September and late October, 1994. The data entered on the surveys were used to represent the dependent and independent variables. Part III of the survey, titled Data Sheet, provides information on individual players that is used to explain the first 9 variables listed below:

1. ATHLETIC ABILITY: Member institutions were asked to list the minutes played and number of seasons played for each football player who enrolled as a freshman in the Fall of 1986. The number of minutes played was divided by the number of seasons to calculate an average number of minutes played per season. In order to set up a scale from one (1) to six (6), the researcher located the player with the highest number of minutes played per season and divided this amount by 6. For example, if the largest number of minutes played per season was 480, then each number on the scale was represented by 80 minutes. So, the players with the least amount of athletic ability, a "1", would be those players who played between 0 and 80 minutes. A "2" would be athletes who played between 81 and 160 minutes. A "6" would be those who played between 401 and 480 minutes.

In 2 cases, the institution took a shortcut rather than locate the number of minutes played. The researcher found it necessary to adapt this information to a scale

from 1 to 6. For example, 1 institution listed the number of letters earned and the number of years that a player was a starter.

2. HIGH SCHOOL RANK: The member institutions supplied high school rank most often as a fraction, such as 198/371. In some cases, the institution wrote the rank in a percentage. The researcher first calculated the percentage of the athlete's rank, including one decimal place (13.6%, for example). Then each player was assigned to a scale from one (1) to twenty (20). So, a player in the top 1% to 5% of his class would be a "1". A player between 6% and 10% would be a "2" and a player at 53.4% would be an "11".

3. SAT/ACT: With very few exceptions, the players' scores were listed as SAT's. In those cases where ACT scores were listed, the researcher substituted the appropriate SAT score based on the SAT/ACT Conversion Chart of American College Testing.

4. RACE: Respondents used the following codes to indicate race: American Indian (AI), Asian/Pacific Islander (AP), Black (B), Hispanic (H), White (W), and Other (O). The institutions reported players from only 2 categories, White and Black.

5. SES: The member institutions were asked to write the income levels of the players' families based on a scale from one to six. A "1" represented the lowest income level, 0 to $11,999 and a "6" represented the highest, $60,000 and up.

6. USE OF ACADEMIC SUPPORT SERVICES: Respondents were asked to rate each player on a scale of 1 to 6, based on their use of the support services. A "1" represented a player who did not meet the minimum requirements of study hall.

A "6" was assigned to the player who did the required activities and took an active role in all the services provided.

7. MATURE CAREER ATTITUDE: The member institutions were asked to rate each player on their attitude toward a realistic career on a scale of 1 to 6. If a player without the athletic ability to make the professional ranks did nothing to prepare for life after graduation, he received a "1". If the player studied hard, attended career workshops and visited the career planning office, he received a "6".

8. GRADUATION: The respondents wrote a "Y" for yes, and an "N" for no to the question, "Did the player graduate with a bachelor's degree?". The researcher entered the data as a "1" for those who had graduated, and a "0" for those who did not.

9. COLLEGE GPA: The member institutions were asked to list each players' last reported cumulative grade point average. The researcher recorded this data to the second decimal point (example: 2.05).

Part II of the survey, titled Academic Support Services, provided information that is used to quantify 2 more variables that are specific to the institutions.

10. QUALITY OF ACADEMIC SUPPORT SERVICES: The respondents are asked to provide information concerning the number of academic counselors and their backgrounds in Subpart A, the services provided in Subpart B, and the programs and courses offered in Subpart C.

To determine the quality of the support services, 4 different areas were considered. The first 2, quantity and quality of counselors, constitute the personnel

side of the calculation. The third area is the number of support services offered. The fourth is a combination of the responsiveness to the needs of at-risk students and the mandatory courses. Thus, the last 2 represent the services offered. Each of these areas is described in further detail below:

a. Quantity of counselors: Question 1a. in Subpart A asks for the number of full time academic counselors. To provide a ratio, the number of counselors is divided by the number of players listed in Part III of the survey.

b. Quality of counselors: This value was calculated by multiplying the number of counselors by a factor that represented each level of education, found in question 3a. of Subpart A. The factor for a counselor with some college/no degree was a "1". The factor for a bachelor's degree a "2", a master's degree a "3", and a doctoral degree a "4". So, if an institution had 3 full time counselors, 2 with a master's and 1 with a doctorate, the total score for the institution would be calculated as follows:

$$(2 \text{ X } 3) + (1 \text{ X } 4) = 10.$$

c. The number of support services: This value is simply the number of services that an institution marked as offering in Subpart B, items 1 through 7.

d. Responsiveness to the needs of at-risk students and mandatory programs and courses: This value is calculated by a point system based on responses to 2 questions in Subpart B and the number of mandatory courses listed in Subpart C. Question 8 asks if Test Assessment occurred at the beginning of the freshman year and Question 10 asks the starting time for the developmental programs and courses.

To determine the weight of the 4 areas, the literature was reviewed for direction. Both Shiflett and Galante (1985) and McFarland and Yeargan (1981) discuss the necessity of sufficient qualified personnel and the services offered. Neither states that 1 area is more important than the other. In another study (Sherman, Weber & Tegano, 1986) athletic directors were surveyed to determine which elements they think are essential for a successful academic support services program. The most important ingredient was listed as sufficient budgeting for a wide range of services with qualified professionals. From these articles, the researcher concludes that sufficient qualified professionals and the services offered are of equal importance. This belief is reflected in the weighting of the 4 areas that constitute the variable, Quality of academic support services. The maximum value of areas a. (Quantity of counselors) and b. (Quality of counselors) is equal to the sum of c. (Number of support services) and d. (Responsiveness/Mandatory courses). Further details for the calculation of scores are provided in the next section, titled DATA CODING INFORMATION.

11. ATMOSPHERE TOWARD ACADEMICS: The institutions are asked to specify their perceptions toward 14 statements in Subpart D of Part II. The first 7 statements requested a response of either "Always", "Usually", "Sometimes", or "Never" and the second 7 statements requested a response on the continuum between "Strongly Disagree" and "Strongly Agree".

Responses to the statements having a very positive nature toward academics received a "4". Responses that illustrated a negative atmosphere toward academics or

placed a stronger emphasis on athletics rather than academics received a "1". Care was taken to write the statements in a positive and negative format and this was taken into consideration when calculating the scores.

The scores for each statement are summated. This figure is divided by the number of statements that were responded to. For example, if the numerical sum of all the responses totalled 25, the institution's Atmosphere value would be 25 divided by the number of statements responded to (14), which is 1.79.

APPENDIX B

INSTITUTIONAL FACTORS

I. FACTORS THAT IMPACT RETENTION

Factor Importance

	Institutions*								
	1	2	3	4	5	6	7	8	9
Athletic Ability	5	6	5	4	6	5	1	4	6
Mature Career Attitude	6	5	6	6	5	6	5	6	3
Use of Academic Support Services	4	5	4	4	5	6	5	5	4

	Mean	Standard Deviation
Athletic Ability	4.67	1.5811
Mature Career Attitude	5.33	1.0000
Use of Academic S. S.	4.67	0.7071

Prioritizing the Factors

	Institutions								
	1	2	3	4	5	6	7	8	9
Athletic Ability	2	1	2	3	1	4	5	3	1
Mature Career Attitude	1	4	1	1	2	3	2	1	3
Use of Academic S. S.	1	2	3	2	3	1	3	2	2

	Mean	Standard Deviation
Athletic Ability	2.44	1.4240
Mature Career Attitude	2.00	1.1180
Use of Academic S. S.	2.11	0.7817

* Institutions are numbered in the order in which they were received.

II. ACADEMIC SUPPORT SERVICES

Number of Counselors

	Institutions								
	1	2	3	4	5	6	7	8	9
Full-Time	4	5	5	1	2	3	3	3	4
Part-Time	1	4	2	0	2	3	2	1	0
Graduation Rate (%)	67	43	36	90	68	83	63	68	63

	Mean	Standard Deviation
Full-Time Counselors	3.33	1.3229
Part-Time Counselors	1.67	1.3229

Number of Institutions

Full-Time			Part-Time		
Number of Institutions	Number of Counselors	Percent	Number of Institutions	Number of Counselors	Percent
2	5	22%	1	4	11%
2	4	22	1	3	11
3	3	33	3	2	33
1	2	11	2	1	22
1	1	11	2	0	22

Educational Levels

Full-Time Counselors	1	2	3	4	5	6	7	8	9
Bachelor's		2	3				1		
Master's	3	2	2		2	2	2	2	3
Doctorate	1	1		1		1		1	1

Part-Time Counselors	1	2	3	4	5	6	7	8	9
Bachelor's	1	1	2				1	1	
Master's		3			2	3	1		

Types of Services

	Number	%	Institutions 1	2	3	4	5	6	7	8	9
Academic Monitoring	9	100%	X	X	X	X	X	X	X	X	X
Academic Advising	9	100	X	X	X	X	X	X	X	X	X
Tutoring	9	100	X	X	X	X	X	X	X	X	X
Mandatory Study Hours	9	100	X	X	X	X	X	X	X	X	X
Career Counseling	7	77.8		X	X	X	X	X	X		X
Personal Counseling	8	88.9		X	X	X	X	X	X	X	X
Test Assessment	6	66.7	X	X	X			X	X		X
Learning Disabilities	6	66.7	X	X	X			X	X		X
Study Skills	4	44.4	X		X			X	X		
Career Counseling	5	55.5		X	X			X	X		X
Math Skills	5	55.5		X	X			X	X		X
Reading Skills	5	55.5		X	X			X	X		X
Writing Skills	4	44.4		X	X			X	X		
Personality	2	22.2							X		X

Proactive Measures

	Number	%	Institutions 1	2	3	4	5	6	7	8	9
Test Assessment at or before freshman year?	4	44.4%		Y				Y	Y		Y
Automatic placement into developmental courses?	4	44.4	Y	Y	Y						Y
When did the development courses begin?			1	2	3	4	5	6	7	8	9
Mid-August	2	22.2	Y	Y							
Early September	3	33.3			Y		Y		Y		
Late September	1	11.1									Y
Late 1st Semester											
2nd Semester											

EXHIBIT A

August 22, 1994

Dear (Name of Athletic Director):

I am writing to seek your assistance in a retention study being conducted by Finn Pincus, a doctoral student at Virginia Tech. He is attempting to determine which factors are most responsible for causing scholarship football players to drop out of college.

I have known Finn for many years. During my tenure as athletic director at Virginia, he was one of the top performers on the Cross Country and Track teams and the recipient of the Scholar-Athlete Award in 1977. He has a sincere interest in college sports and is currently coaching at Roanoke College while working on his dissertation.

His study requires the completion of a survey by several members of your staff. The first two sections of the survey should be filled out by the person you feel is most knowledgeable about dropouts, possibly your director of academic support services. This person should have a great deal of experience working with student-athletes in the academic arena on a regular basis.

The third section of the survey requests information involving statistics on the football players from the freshman class of 1986-87. Most of the information can be provided by the same individual described above; the last part is probably on file in the office of sports information.

The survey pamphlet is included in this packet along with a return envelope. Please forward the survey to the academic support services person and ask them to coordinate the collection of data as soon as possible.

In the next several days, Finn will be calling you to answer any questions that you may have and to discuss the study in depth with you and the respondent you choose. I want to assure you that it will be held in the strictest of confidence. It is the statistics that he is interested in; the names of the players are not needed.

Thank you for your assistance in this matter.

Sincerely,

Eugene Corrigan
Commissioner

EXHIBIT B

DEAR ACADEMIC SUPPORT ADMINISTRATOR:

First, I would like to thank you for participating in this dissertation study. I realize that this time of year is the preparation time for the upcoming football season and the start of a new school year and your time is valuable.

Second, I want to briefly explain the underlying hypothesis of my study. As you are aware, admissions offices across the country decide who gets into school and who does not, based on traditional factors such as SAT scores, high school grades, and class rank. These factors are used to predict how well a student will do in school. It is my belief that, for football players competing in Division I, there are other factors of importance that influence their success or failure.

There are three sections to the survey. The first two sections seek information concerning factors of retention in general and the academic support services offered at your institution. The third section requests data on freshman who first enrolled in September of 1986. You will be able to provide some of the answers to this section; other parts will be on file in the sports information office. Since the NCAA required that much of this information be compiled for their Graduation-Rates Report, it should be accessible. There is no need to copy the data onto the survey; simply photocopying the information will suffice.

Third, I want to point out that your institution can benefit by this study in two ways. If the collection of data goes as planned, I hope to construct a predictive model that includes nontraditional factors. This model can help your admissions office in the selection of student-athletes. It may also specifically help you identify methods that could improve the retention of the student-athletes currently enrolled.

I will call you in the next several days to answer any questions that you may have. Again, thank you for your cooperation.

Sincerely,

Finn D. Pincus

EXHIBIT C

I. FACTORS THAT IMPACT THE RETENTION OF SCHOLARSHIP FOOTBALL PLAYERS

A. FACTOR IMPORTANCE

Please indicate how important each of the following factors is in a scholarship football player's decision to remain in school or drop out by placing an "X" in the appropriate position. Your answer should reflect all players in general, not any one individual. Definitions of the factors are listed below.

1. Athletic Ability-the ability level of the student-athlete to participate and contribute on the college level.

2. Having a mature career attitude-the extent to which the student-athlete chooses and prepares himself for a REALISTIC career. The football player with a mature attitude has a good fit between his athletic aspirations and his athletic ability.

3. Using academic support services-the time and effort that the student-athlete puts into using the support services provided by the institution.

FACTORS THAT IMPACT ATHLETES' RETENTION	EXTREMELY INFLUENTIAL 6	5	4	3	NO INFLUENCE 2	1
1. Athletic Ability	___	___	___	___	___	___
2. Having a mature career attitude	___	___	___	___	___	___
3. Using academic support services	___	___	___	___	___	___

B. OTHER FACTORS

Are there some other factors which have not been included? Please list these on the following lines, and indicate whether or not the institution is currently monitoring each factor by circling either "Y" for yes or "N" for no. Feel free to use the space at the bottom of the page if an explanation is necessary.

OTHER FACTORS	CURRENTLY MONITORED?
_____	Y N
_____	Y N
_____	Y N
_____	Y N

C. PRIORITIZING

Please prioritize the factors in terms of importance, including the ones you added in Part B. Write a "1" beside the factor that you believe is the most important, a "2" beside the second most important factor, and so on.

Athletic Ability _____

Having a mature career attitude _____

Using academic support services _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

EXHIBIT D

II. ACADEMIC SUPPORT SERVICES

I AM INTERESTED IN THE SERVICES OFFERED DURING THE TIME PERIOD BETWEEN THE BEGINNING OF THE FALL SEMESTER OF 1986 AND THE ENDING OF THE SPRING SEMESTER OF 1992.

A. ACADEMIC COUNSELORS

1.a. How many full time athletic academic counselors (FTE's) were employed by the institution? _____

1.b. How many part time counselors? _____

2.a. How many of the full time academic counselors were:
Professionals _____
Graduate students _____
Coaches _____
Other _____

2.b. How many of the part time academic counselors were:
Professionals _____
Graduate students _____
Coaches _____
Other _____

3.a. How many of the full time academic counselors had:
Some college but no degree _____
Bachelor's degree _____
Master's degree _____
Doctorate _____
Post doctorate _____

3.b. How many of the part time academic counselors had:
Some college but no degree _____
Bachelor's degree _____
Master's degree _____
Doctorate _____
Post Doctorate _____

B. SUPPORT SERVICES

Please indicate which services the institution offered by placing an "X" beside the services listed below. If one of the services began in the middle of that time period, please write the year and approximate month of its start.

1. Academic Monitoring _____
2. General Academic Advising _____
3. Tutoring _____

4. Study Hours _____ Mandatory? (Y or N) _____
If mandatory, could good students place out? (Y or N) _____

5. Career Counseling _____
6. Personal Counseling _____

7. Test Assessment _____ If yes, please specify:
Career Counseling _____ Learning Disabilities _____
Math _____ Personality _____
Reading _____ Study Skills _____
Writing _____ Other _____ (Explain) _____

_____

8. Did Testing occur at or before the beginning of the freshman year? (Y or N) _____

9. Were at-risk students automatically placed into developmental programs/courses? (Y or N) _____

10. When did these programs/courses start for the athlete? Circle the appropriate answer:
Mid-August; early Sept.; late Sept.;
late in the 1st semester; early 2nd semester;
when the athlete started having academic problems.

11. Were players who were academically weak encouraged to attend preparatory school (off campus) prior to enrollment? (Y or N) _____

12. Were players who were academically weak encouraged to take remedial, non-credit courses? (Y or N) _____

C. OTHER PROGRAMS/COURSES

Please indicate other courses or programs that the institution offered to student-athletes. Again, if one of the services began in the middle of that time period, write the year and approximate month of its start. In the chart below, write the number of credit hours beside those courses which are offered. If the topic is offered in a program, write the length in number of hours. If the course or program is mandatory, write an "X" in the appropriate column. A course is a class that meets on a regular basis and earns credit hours. A program is a non-credit activity such as a seminar or workshop.

	COURSE CREDITS	MANDATORY	PROGRAM HOURS	MANDATORY
1. Study skills				
2. Reading skills				
3. Resume writing				
4. Interviewing				
5. Drug Awareness				
6. Writing skills				
7. Math skills				
8. Other (specify)				
_____				
_____				

D. ACADEMIC COURSEWORK

1. What are your perceptions about the following statements in reference to the time period between the Fall of 1986 and the spring of 1992?

Please circle the appropriate number, using this code:

1=Always; 2=Usually; 3=Occasionally; 4=Never

a.	Football players took a lighter course load during the season.	1	2	3	4
b.	Players majored in programs of study that were just as difficult as those chosen by nonathletes.	1	2	3	4
c.	Coaches emphasized the importance of academic success.	1	2	3	4
d.	Players enrolled in classes to maintain eligibility.	1	2	3	4
e.	Football players were students first, athletes second.	1	2	3	4
f.	The university administrations was concerned about the academic success of football players.	1	2	3	4
g.	The graduation rate of football players was not a priority to the athletic administration.	1	2	3	4

2. Please circle the appropriate responses:

SD=Strongly Disagree; D=Disagree; A=Agree; SA=Strongly Agree

a.	There was no difference in rigor between courses taken by football players and those taken by nonathletes.	SD	D	A	SA
b.	There was no difference in the number of credit hours taken between football players and nonathletes.	SD	D	A	SA

c.	Football players enrolled in courses that kept them eligible.	SD	D	A	SA
d.	Football players enrolled in courses that moved them toward graduation.	SD	D	A	SA
e.	Coaches were openly realistic about the necessity of preparing for a nonathletic career for most football players.	SD	D	A	SA
f.	It was extremely important to alumni to have a winning season.	SD	D	A	SA
g.	Coaches encouraged all football players to consider a professional career in the NFL or CFL.	SD	D	A	SA

EXHIBIT E

III. INSTRUCTIONS
DATA SHEET

This set of instructions will assist you in the completion of the attached Data Sheet. The purpose is to collect data on scholarship football players who first enrolled in the institution in the Fall of 1986. A "walk-on" who enrolled that semester for the first time and later received a scholarship should also be included. The results of the study will focus on all football players in the Atlantic Coast Conference; neither team nor individuals will be identified. All information will be held in the strictest of confidence.

Several staff members may assist in the collection of your data. If so, photocopies of the blank sheet can be made, or photocopies of the information from institution records is suitable.

COLUMN #1: Football player number. As you can see, there is a column with the numbers 1 through 30 on the far left side of the sheet. Each number represents one player. There is a space provided beside the number that you may use to identify each individual when you are collecting the data. You may write their initials or name to help you during the data collection, but please erase the names before returning the sheet.

COLUMN #2: Minutes played. Calculate the total minutes played for each individual during the regular seasons. For each season, round to the closest 10 minutes. Then, add the totals for all the seasons.
Example: Actual minutes were 88, 126, 203, and 265 for the four regular seasons.
Add 90 + 130 + 200 + 270 = 910

COLUMN #3: Seasons played. Write the total number of seasons played. This should include all seasons that the athlete was eligible and on the roster, even if they were on the sidelines. This should not include a redshirt year.

COLUMN #4: H.S. Rank. Write the athlete's high school class rank. Your information may be provided in a number of ways. Please indicate which method is used.
Example:If he was 15th out of 32, write 15/32. If the information is by percentage, write 33%. If it is by decile, write 7th.

COLUMN #5: SAT/ACT. Write the total score for the SAT's or ACT's, whichever the athlete took.

COLUMN #6: Race. Write the race of the athlete, using the following code: American Indian-> AI, Asian/Pacific Islander-> AP, Black-> B, Hispanic-> H, White-> W, Other-> O.

COLUMN #7: SES. Write the socioeconomic status of the family based on the following income code: $0-11,999-> 1, $12,000-23,999-> 2, $24,000-35,999-> 3, $36,000-47,999-> 4, $48,000-59,999-> 5, $60,000+ -> 6.

COLUMN #8: Use of acad. support services. Rate each player on their use of academic support services on a scale of 6 (high) to 1(low). If the athlete did not even do the minimum requirements of attendance at study hall, rate him a 1. If he just met the minimum requirements, rate him a 2. In making this rating ask yourself the following questions:

1. Did the individual take a proactive role in using the services?
2. Was he interested in learning?
3. Did he show an interest in preparing for life after college?
4. Did he attend the optional workshops, programs, or seminars?
5. How well did you know him?

COLUMN #9: Mature career attitude. Rate each player on their choice and preparation for a REALISTIC career on a scale of 6 (high) to 1 (low). If the player did nothing to prepare because he believed he would make the pros and in reality, did not have the athletic skills, rate him a 1. If the player worked hard academically, attended career workshops, and visited the career planning office, rate him a 6.

COLUMN #10: Graduate? Did the player graduate with a bachelor's degree? If yes, write "Y", if no, write "N".

COLUMN #11: College GPA. Write the player's last reported grade point average.

TABLE 1

PROFILE OF THE POPULATION

CHARACTERISTIC		COUNT	PERCENT
RACE			
White		116	53.7
African-American		100	46.3
ATHLETIC ABILITY			
One		46	21.3
Two		33	15.3
Three		32	14.8
Four		29	13.4
Five		53	24.5
Six		23	10.6
Mean	3.3657		
Standard Deviation	1.7201		
SOCIOECONOMIC STATUS			
One	($0 - $11,999)	26	16.3
Two	($12,000 - $23,999)	26	16.3
Three	($24,000 - $35,999)	35	21.9
Four	($36,000 - $47,999)	37	23.1
Five	($48,000 - $59,999)	10	6.3
Six	($60,000 +)	26	16.3
Mean	3.3563 ($34,272)		
Standard Deviation	1.6266		

CHARACTERISTIC		COUNT	PERCENT
HIGH SCHOOL RANK			
One	(Top 5%)	18	12.3
Two	(5.01% - 10%)	19	13.0
Three	(10.01% - 15%)	15	10.3
Four	(15.01% - 20%)	15	10.3
Five	(20.01% - 25%)	9	6.2
Six	(25.01% - 30%)	9	6.2
Seven	(30.01% - 35%)	12	8.2
Eight	(35.01% - 40%)	2	1.4
Nine	(40.01% - 45%)	8	5.5
Ten	(45.01% - 50%)	9	6.2
Eleven	(50.01% - 55%)	11	7.5
Twelve	(55.01% - 60%)	4	2.7
Thirteen	(60.01% - 65%)	2	1.4
Fourteen	(65.01% - 70%)	4	2.7
Fifteen	(70.01% - 75%)	3	2.1
Sixteen	(75.01% - 80%)	4	2.7
Seventeen	(80.01% - 85%)	2	1.4
Eighteen	(85.01% - 90%)	-	-
Nineteen	(90.01% - 95%)	-	-
Twenty	(95.01% - 100%)	-	-

Mean 6.2740 (28.9%)
Standard Deviation 4.4264

CHARACTERISTIC		COUNT	PERCENT
SAT			
480 - 520		2	0.9
530 - 560		2	0.9
570 - 610		4	1.9
620 - 650		6	2.8
660 - 700		27	12.8
710 - 740		20	9.5
750 - 790		18	8.5
800 - 830		19	9.0
840 - 880		19	9.0
890 - 920		12	5.7
930 - 970		16	7.6
980 - 1010		18	8.5
1020 - 1060		15	7.1
1070 - 1100		7	3.3
1110 - 1150		9	4.3
1160 - 1190		8	3.8
1200 - 1240		6	2.8
1250 - 1290		3	1.4
Mean	875		
Standard Deviation	175.4484		
MATURE CAREER ATTITUDE			
One		49	29.3
Two		14	8.4
Three		19	11.4
Four		28	16.8
Five		21	12.6
Six		35	21.0
Mean	3.3593		
Standard Deviation	1.9395		

CHARACTERISTIC		COUNT	PERCENT
USE OF ACADEMIC SUPPORT SERVICES			
One		40	23.8
Two		28	16.7
Three		20	11.9
Four		30	17.9
Five		21	12.5
Six		29	17.3
Mean	3.3036		
Standard Deviation	1.8107		

DEPENDENT VARIABLES

CHARACTERISTIC		COUNT	PERCENT
GRADUATION			
Yes		140	65.4
No		74	34.6
Mean	.6542		
Standard Deviation	.4767		
COLLEGE GPA			
0.60 - 0.930		2	0.9
0.939 - 1.27		5	2.3
1.277 - 1.61		14	6.6
1.620 - 1.95		32	15.0
1.960 - 2.12		35	16.4
2.130 - 2.29		46	21.6
2.294 - 2.46		18	8.5
2.463 - 2.63		19	8.9
2.633 - 2.80		13	6.1
2.802 - 2.97		9	4.2
2.972 - 3.14		8	3.8
3.141 - 3.31		7	3.3
3.311 - 3.48		-	-
3.481 - 3.65		5	2.3
Mean	2.2262		
Standard Deviation	0.5241		

TABLE 2

QUALITY OF ACADEMIC SUPPORT SERVICES

INSTITUTION	COUNSELORS QUANTITY	COUNSELORS QUALITY	SERVICES NUMBER	SERVICES RESPONSE/COURSES	TOTAL
One	14.67	13	10	10	47.67
Two	11.77	14	14	15	54.77
Three	15	12	14	15	56
Four	2.18	4	12	-	18.18
Five	6.02	6	12	2.5	26.52
Six	8.59	10	14	5	37.59
Seven	8.26	8	14	7.5	37.76
Eight	8.99	10	10	5	33.99
Nine	9.78	13	14	15	51.78
Mean	40.47				
Standard Deviation	13.1077				

ATMOSPHERE TOWARD ACADEMICS

INSTITUTION	SCORE
One	3.21
Two	3.77
Three	3.14
Four	3.69
Five	2.93
Six	2.77
Seven	2.93
Eight	3.29
Nine	3.18
Mean	3.21
Standard Deviation	0.3366

DESCRIPTIVE STATISTICS

VARIABLE	MEAN	STANDARD DEVIATION
Race	1.4629	.4998
Athletic Ability	3.3657	1.7201
SES	3.3563	1.6266
High School Rank	6.2740	4.4264
SAT	874.6445	175.4484
Mature Career Att.	3.3593	1.9395
Use of Services	3.3036	1.8107
Quality of Services	40.4733	13.1077
Atmosphere	3.2122	.3366
Graduation	.6542	.4767
College GPA	2.2262	.5241

TABLE 3

CORRELATIONS

	Athletic Ability	H.S. Rank	SAT	Race	SES	Use of Services	Mature Career Attitude	Atmosphere	Quality/ Services	College GPA	Graduation
Athletic Ability	1	0.0503	-0.0813	0.1352	-0.09	0.2625	0.1822	-0.0203	0.0908	0.1684	0.1779
H.S. Rank	0.0503	1	-0.4777	0.1727	-0.3347	-0.4084	-0.4682	-0.207	0.4855	-0.3598	-0.2854
SAT	-0.0813	-0.4777	1	-0.5347	0.5284	0.3391	0.4673	0.2618	-0.4552	0.5683	0.4206
Race	0.1352	0.1727	-0.5347	1	-0.5024	-0.1731	-0.2427	-0.3593	0.3153	-0.3774	-0.3216
SES	-0.09	-0.3347	0.5284	-0.5024	1	0.348	0.4432	0.12	-0.522	0.3406	0.3665
Use of Services	0.2625	-0.4084	0.3391	-0.1731	0.348	1	0.8584	0.1776	-0.4656	0.6465	0.6772
Mature Career Attitude	0.1822	-0.4682	0.4673	-0.2427	0.4432	0.8584	1	0.2022	-0.4672	0.7319	0.6619
Atmosphere	-0.0203	-0.207	0.2618	-0.3593	0.12	0.1776	0.2022	1	-0.505	0.3728	0.2167
Quality/Services	0.0908	0.4855	-0.4552	0.3153	-0.522	-0.4656	-0.4672	-0.505	1	-0.3825	-0.3697
College GPA	0.1684	-0.3598	0.5683	-0.3774	0.3406	0.6465	0.7319	0.3728	-0.3825	1	0.6442
Graduation	0.1779	0.2854	0.4206	-0.3216	0.3665	0.6772	0.6619	0.2167	-0.3697	0.6442	1

TABLE 4

PATH COEFFICIENTS FOR THE RETENTION MODEL

INDEPENDENT VARIABLE	COLL.GPA	GRAD	DEPENDENT VARIABLES QUALITY	ATMOS	USE.ACAD	MAT.C.A.
QUAL.A.S.S.	.1314	.0303				
ATMOSPHERE	.2224*	.0461				
USE.ACAD.	.1515	.4571*	-.3471*	.0515		
MAT.C.A.	.5010*	.1983	.1015	.0660	.8496*	
SES	-.0730	.0283	-.2942*	-.1865	-.0016	.2637
RACE	-.0781	-.1190	.0261	-.3806*	-.0173*	.0351
SAT	.3117*	.1396	-.0923	.0466	-.0831	.2159
H.S.RANK	.0540	.0834	.2385*	-.1294	-.0532	-.2866
ATH.ABIL	.0565	.0458	.1139	-.0009	.1058*	.2506
R SQUARED	.6691	.5314	.4441	.1759	.7530	.3845

* $P < .05$

TABLE 5

DIRECT, INDIRECT, AND TOTAL EFFECTS

	Effects on Graduation		
Variables	Direct	Indirect	Total
Mature Career Attitude	-	.614	.614
Use of Academic Support Services	.51	-	.510
College GPA	.29	-	.290
High School Rank	-	-.178	-.178
SAT	-	.073	.073
Athletic Ability	-	.041	.041
Atmosphere	-	.035	.035

	Effects on College GPA		
Variables	Direct	Indirect	Total
Mature Career Attitude	.62	-	.620
SAT	.25	.124	.374
High School Rank	-	-.180	-.180
Athletic Ability	-	.155	.155
Atmosphere	.12	-	.120
Race	-	-.017	-.017

Effects on Use of Academic Support Services

Variables	Direct	Indirect	Total
Mature Career Attitude	.85	-	.850
High School Rank	-	-.247	-.247
SES	-	.213	.213
SAT	-	.170	.170
Athletic Ability	.08	-	.080

Effects on Mature Career Attitude

Variables	Direct	Indirect	Total
High School Rank	-.29	-	-.290
SES	.25	-	.250
SAT	.20	-	.200

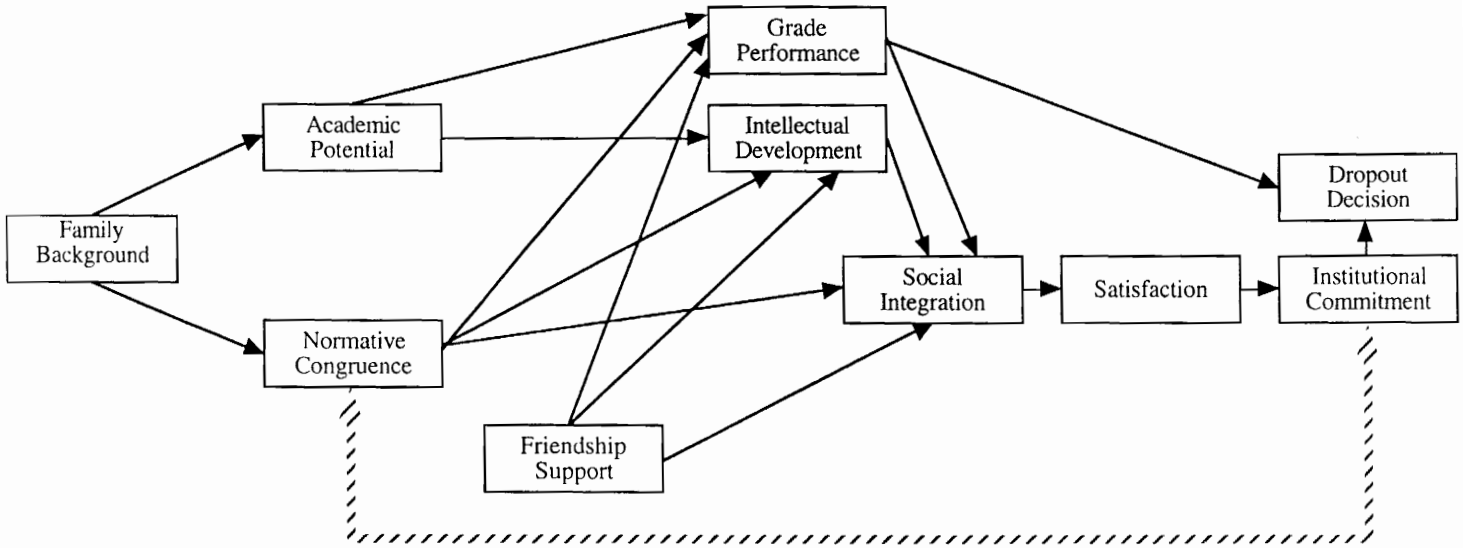

Figure 1
Spady's Model of the Undergraduate Dropout Process

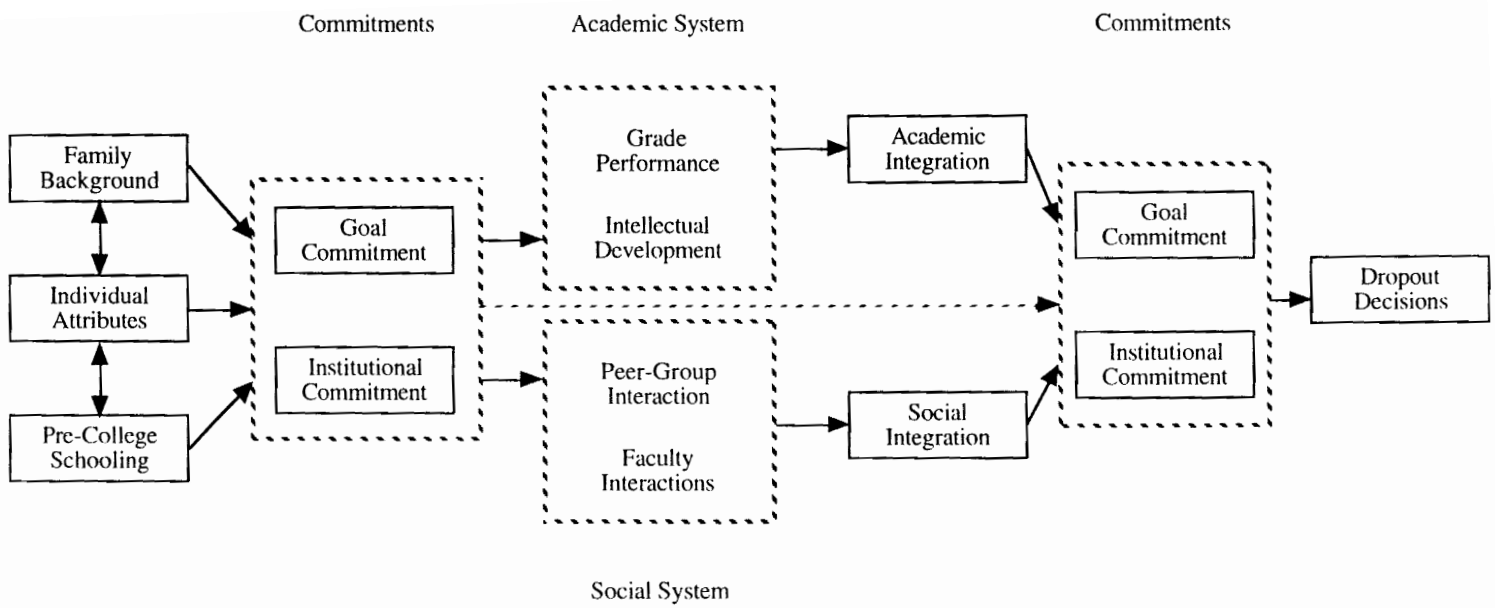

Figure 2
Tinto's Integration Model for the Dropout Decision

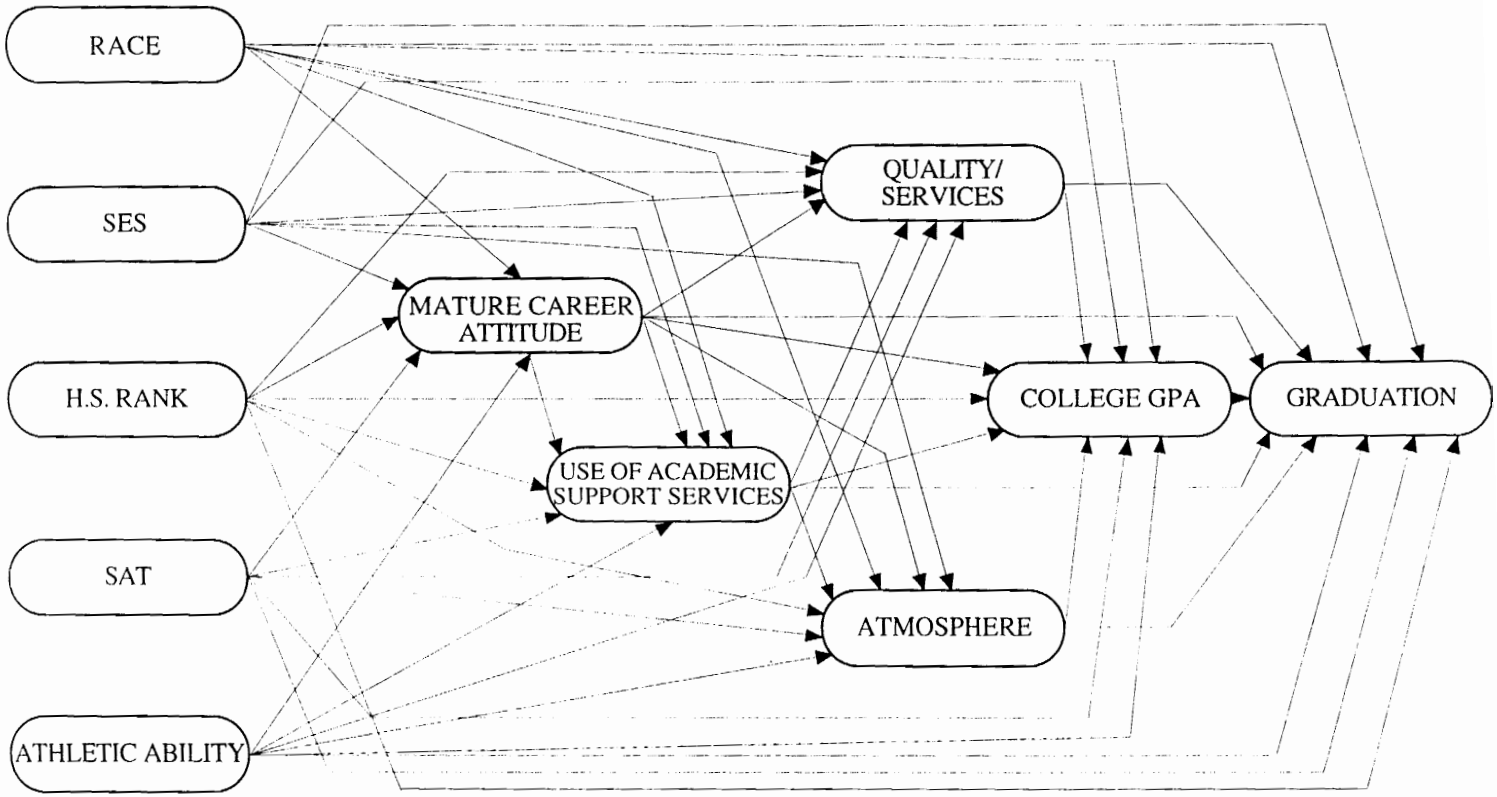

Figure 3
Path Diagram for the Conceptual Retention Model

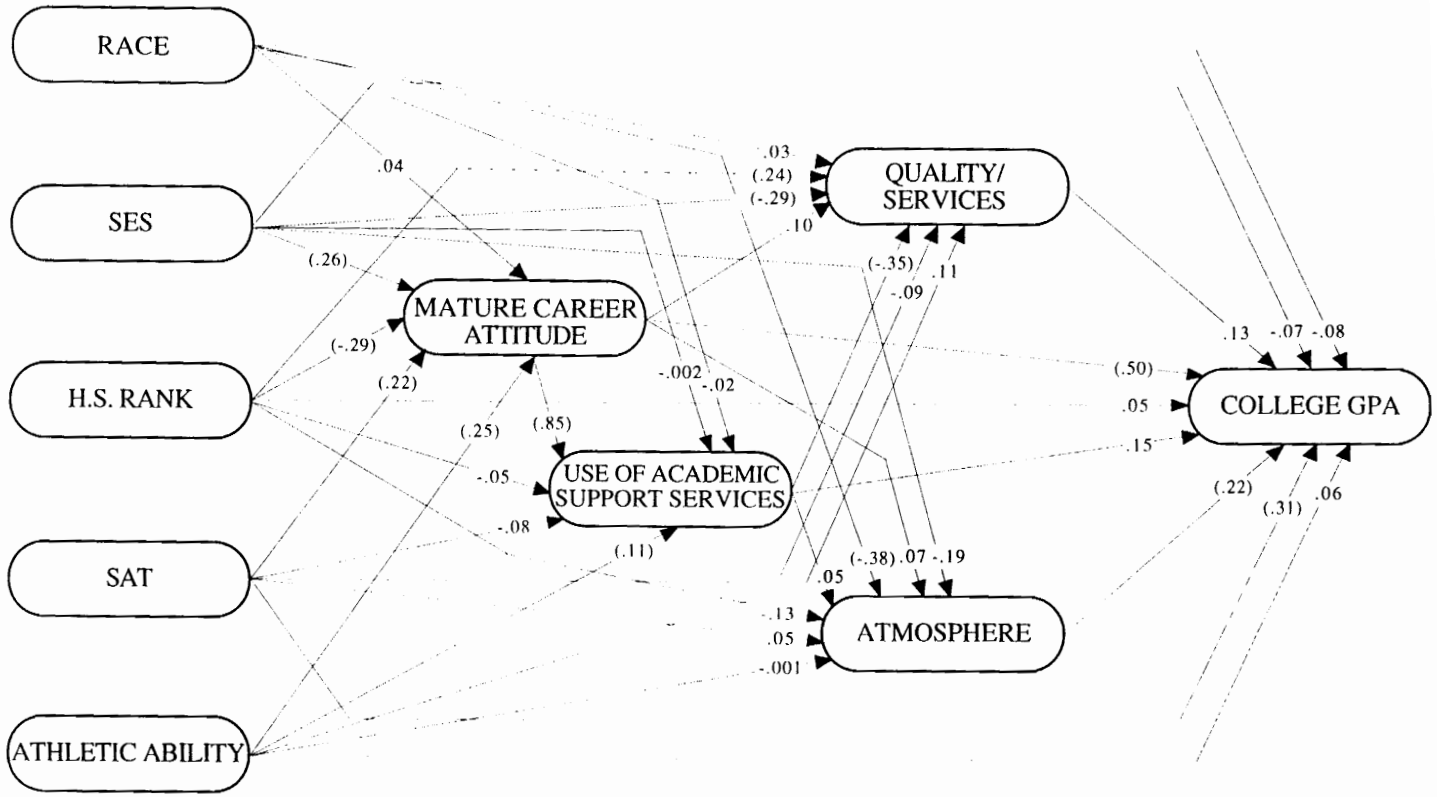

Figure 4
Results for the Model of COLLEGE GPA

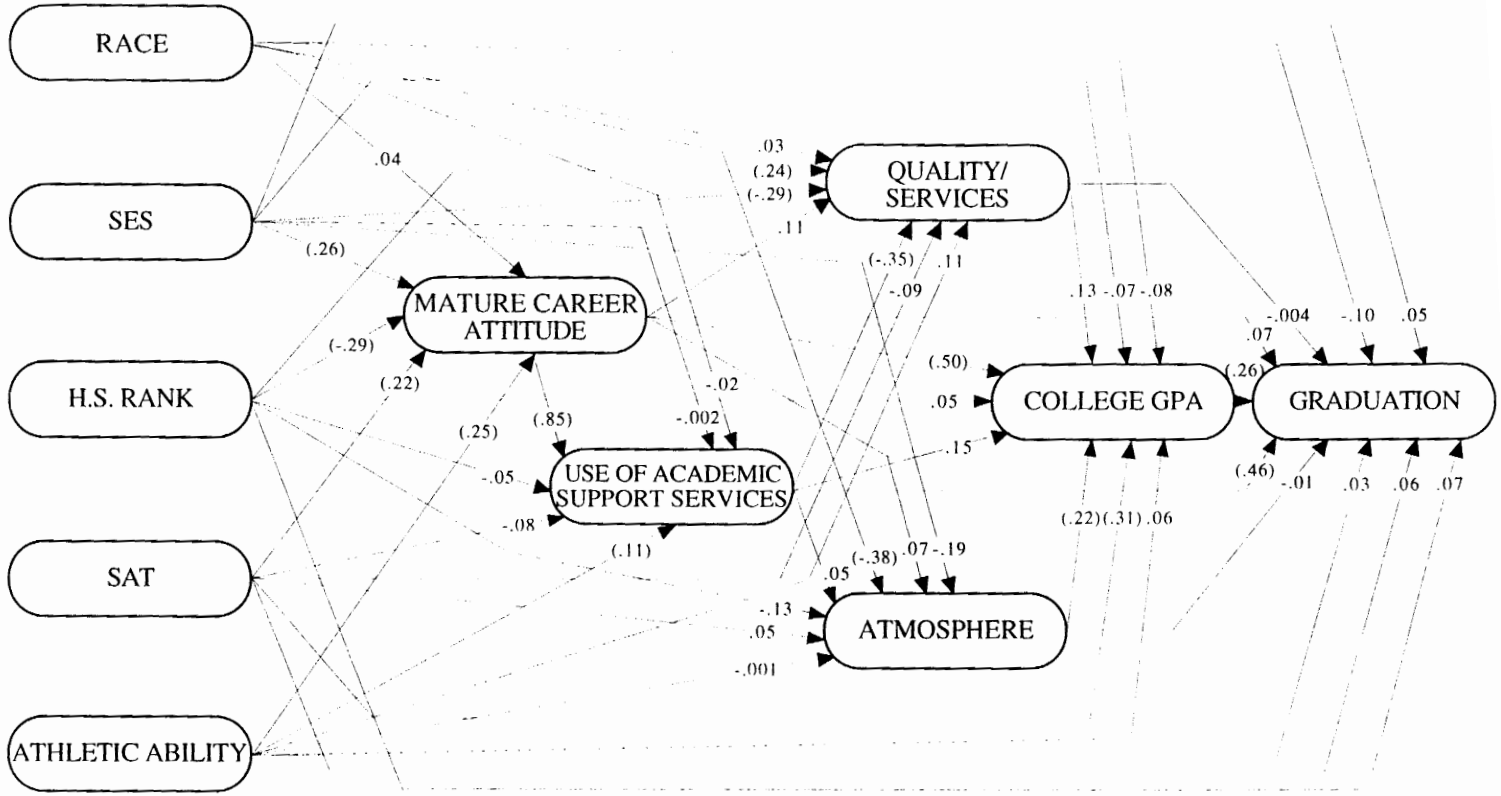

Figure 5
Results for the Model of GRADUATION

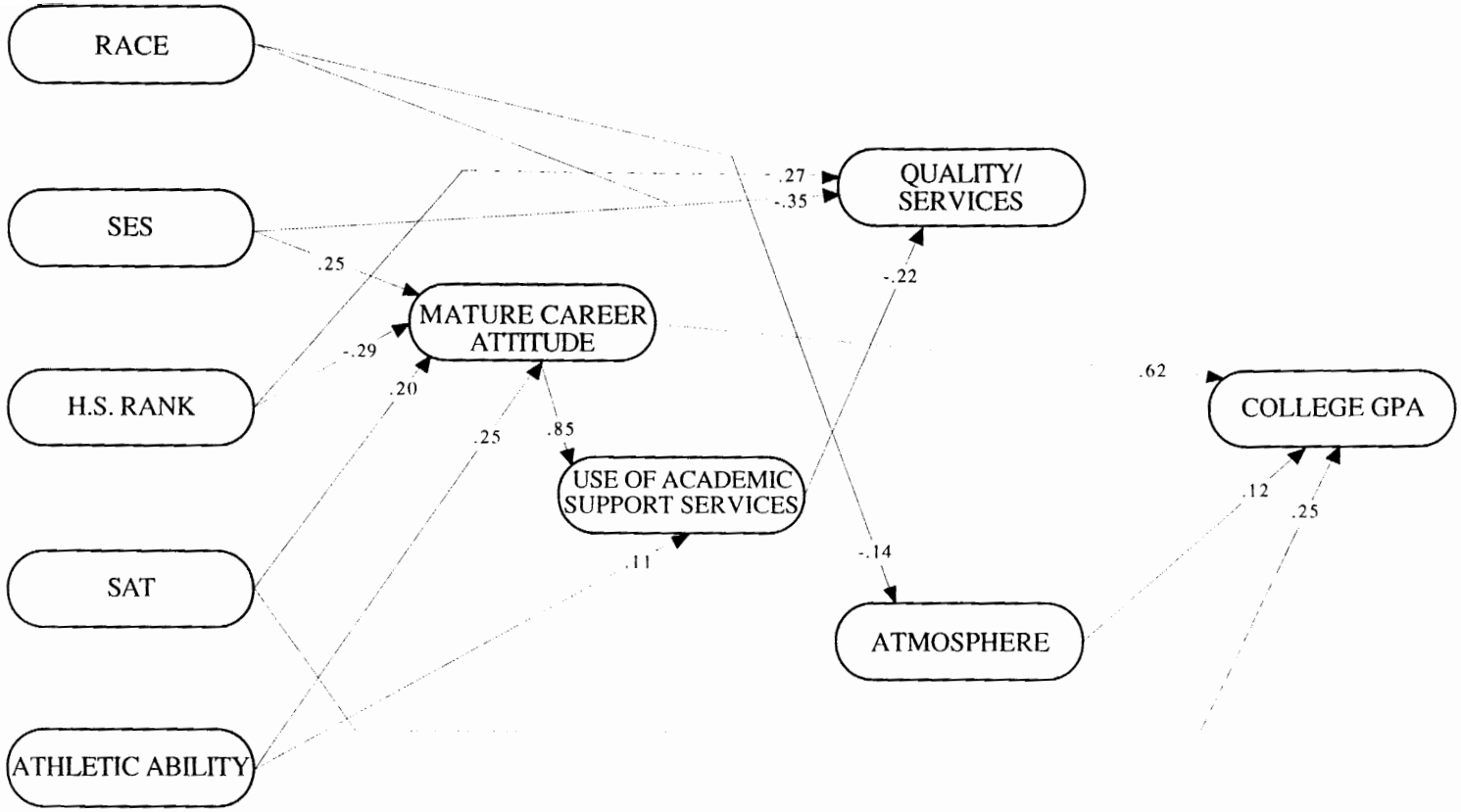

Figure 6
Results for the Reduced Model of COLLEGE GPA

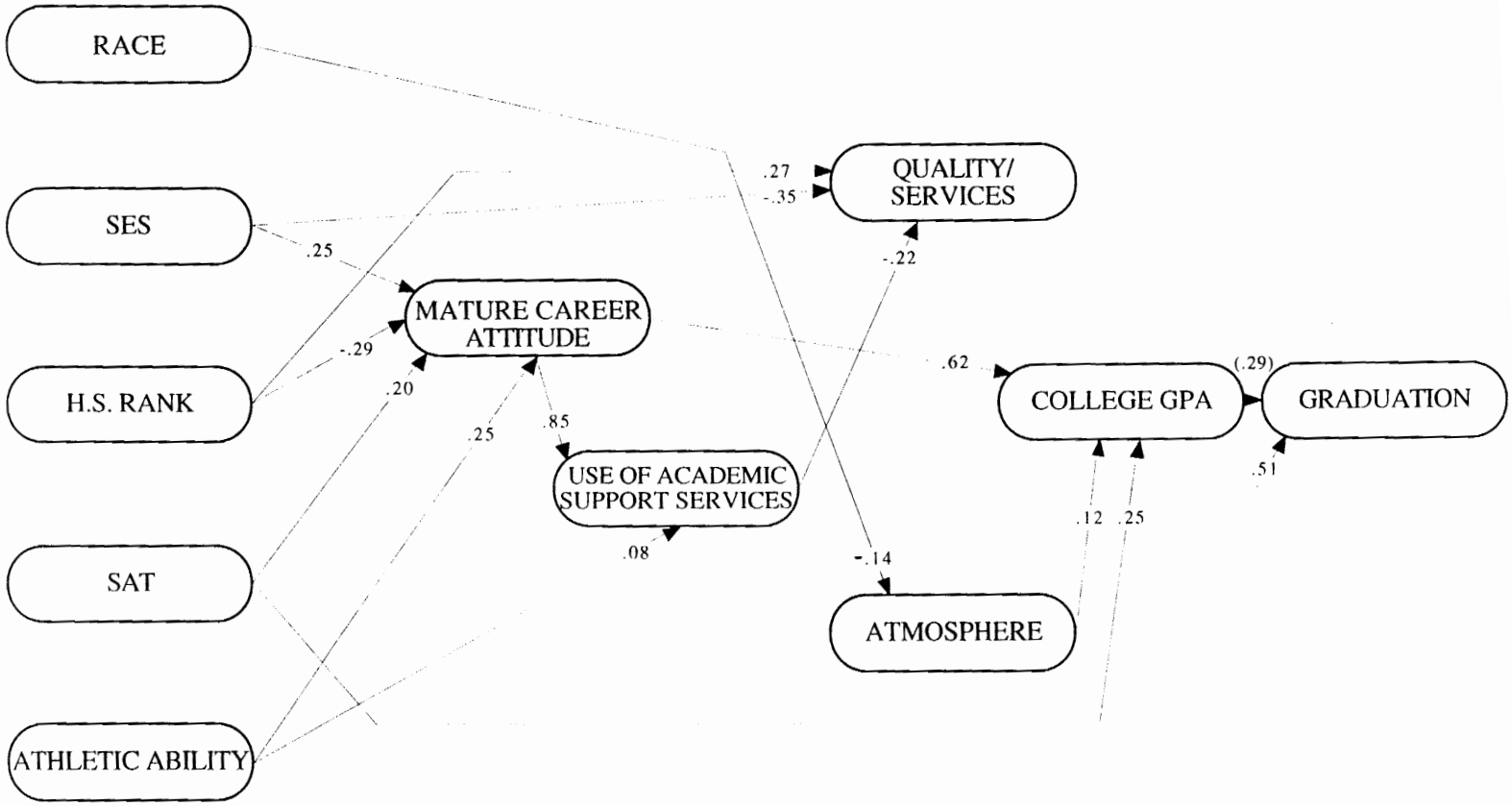

Figure 7
Results for the Reduced Model of GRADUATION

VITA

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EDUCATION

Ph.D. Educational Administration, Higher Education, Virginia Tech, Blacksburg, VA; May, 1995.

M.B.A. Finance and Marketing, Virginia Tech, Blacksburg, VA; December, 1983.

M.A.Ed. Counseling and Student Personnel, Virginia Tech, Blacksburg, VA; December, 1978.

B.A. with Distinction in Economics, The University of Virginia, Charlottesville, VA; May, 1977.

EXPERIENCE

Roanoke College	Head Coach, Cross Country and Track & Field, Roanoke College, Salem, VA. August, 1991 to May, 1995.
E.C.P.I.	Director, E.C.P.I. Computer Institute, Roanoke and Hampton Centers. Supervised the daily operations of all the school's services, including selection, hiring, evaluation, and supervision of all employees. April 1985 to November, 1991.
U.R.C.	Management Consultant, United Research Company, Morristown, NJ. April, 1984 to January, 1985. Assisted in the analysis, design, and implementation of management development projects for several Fortune 50 companies.
T.C.C.	Senior Partner, Tax Credit Consultants, Danville, VA. June, 1980 to December, 1982. Established a private consulting firm which assisted companies in taking advantage of tax credits. Prospected clients, negotiated contracts, and interviewed tax credit qualifiers.

Averett — Assistant Dean of Students, Averett College, College Danville, VA. June, 1979 to May, 1980. Area Coordinator, January, 1979 to June, 1979.

HONORS

Co-Winner, Coach of the Year, Women's Cross Country, Old Dominion Athletic Conference, 1993.

Volunteer of the Year, Special Olympics, District 8, 1992.

Phi Delta Kappa, (Honorary Education) 1980.

Louis Onesty Memorial Scholar-Athlete Award, University of Virginia, 1977.

CIVIC

Roanoke City School Board, May, 1990 to June, 1996. Chairman, July, 1991 to June, 1993.

Roanoke Valley Regional Board for Low Incidence Populations, July, 1992 to June, 1995.

Virginia Amateur Sports, Board of Directors, March, 1993 to April, 1996.

E.C.P.I. Computer Institute, Board of Trustees, April, 1993 to present.

Roanoke Jaycees, March, 1987 to September, 1993.

ADJUNCT TEACHING

Management of Human Resources, Bluefield College, December, 1994 to present.

Introduction to Track & Field, Roanoke College, Spring, 1992.

Contemporary Financial Management, Averett College (Adult Bachelor's program), Winter, 1992.

Introduction to Computer & Information Processing, Averett College, Winter, 1990.

LOTUS 1-2-3, ECPI Computer Institute, Winter, 1988.

Finn D. Pincus