

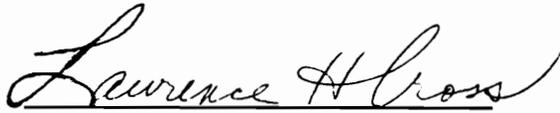
THE RELATIONSHIP BETWEEN PARTICIPATION IN EXTRACURRICULAR
ORGANIZATIONS AND THE ACADEMIC PERFORMANCE AND RETENTION OF
COLLEGE FRESHMAN

by
Bruce Boling

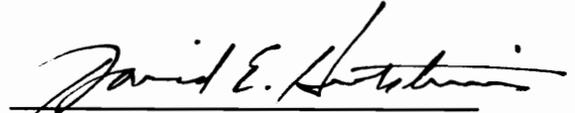
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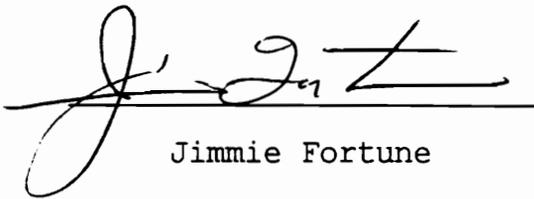
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Committee Chairman: Lawrence Cross

(Abstract)

The purpose of this study was to investigate differences in academic performance and persistence among freshman participating in fraternities, corps of cadets, and athletics in comparison to matched samples of non-members. The study showed that, on average, students were adversely affected by participation in athletics and fraternities when sex, race, college, major, and academic ability were controlled. There was no evidence to conclude that participation in these organizations had any consistent effect on persistence.

Acknowledgements

I would like to thank all the members of my committee for their guidance. I am indebted to Lawrence Cross for the attention and support he gave me during this entire project. My family has always been supportive, but I would like to particularly thank my brothers Joe (Virginia Tech) and John (SAS Institute) for their thoughtful insights. I am sorry to say my companion and loyal friend, Jamie Boling (collie dog), did not live to see me finish. His determination to survive cancer gave me the strength to endure.

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The Relationship Between Participation in Extracurricular Organizations and the Academic Performance and Retention of College Freshman

It is of interest to colleges and universities as to whether participation in extracurricular organizations inhibits or enhances the academic performance and retention of students. Does participation in extracurricular organizations have an adverse impact on the academic performance of students? Whatever the case, students may decide to participate in extracurricular organizations without knowing the full consequences on academic performance and retention. These campus organizations can become a focal point for students, and for some students the likelihood exists for the organization to affect their academic as well as their social development.

Colleges and universities need to be aware of the ways that participation in campus organizations can affect students. The effect of participation in campus organizations may be in conflict with the mission of the college or university. It is important for colleges and universities to recognize potential problems associated with participation in extracurricular organizations in order that they may develop programs to improve the academic performance and retention rate of participants. The relationship between participation in extracurricular organizations and academic performance can

affect the way these campus organizations are evaluated and managed by supervisors and administrators.

Measuring the impact of participation on students in campus organizations is problematic because students change and develop regardless of whether or not they participate in campus organizations. Student development has traditionally been classified into cognitive and non-cognitive categories. Non-cognitive development, such as students' values and attitudes, has been the subject of many research studies because it is relatively easy to measure through questionnaires. Cognitive development, such as academic performance, is also relevant to studies in higher education and is the criterion of interest in this study.

Research studies describing the impact of group membership exist; however, much of the research is more concerned with the effect of participation in organizations on the attitudes and moral development of students. These group membership studies focus on how college life influences students' attitudes, values, opinions, views about life, and future goals. However, fewer research studies investigated the effects of participation in campus organizations on the grade-point-average (GPA) and persistence of students. All of the latter studies represent either non-experimental or quasi-experimental designs and few involve large and diverse samples of students.

Astin (1977) reported that much of the research on the impact of college on students conducted prior to 1977 was limited in scope, inadequate in design, and yielded very little information one can turn to with confidence. According to Astin, much of the early research failed to meet the two minimal requirements for adequately designed studies. He suggests that, first, data should be collected simultaneously from students at many institutions; and second, longitudinal data is needed between admission into college and a point later in time. Astin suggests that the task of assessing how students are affected by college is composed of three major undertakings: 1) understanding the meaning of student change; 2) developing a means of measuring outcomes; and 3) designing the analysis of college impact. Of course, it is not feasible to measure the effects of participation in extracurricular organizations definitively, since a true experimental design would require a random assignment of students to extracurricular organizations -- clearly an impossible situation.

Various models for investigating student development have direct implications for explaining the effect of participation in organizations on academic performance. The college impact models of Astin (1975), Pascarella (1985), and Tinto (1987) are based on a common assumption that entering freshman students have different pre-college characteristics which may interact in different ways with the environment.

The magnitude of the interactions may lead to differences in the academic performance and retention of students. These models provide a framework for studying the effect that participation in campus organizations has on the GPAs and retention rates of students.

The theory of student involvement relating to student development grew out of a study by Astin (1975) on college dropouts. Astin's study investigated factors in college that affected student persistence to remain in college. He found that students who joined social fraternities or sororities were less likely to drop out. Also, he found that participation in intercollegiate athletics and ROTC enhanced the retention rate of students. However, persistence or retention did not necessarily mean that the students graduated after remaining in school. A central component of Astin's theory of student involvement is that more emphasis is placed on the actions of students as opposed to pre-college characteristics.

Astin (1985) suggests that differences in student development cannot be entirely explained by factors measured prior to entering college. Part of the explanation lies in what happens to students after they enter college. Astin's earlier theory of involvement (1975) consists of five basic principles: 1) involvement is the investment of energy into various efforts; 2) students manifest different degrees of involvement; 3) involvement can be measured quantitatively or

qualitatively; 4) the amount of learning and development is proportional to the quality and quantity of involvement; and 5) the effectiveness of any practice is related to the capacity of that practice to increase student involvement. These five principles underline Astin's current theory (1985) that students learn by becoming involved.

Student development is seen by Pascarella (1985) as a function of a student's characteristics, interactions with faculty and peers, and quality of effort in learning. Pascarella suggests that student growth is a function of the direct and indirect effects of many variables. The variables comprise five major sets: 1) student's background and pre-college characteristics; 2) structural and organizational features of the institution; 3) institution's environment; 4) student's interactions with faculty and peers; and 5) quality of effort. The structural and organizational features of the institution were thought by Pascarella to have an indirect effect on student development through intervening variables of environment, quality of effort, and interaction with faculty and peers. Pascarella's theory helps explain changes in cognitive development.

With a model similar to Pascarella's (1985), Tinto (1987) theorizes that students enter an institution with varying characteristics and these characteristics are modified on a continual basis through interactions within the institutions. Tinto reported that 44 out of every 100 new

college students will dropout after two years. According to Tinto, the retention rate is thought to be influenced by pre-college characteristics of students and by the college environment. Tinto suggests that what happens to students after they are on campus has a greater impact on persistence than their pre-college characteristics. Tinto's model is preferred for studies on single institutions, while Pascarella's model has been used for multi-institutional studies as well as single institutional studies. However, either model could be used for measuring change in single or multi-institutional settings.

Astin's (1975) theory of involvement has been used by many researchers to investigate the effect of different environments on the academic performance and retention of students (Pascarella, 1989; Pascarella, Smart, Ethington, and Nettles, 1987; Terenzini and Pascarella, 1980; Weidman, 1984; Pascarella and Terenzini, 1976; Pascarella and Terenzini, 1978). Some studies have supported the theory of involvement on persistence when pre-college academic ability was controlled. Pascarella and Chapman (1983a, 1983b) suggest a positive effect of participation on persistence when controlling pre-college characteristics. A study by Carroll (1988) provided more evidence to support the theory that participation in extracurricular organizations has a positive impact on persistence. However, earlier studies by Pascarella

and Terenzini (1980), and Feldman and Newcomb (1969) are less supportive of Astin's (1975) theory.

Astin's (1975) theory of student involvement is concerned with the processes that facilitate student development. Astin's theory realizes that the time and energy of students is not infinite. Education is in competition with campus organizations for a piece of the student's time and energy. A student's involvement in extracurricular organizations will limit the time and energy that can be devoted to academic development. Astin's theory of involvement helps colleges and universities recognize that extracurricular organizations affect the amount of time and energy students have to devote to academic development.

A good academic record in high school does not necessarily mean a student will succeed in college. The first-year (freshman) college grade-point-average (GPA) is one indicator for determining how well a student will progress and succeed academically in college. The freshman GPA will determine, in part, whether some opportunities are afforded to students before and after graduation. The freshman GPA determines whether the student remains academically eligible to return for the sophomore year, and can also be a basis for granting a change of major. The freshman GPA is part of the overall GPA that is important in determining admission to graduate and professional schools. Also, a student's

employment opportunities may be greatly affected by their academic success.

When comparing the academic performance of freshman participating in different campus organizations, it is necessary to include a measure of initial cognitive ability. To infer a causal connection between participation in organizations and academic performance, it becomes important to control student characteristics at the time of entry to college. The Scholastic Assessment Test (SAT) is a commonly used measure of academic aptitude and is often used for controlling differences in academic aptitude at time of college entry.

The use of SAT score to predict GPA has a long history and is widely accepted. Few studies involving GPAs have included students from more than one institution. Investigating the relationship between SAT scores and GPAs across colleges and universities is rarely done because grading standards cannot be considered equivalent across colleges. GPAs are relatively crude indices of student performance and development even within the same college or university. Nonetheless, using the GPA as a measurement of academic performance for freshman is consistent with previous measures of performance outcomes and validation studies.

The review of research literature uncovered varied approaches to analyzing the relationship between participation in campus organizations and the GPAs of students. Most of the

research was based on the reasonable assumption that participation in extracurricular organizations may have an effect on GPA. Mixed opinions exist as to whether the influence of Greek membership and athletics on the academic performance of college students is favorable or unfavorable. Research literature relating to the ROTC or the corps of cadets was limited to investigating the attitudes and values of cadets without regard to GPA and thus was not applicable to this research study.

Research studies have indicated that students undergo developmental changes after they enter college. The amount of change varied by race, sex, and academic ability and is reflected in the research studies predicting student GPA and persistence. The different organizations at a single institution may have different influences on the growth and development of students. For longitudinal studies, the difference between a pretest and posttest was often reported as an effect brought on by participation in the organization. A weakness of these longitudinal designs was that they failed to consider whether the same change would have occurred if the students had not participated in the organization.

Methodological shortcomings of previous research have made it difficult to determine whether differences in GPA and retention rates are the result of participation in campus organizations or the result of differences in pre-college characteristics. A common characteristic for most of the

previous research has been inadequate sample size, research designs lacking power to detect differences, and limited control over differences in aptitude for entering students. These weaknesses in research designs have strengthened the case for additional research using a more powerful design and analysis in order to gain insight into how the GPAs of freshman are affected by participation in campus organizations. One solution to minimize these shortcomings is the matched control-group design wherein students who do not participate in the organizations are matched on key variables with students who do participate.

The purpose of this study is to investigate differences in academic performance and retention rates among freshman participating in fraternities, the corps of cadets, and intercollegiate athletics in comparison to matched samples of non-participants. This study was replicated over a two-year time frame with separate analyses conducted for the academic years 1993-94 and 1994-95 at a single state university located in the Southeast. Enrollment information from the sophomore year for the different years under analysis made it possible to investigate the relationship between participation in these campus organizations and retention. This study attempts to clarify the relationship between participation in extracurricular organizations and the academic performance and retention of college freshman.

Review of Literature

The review of literature found contrasting results for the effect of participation in extracurricular organizations on students' academic performance and retention. Only a limited number of studies investigated the effect of participation in intercollegiate athletics and social Greek organizations on the academic performance and persistence of students. Many of these studies failed to show a significant mean difference in academic performance between students who participate in extracurricular organizations and non-participants.

There is an absence of literature on the relationship between participation in the corps of cadets and student behavior. This may be due in part to the difficulty of getting access to student information that is protected by the Buckley Amendment. The corps of cadets is of interest because of the amount of time students spend participating in military activities. Formal and informal activities of the military require a high demand of their time, and students in the corps of cadets have a dedication to the military lifestyle unlike what is seen or expected from athletes or members of Greek organizations.

A considerable number of early college attrition studies exist which are cited in the literature reviews by Tinto (1975); Pantages and Creedon (1978); Cope and Hannah (1975);

Lennning, Beal, and Sauer (1980); Pascarella, Terenzini, and Wolfle (1986); Pascarella, Duby, Miller, and Rasher (1981); Terenzini and Pascarella (1978); Nelson, Scott, and Bryan (1984); Dukes and Gaither (1984); Mallinckrodt (1988); Pascarella and Terenzini (1979a), Pascarella and Terenzini (1979b). In addition, several research studies found different characteristics of students to be significant predictors of retention: race (Avakian, MacKinney, Allen, 1984; Pascarella, Smart, Stoecker, 1989); college GPA and gender (Langer, Wilton, Presley, 1987); cognitive ability (Astin, 1975); and study habits (Astin, 1975; Wolfle, 1980). In some studies, the effect of pre-college characteristics of students on an outcome of interest may have been confounded with other effects. In other studies, researchers attempted to control the confounding effects of pre-college characteristics by using statistical procedures such as regression analysis and analysis of covariance. After these differences in students' pre-college characteristics were controlled, some researchers were able to associate GPA differences with the different environments or organizations on college campuses.

Researchers have examined the relationship between college persistence and student characteristics. Pennington, Zvonkovic, and Wilson (1989) used a survey to examine changes in expressed college satisfaction across an academic term for 180 undergraduates enrolled in a Human Development/Family

Studies course at a large university in the Northwest. A longitudinal design was used whereas each student completed the College Student Satisfaction Questionnaire (CSSQ) the second week of classes, at midterm, and again the last week of classes. The research questions addressed in this study were: 1) does college satisfaction change over the course of an academic term; and 2) what student factors are associated with college satisfaction. Student factors in the study included sex, Greek membership, place of residence, GPA, employment, age, class year, course load, outside activities, dating status, social life, and recognition. The results indicated that college satisfaction did change over the course of the term. The lowest score occurred at midterm with highest score on college satisfaction occurring the last week of classes. Men, Greeks, residents of Greek houses, and students employed 11-20 hours expressed more satisfaction with college than women, non-Greeks, students in residence halls or houses or apartments, and students working more or less hours. The other student characteristics were unrelated to college satisfaction. This study suggests that students who are more involved with their college environment are more satisfied with college. A concern in the Pennington et al. (1989) study is that the time interval for administering the survey may have affected the results. One would expect students to be less satisfied with college during examination periods. The results are consistent with an earlier study by Abrahamowicz

(1988) who used the College Student Experiences questionnaire (CSE) to explore the relationship between student organization membership and student satisfaction with college.

Abrahamowicz reported that students who were more involved in their college environment were more satisfied with their college experience.

Other research studies investigated the relationship between college retention and the characteristics of student groups with whom the student lives (e.g., dormitory, fraternity/sorority). A study by Terenzini and Pasacarella (1982) assessed the influence of the residential unit on the freshman student retention rate after controlling for students' pre-college characteristics and individual levels of academic and social integration in the institution. This longitudinal study set out to assess the degree to which the nature of the group with whom a freshman college student lives influences continued enrollment into the sophomore year. A survey was mailed to a random sample of 1905 entering freshman at a university in New York state to assess their expectations of the upcoming college experience and collect background information. At the end of the freshman year, a second survey was mailed to the same students seeking information about the reality of their college experience. On-campus residential units were either male or female. Separate regressions were conducted for males and females with responses for residential

unit weighted by the number students per unit in order to control for differences in residence unit size.

The regression analysis for males showed that residential units were reliably related to retention rates. As the level of commitment by residents to the goals of the institution increased, so did the retention rates for males. The level of commitment to the academic goals of an institution by those with whom one lives is likely to affect chances for continued enrollment, at least for men. This conclusion is consistent with Blai's (1971) study, that after assigning roommates with various levels of academic ability, found that significantly higher levels of academic achievement could be attained when average and below average achievers are assigned to roommates of above average ability. The design of the Terenzini and Pascarella (1982) research study did not consider involuntary attrition nor did researchers provide a description of the residential units which limits the interpretation of the study.

There is some evidence (Moos, 1979; Winston, Hutson, McCaffrey, 1980; Moos, Deyoung, VanPort 1976; Pascarella and Terenzini 1982) that living groups are capable of affecting the academic performance of residents. Schragger (1986) used subscales of the University Residence Environment Scale (URES) to examine the relationship between living group social climate and freshman academic performance in 36 fraternity groups and 18 male residence halls after controlling for high

school grades and college entrance exam scores. A two-stage regression model was used to control for differences in students' aptitude (first stage) and to investigate the effects of the ten URES subscales (second stage) on freshman academic performance. Subscales of academic achievement, competition, and student influence were significantly correlated with freshman GPA for Greeks but not for independents. Emphasis on academic achievement by Greeks had a positive effect on GPA. Traditional social orientation was not significantly related to freshman achievement for fraternities, but was significant for residence halls meaning dating and other social activities among students in residence halls had a negative effect on their GPA. These findings suggest that different living groups have different effects on freshman academic achievement which is not entirely explained by high school achievement and college entrance exam scores. A limitation that could not be overcome by the researchers was the absence of random assignment. Students selected their own living group which allowed other factors not under study to operate in matching a student with a suitable living group that may have influenced their academic performance.

Many colleges and universities are reassessing their commitment to the retention of students. Beil and Shope (1990) used the American College Testing Entering Student Survey (ACTESS) to determine the factors influencing college student persistence for remaining in school after the first

year of enrollment and again after the fourth year at a private, urban university. Using a regression model, they found factors, such as region of the United States that students called home, satisfaction with campus social life, freshman GPA, summer orientation attendance, and satisfaction with academic advising were significant predictors of persistence after the freshman year. Gender, financial aid, academic advising, institutional attitude toward students, satisfaction with institution, and membership in sorority or fraternity were significant predictors of persistence after four years. The findings suggest that it is the experience of involvement with college that has a positive effect on persistence. This study failed to differentiate between voluntary and involuntary departure from the institution. Involuntary departure due to suspensions and poor academic performance will restrict the generalizability of the study.

Another study by Pike and Askew (1990) examined the effects of Greek membership on academic performance. They used the College Outcome Measures Project (COMP) Objective Test to examine the effects of belonging to a Greek organization on students' academic development for 6646 seniors at a Southeastern public university. In addition to the COMP test, a survey was used to obtain college information about students' backgrounds, college experiences, and satisfaction with various aspects of their undergraduate education. The researchers determined that both the parents'

income and educational level of Greeks were significantly higher than independents. Students were classified by sex and Greek/independent status with parents' income and educational level being used as covariates. Using a series of two-way analyses of covariance, the researchers found a significant interaction indicating that Greek men had a lower mean GPA than did male independents. Greek women had only a slightly higher GPA than did female independents. Greeks and independents differed significantly on all five measures of involvement on the COMP test. According to the findings, Greeks exerted greater academic effort, participated more often in clubs and student organizations, and had higher levels of interaction with other students. Independents attended more cultural events and interacted more with the faculty. The mean GPAs of sororities and female independents were similar, but the mean GPA of fraternities was lower than that of male independents. Membership in Greek organizations had some positive outcomes with the exception of the GPA for male Greeks. As with other similar studies, a common limitation was the lack of knowing the extent to which Greeks and independents differed academically prior to joining a Greek organization.

A study by Porta (1991) investigated differences in academic achievement (GPA) between Greeks and independents for 593 undergraduates during the Fall semester of 1990 at Murray State University. Students were subdivided by sex, Greek

status (independents, pledges, actives), and college. To create an academically homogenous group, only participants having ACT scores between 19 and 23 were considered for the study. Results from a 2-way ANOVA indicated that differences in GPA among colleges by Greek status were not significant. Independents did have a significantly higher GPA than did actives or pledges for males, but not females. When all independents were compared with Greeks, regardless of sex and college, there was no significant difference between independents and actives, or actives and pledges, but there was a significant difference in mean GPA between independents and pledges. The findings suggest that Greek membership has an effect on males but not females. Female achievement was not affected by membership in sororities; in fact, sorority members had a higher mean GPA than female independents, although not significant. The design of the study limited the analysis to one semester, and it is risky to draw conclusions about academic performance from one grading period. Replicating the study would have provided more support for the findings.

Some studies have dealt with the influence of Greek membership on the intellectual values of college students and whether differences are the result of pre-college characteristics. Wilder, Hoyt, Surbeck, Wilder, and Carney (1986) used the College Student Questionnaire (CSQ) to investigate changes in attitudes and intellectual values

occurring between the freshman and senior years for a sample of 2178 students over a seven year period at Bucknell University. This study was an extension of an earlier study by Wilder, Hoyt, Doren, Hauck, and Zettle (1978) that found differences in attitudes and values between Greeks and independents existed before students became members of Greek organizations or remained independent.

The original sample was updated and expanded by adding students who enrolled in 1980 and 1981. Students were classified by sex (male, female), year of graduation (1969-70, 1972-74, 1984-85), Greek membership (Greek, ex-Greek, independent), and class (freshman, senior). Using a 2x2x3x3 (class by sex by year by membership) repeated measures ANOVA, he found that Greeks scored lower than ex-Greeks and independents on all scales measured by the CSQ. These results were consistent with the earlier Wilder et al. (1978) study suggesting that Greek affiliation hinders the development of family independence, liberalism, and cultural sophistication. The breakdown of Greek affiliation into active Greeks and ex-Greeks resulted in two extreme groups; whereas, if the groups had been combined, significant differences on the CSQ may not have occurred. A limitation of this study was the lack of control over when a Greek became an ex-Greek. This lack of information limited the interpretation of the results. All freshman completed the survey which suggests that attrition

from freshman to senior years and voluntary participation by seniors could have affected the validity of the findings.

In a published response to the Wilder et al. (1986) study, Jakobsen (1986) agreed that Greeks were conformists, preoccupied with social acceptance, and competitive in scholastic pursuits. Greeks were labeled in this conformist category because they were more concerned with social niceness, appearance, materialism, and reputation for social acceptance. Competitive in scholastic pursuits meant Greeks may only be academically competitive with other Greeks. Jakobsen reported that Greek organizations have behavioral requirements for their members. If these behavioral requirements are too strict, the development of individual values and self-awareness may be hindered. These conclusions suggest that administrators should create a more challenging and supportive college environment that encourages self-awareness and academic pursuits.

In another response, Strange (1986) agreed with the findings of the Wilder et al. (1986) study by suggesting the characteristics of students who join Greek organizations differ from those of students who do not join. Strange responded to the conclusions of Wilder et al. (1986) by suggesting that students who join Greek organizations differ from independents in value orientation before membership initiation. Students who remain members of Greek organizations exhibit less change toward the values of the

institution, and Greeks as well as independents conform less today than in previous years. The non-conformist nature of college students was characterized by their concern for having a successful college career and getting a job. The higher scores by ex-Greeks (14% of sample) in the Wilder et al. (1986) study suggest that ex-Greeks became dissatisfied with the values of the Greek system and left to achieve values more consistent with the values of the institution. Strange concurred with Wilder et al. (1986) by saying the Greek system is not compatible with the goals of the university.

In another study, Marlowe and Auvenshine (1982) used the Defining Issues Test (DIT) to investigate the impact of Greek membership on the moral development and values of college students for a sample of 98 freshman students (48 Greeks and 50 non-Greeks) at a small liberal arts college. They attempted to determine if students affiliated with Greek organizations increase their level of moral reasoning more than do students who do not affiliate over the course of the freshman year. The design of the study compared scores on a pretest taken during the Fall orientation with scores on a posttest taken one week before finals. No significant differences were found in moral development or values between members and non-members of Greek organizations during the freshman year. The conclusion to be drawn is that Greek membership had no effect on the moral development or values of college freshman. The findings suggest that Greek membership

has no benefit in shaping the character of students in terms of moral development and values. A possible limitation of the study was the pretest-posttest instrumentation (DIT) did not detect differences when differences did exist.

In a commentary, Maisel (1990) discussed the role of higher education in determining the values of students. The author suggested that administrators contradict the values of the university by the way they deal with Greek social organizations. The mission of colleges and universities is to admit students without regard to race, creed, or sex, but the mission of fraternities and sororities by design is to be gender specific and exclusionary in practice. Greek organizations reinforce the value system that their members possess prior to joining the organization. Social fraternities and sororities often have a value system that contradicts the goals of the higher education system. According to Maisel (1990), the Greek system today is not consistent with the original goals of the earlier Greek organizations that encouraged thinking and new ideas. A tremendous amount of money is spent by universities to support a Greek system that is inconsistent with the values of the university. Greek organizations do not challenge students to think and be different because the members have a similar value system. The author concludes by suggesting that social Greek organizations no longer belong in our institutions of higher learning. In this writer's opinion, the author

unfairly expressed opinions about all Greek organizations by examining the problems primarily associated with fraternities. Sororities often have higher academic requirements and fewer problems than fraternities.

The effect of participation in athletics on the academic performance of student-athletes is of great concern to parents, coaches, and administrators. Critics have charged that participation in intercollegiate athletics hinders the academic performance of the student-athlete. Many students participate in athletic-related, campus-based, extracurricular activities. Athletic activities, especially at the intercollegiate (NCAA) level, can be very demanding and time consuming. For student-athletes, there is less time for studying which has a bearing on academic performance. Athletic involvement tends to isolate student-athletes from their peers. This isolation results from long hours spent in practice and travel to athletic competitions. Many student-athletes may not be prepared for the rigors of the college classroom (Lang, Dunham, Alpert, 1988), and participation in a demanding sport will only compound the problem.

The student-athletes and their academic performance have been under scrutiny in recent years. Bryant and Clifton (1990) investigated the difference between in-season and out-of-season GPAs for a sample of 74 student-athletes participating in football, softball, and soccer at Trenton State College during the 1988-89 academic year. Sports that

were in-season both semesters of the academic year or were comprised of players from exclusive economic backgrounds (e.g., golf, tennis) were eliminated to protect the validity of the study. In-season versus out-of-season (control) served as the independent variable with GPA as the dependent variable. Student athletes were analyzed by sport, sex, and class (academic level). The comparison of in-season and out-of-season GPAs showed a slightly higher GPA in-season, but the difference was not significant. Freshman and sophomores had higher GPAs in-season than juniors and seniors who had higher GPAs out-of-season. Both male and female student-athletes had higher GPAs in-season than out-of-season, but the differences were not significant. Even though a comparison of male and female GPAs was not made, it appeared that female student-athletes had a much higher GPA than males for both seasons. The findings suggest that the academic performance of athletes is the same for both seasons of the year. These results were inconsistent with comments made by Ballantine (1981) who did a literature review of athletic studies and concluded that research suggests that athletes perform academically at a higher level once their season was over. One notable limitation in the Bryant and Clifton (1990) study was the absence of a non-athlete control group. This limitation prevented any comparison from being made between student-athletes and non-athletes on the effect of participation in athletics on GPA.

A study by Marcotte (1986) was conducted to investigate differences in GPAs between athletes and a matched sample of non-athletes for 51 basketball players at the Cincinnati Technical College (CTC) from 1982 to 1986. Basketball players were matched against a sample of non-players with similar aptitude test scores, dates of entry, and programs of study. In addition to GPA, the number of credit hours completed and graduation rates were compared. The results showed that athletes carried a significantly lower GPA than the matched sample of non-athletes, but no significant difference was found for the number of credit hours completed or for graduation rates between the groups. The findings support the conclusion that participation in basketball at CTC had an adverse effect on GPA. Low graduation rates for both groups were evidence that students with these same characteristics have little chance of graduation from CTC. Failure to investigate demographic or background information on students may have resulted in match mates not being equal in ability.

Cook and Mottley (1984) used regression analysis to determine predictors of academic success for a sample of 59 freshman football players at a Southern four-year NCAA institution. Significant predictors of GPA were race, number of games played, number of study and reading improvement courses taken, and ACT composite. The variables that did not significantly predict GPA were ACT scores by subject matter, scholarship vs. non scholarship, playing position, eligibility

or ineligibility to play, and team membership. These findings suggest that there were differences in the predictor variables by race. The small sample size may have prevented some variables from being significant predictors of academic success. The sample was limited only to athletes, so no conclusions could be reached regarding differences between athletes and non-athletes.

Method

Design and Sample

The setting is a four-year, land-grant institution in the Southeastern part of the United States with a total freshman enrollment of approximately 4000 students. This study investigated participation in three extracurricular organizations that are known to require a high investment of time from students. Students participating in intercollegiate athletics, the corps of cadets, and social Greek fraternities are the organizations of interest. These intact groups provide a readily available environment for studying the academic performance and persistence of students participating in extracurricular organizations. It is hypothesized that participation in these extracurricular organizations will have an effect on the GPA and retention of college freshman.

The freshman participants in these organizations were identified by university personnel. The athletic sample (scholarship and nonscholarship) included all freshman men and women student-athletes from the sports of football, basketball, baseball, wrestling, soccer, track, swimming, volleyball, lacrosse, cross country, tennis, and golf. All male and female freshman cadets from the Army, Navy, Air Force, and Marines comprised the cadet sample. For the Greek sample, only male members of Greek social organizations (fraternities) were included in the study. Sororities were

excluded because at the institution where the data were collected, female members do not participate in the Greek system the entire freshman year. The sorority rush for pledges occurs during the Spring semester which limits their involvement to one semester during the freshman year. Fraternities conduct rush during the Fall semester with active membership offered the Spring semester. Only male students who were pledges during the Fall semester and active members during the Spring semester were included in the study. Religious, academic, and service chapters of the university Greek system were not of interest in this study and excluded from the analysis.

These three target groups were identified for each of two freshman academic years (1993-94 and 1994-95). The replication for two consecutive years was done to investigate the stability of the results and provide support for causal inferences. The 1993-94 sample included 179 athletes, 112 cadets, 191 fraternity members; the 1994-95 sample included 140 athletes, 107 cadets, 125 fraternity members. For each target group, a matched sample of freshmen was identified to serve as a control group.

Matching Procedure

The use of matched sampling in experimental and nonexperimental research can present problems to researchers. According to Althausser and Rubin (1970), there are four

obstacles to matched sampling in experimental and nonexperimental settings. These obstacles are attrition, incomplete matching, selection, and regression to the mean. Althausser and Rubin suggest that attrition and incomplete matching are functions of the levels of measurements (ordinal or interval) of variables on which we match; the number of matching variables; the sampling situation (matching at the same time or in succession); the relative sizes of the parent populations; and the definition of a match and the means used to accomplish matching. In this observational study, matching will theoretically neutralize the target/control groups on the matching variables as would randomization in an experimental study.

Two obstacles of concern in this study are attrition and incomplete matching. Not all participants were perfectly matched on all variables as a result of some match-mates not having the same characteristics needed for all five matching criteria. Matching on many variables may be desirable, but what is gained on more than three or four variables will be marginal (McNemar, 1940). The high percentage of matches in this study resulted in a considerable reduction in the difference between targets and controls on the matching variables. In addition, the problem of attrition was avoided by only using participants in target and control groups that completed both semesters of the freshman year.

The sampling situation in this study involved intact (target) groups. To form the control groups, the databases were searched for a match-mate for every person identified in the targeted groups. Matches were made in the following order: 1) SAT composite; 2) college; 3) race; 4) sex; and 5) major of study. A computer program was written to attempt a match on the identical SAT composite score followed by college, race, sex, and major for every participant in the target groups. The match variables and order of matching were chosen based on the findings of previous studies and the reported relationships between these variables and GPA.

To enhance the validity of the study, it was important to first match (zero tolerance) on SAT composite. College, race, sex, and major were used as additional matching criteria to help equalize the target/control groups with variables influencing academic performance. Any student showing a TOEFL (Test of English as a Foreign Language) score was removed from the study. This provided the researcher with control over differences in a students' ability to understand the language spoken in the classroom. The freshman class was a large enough sample frame to yield a high quality match-mate for each member of the target groups. The success rate of matching is presented in Table 1. A breakdown of the target and control groups by race and sex is outlined in Tables 2 and 3.

**Table 1 - Percentage of Matches for Target and
and Control by Year**

| Year/Group | SAT | College | Race | Sex | Major |
|----------------------|------|---------|------|-----|-------|
| 1993-94 | | | | | |
| Athletes/Control | 99% | 97% | 90% | 93% | 79% |
| Cadets/Control | 99% | 96% | 89% | 89% | 78% |
| Fraternities/Control | 99% | 98% | 94% | 84% | 71% |
| 1994-95 | | | | | |
| Athletes/Control | 98% | 89% | 85% | 84% | 76% |
| Cadets/Control | 99% | 98% | 95% | 94% | 87% |
| Fraternities/Control | 100% | 98% | 98% | 89% | 84% |

Table 2 - 1993-94 Groups by Race and Sex

| Group/Control | N | Black | Am Indian | Asian | Hispanic | White | Total |
|-----------------------|------|-------|-----------|-------|----------|-------|-------|
| Athletes | 179 | | | | | | |
| Male | | 21 | 0 | 3 | 1 | 86 | 111 |
| Female | | 10 | 0 | 0 | 1 | 57 | 68 |
| Control | 179 | | | | | | |
| Male | | 7 | 0 | 1 | 1 | 89 | 98 |
| Female | | 7 | 0 | 5 | 1 | 68 | 81 |
| Cadets | 112 | | | | | | |
| Male | | 8 | 0 | 7 | 2 | 77 | 94 |
| Female | | 2 | 0 | 2 | 0 | 14 | 18 |
| Control | 112 | | | | | | |
| Male | | 3 | 0 | 5 | 0 | 74 | 82 |
| Female | | 1 | 0 | 0 | 1 | 28 | 30 |
| Fraternities | 191 | | | | | | |
| Male | | 0 | 1 | 1 | 1 | 188 | 191 |
| Control | 191 | | | | | | |
| Male | | 4 | 0 | 5 | 1 | 150 | 160 |
| Female | | 2 | 0 | 0 | 1 | 28 | 31 |
| Total Control | 482 | | | | | | |
| Male | | 14 | 0 | 11 | 2 | 313 | 340 |
| Female | | 10 | 0 | 5 | 3 | 124 | 142 |
| Total Freshman | 4881 | | | | | | |
| Male | | 123 | 5 | 174 | 47 | 2523 | 2872 |
| Female | | 106 | 3 | 102 | 31 | 1767 | 2009 |

Table 3 - 1994-95 Groups by Race and Sex

| Group/Control | N | Black | Am Indian | Asian | Hispanic | White | Total |
|-----------------------|------|-------|-----------|-------|----------|-------|-------|
| Athletes | 140 | | | | | | |
| Male | | 23 | 0 | 3 | 3 | 57 | 86 |
| Female | | 5 | 0 | 3 | 2 | 44 | 54 |
| Control | 140 | | | | | | |
| Male | | 4 | 0 | 3 | 1 | 56 | 64 |
| Female | | 7 | 1 | 3 | 0 | 65 | 76 |
| Cadets | 107 | | | | | | |
| Male | | 3 | 0 | 2 | 1 | 83 | 89 |
| Female | | 2 | 0 | 1 | 2 | 13 | 18 |
| Control | 107 | | | | | | |
| Male | | 3 | 0 | 3 | 0 | 77 | 83 |
| Female | | 0 | 0 | 3 | 0 | 21 | 24 |
| Fraternities | 125 | | | | | | |
| Male | | 1 | 0 | 4 | 0 | 120 | 125 |
| Control | 125 | | | | | | |
| Male | | 1 | 0 | 0 | 0 | 110 | 111 |
| Female | | 0 | 0 | 1 | 0 | 13 | 14 |
| Total Control | 372 | | | | | | |
| Male | | 8 | 0 | 6 | 1 | 243 | 258 |
| Female | | 7 | 1 | 7 | 0 | 99 | 114 |
| Total Freshman | 4422 | | | | | | |
| Male | | 97 | 10 | 147 | 30 | 2190 | 2474 |
| Female | | 87 | 8 | 94 | 37 | 1722 | 1948 |

Table 1 shows a match-mate was made for 98-100% of the targeted participants with the same SAT score. An exact match was made on the SAT composite for almost all participants with the exception of one or two matches. For those mismatches, the computer algorithm was programmed to match to the next closest SAT score. These matches resulted in SAT scores either one point higher or lower for the match-mate. Since freshman enrolled in the same college of study take what amounts to equivalent courses the freshman year, it was decided to match on major of study last. The percentage of matches can be seen in Table 1 decreasing from the first-order match to the last-order match. In the rare cases where multiple matches were possible, a random selection was made. Once the target and control samples were identified, the GPA was computed for the freshman years.

Criteria

Academic performance was determined by the student's GPA at the end of the Spring Semester. Academic performance was defined using the overall freshman grade-point-average based on a 4.0 scale. The overall GPA was used as the dependent variable instead of a one semester GPA in order to obtain a more reliable measurement of academic performance for the freshman year.

Whether the student was enrolled or not enrolled for the sophomore year will provide the necessary data for the

retention phase of the study. The enrollment status of each participant and their match-mate served as a secondary criterion for measuring changes in retention rates between the targets groups and their control. Match-mates were classified into one of four possible outcomes: 1) both match-mates enrolled for the sophomore year; 2) both match-mates were not enrolled for the sophomore year; 3) target participant was enrolled and control match-mate was not enrolled; 4) target participant was not enrolled and control match-mate was enrolled.

Analyses

Initially, an analysis of covariance (ANCOVA) was to be used to determine whether mean GPA differences between each target and control group were significantly different. The incentive for using ANCOVA (with SAT scores serving as the covariate) was to increase statistical power. However, the assumption of homogeneity of regression required of ANCOVA had to be rejected for the athletes and fraternities for both the 1993-94 and 1994-95 samples. As a result of the failed assumption of ANCOVA, dependent *t*-tests were used to test for mean differences between targets and controls. The retention phase of the study used McNemar's "Test for Significance Change" to examine changes in the retention rate of match-mates. The enrollment status of each matched pair comprised the four cells of a 2x2 contingency table for McNemar's test.

In this study, any additional activities and organizations that students might have been involved in were not known, including such activities as socializing (partying), study habits, and hobbies. However, it was possible to obtain the number of hours enrolled per student, but this was not used as a matching variable. Nonetheless, it is of interest to note that the mean hours enrolled per group for the 1993-94 sample were: athletes=27 and their control=29, cadets=29 and their control=29, and fraternities=27 and their control=29. For the 1994-95 sample, the mean hours enrolled for the different groups were: athletes=27 and their control=29, cadets=28 and their control=29, and fraternities=28 and their control=29. Thus, it appears that the control groups maintained a slightly higher mean number of hours enrolled for both years, except for the cadets in 1993-94, when the number of mean hours were the same for the cadets and their control group.

Clearly, it is impossible to investigate the effect of organization affiliation on GPA using experimental methods, and thus, it is impossible to draw a strong causal inference as to the effect of group participation. However, unlike all studies reviewed for this research, the lack of randomization to group participation was compensated for as best as possible by identifying control groups carefully matched on key variables. While it is not appropriate to claim that differences reported between target and control groups are

attributable to group participation alone, it is possible to eliminate rival explanations for the observed differences being due to differences in SAT scores, college, race, sex, and major.

Results

Primary Results

It was of primary interest to determine whether the mean GPA of each target group differed from the mean GPA of its matched control group. Interest in this question is warranted due to the amount of time students devoted to these organizations and the number of resources used by university offices to monitor the academic performance of students. Table 4 shows the means and standard deviations of the SAT composites and freshman GPAs for target and control groups as well as all control groups combined and the entire freshman class. The latter group was included in order to provide a basis for evaluating how similar each of the groups are to the entire freshman class.

The extent to which participation in extracurricular organizations had an effect can be judged most directly by comparing the mean GPAs of each target group with its control. As shown in Table 4, the mean GPAs of the control groups were higher than the mean GPAs of their respective target groups for both years (1993-94 and 1994-95). Because each control group was matched to its target group, it was appropriate to use dependent *t*-tests to compare the target and control group means. The GPAs for a matched pair are similar, but do vary considerably from student to student.

**Table 4 - Means and Standard Deviations of SATs and
and GPAs, and Dependent *t* for Targets and Controls**

| Group/Year | N | Target | | Control | | <i>t</i> | prob |
|----------------------|------|------------------|-----------------|------------------|-----------------|----------|------|
| | | SAT Composite | Freshman GPA | SAT Composite | Freshman GPA | | |
| 1993-94 | | | | | | | |
| Athletes | 179 | | | | | 2.67 | .008 |
| Mean | | 1019.72 | 2.51 | 1019.78 | 2.66 | | |
| SD | | 156.94 | 0.64 | 156.79 | 0.6 | | |
| Cadets | 112 | | | | | 2.11 | .037 |
| Mean | | 1124.02 | 2.54 | 1123.93 | 2.68 | | |
| SD | | 139.53 | 0.56 | 139.51 | 0.58 | | |
| Fraternities | 191 | | | | | 4.50 | .001 |
| Mean | | 1076.44 | 2.48 | 1076.39 | 2.68 | | |
| SD | | 150.52 | 0.48 | 150.42 | 0.57 | | |
| Total Control | 482 | | | | | | |
| Mean | | | | 1066.41 | 2.67 | | |
| SD | | | | 155.39 | 0.58 | | |
| All Freshman | 4881 | | | | | | |
| Mean | | | | 1068.45 | 2.57 | | |
| SD | | | | 150.46 | 0.70 | | |
| 1994-95 | | | | | | | |
| Athletes | 140 | | | | | 4.29 | .001 |
| Mean | | 982.14 | 2.38 | 982.07 | 2.66 | | |
| SD | | 162.62 | 0.77 | 163.02 | 0.55 | | |
| Cadets | 107 | | | | | 1.68 | .094 |
| Mean | | 1124.58 | 2.55 | 1124.67 | 2.65 | | |
| SD | | 110.49 | 0.61 | 110.43 | 0.58 | | |
| Fraternities | 125 | | | | | 5.95 | .001 |
| Mean | | 1065.76 | 2.10 | 1065.76 | 2.52 | | |
| SD | | 116.68 | 0.66 | 116.68 | 0.61 | | |
| Total Control | 372 | | | | | | |
| Mean | | | | 1051.21 | 2.61 | | |
| SD | | | | 146.36 | 0.58 | | |
| All Freshman | 4422 | | | | | | |
| Mean | | | | 1063.95 | 2.53 | | |
| SD | | | | 147.84 | 0.76 | | |

The dependent *t*-test has an advantage over one-way ANOVA in statistical power by calculating the variability from the difference between match-mates which cancels out the student to student variability.

The results of the dependent *t*-tests applied to GPAs are shown in Table 4. The difference in mean GPA of athletes (2.51) and their control group (2.66) was significant, favoring the control group. The difference in mean GPA between cadets (2.54) and their control group (2.68) was significant, also favoring the control group. The mean GPA of fraternities (2.48) differed significantly from their control group (2.68), also favoring the control group. The results consistently favored the control group in all three comparisons for the 1993-94 freshman year.

The results of the dependent *t*-tests for 1994-95 were significant in two of the three comparisons. The difference in mean GPA between athletes (2.38) and their control group (2.66) was significant, favoring the control group. The difference in means for the GPA of cadets (2.55) and their control group (2.65) was not significant. A significant difference was found between the means for fraternities (2.10) and their control group (2.52), favoring the control group. Only the cadets failed to show consistency in terms of a significant difference for the two consecutive years.

It was interesting to note from Table 4 that although fraternities had a higher mean SAT score than athletes for

1993-94 (1076 vs. 1019) and 1994-95 (1065 vs. 982), the athletes out performed the fraternities in the classroom with a higher GPA for 1993-94 (2.51 vs. 2.47) and 1994-95 (2.38 vs. 2.09). ANOVA was used to test the significance of the mean difference in SAT and GPA measures across the three target groups. Table 5 shows the results of the ANOVAs were significant for SAT and GPA measures across the three target groups except for the mean GPAs of the 1993-94 groups. Posthoc comparisons between athletes and fraternities showed a significant difference in mean SAT scores with fraternities having the higher mean SAT composite than athletes for the 1993-94 ($p=.0003$) and 1994-95 ($p=.0001$) samples. The mean GPA for the 1993-94 athletes was not significantly different than the mean GPA of fraternities ($p=.5620$); however, the mean GPA of athletes was significantly different than the mean GPA of fraternities for 1994-95 ($p=.0009$), favoring the athletes. A reasonable explanation for this phenomenon is forthcoming in the discussion chapter.

Secondary Results

The original analysis plan called for ANCOVA to be used to test mean differences in GPAs while controlling for SAT scores. However, the assumption of homogeneity of regression needed as a preliminary test for ANCOVA was rejected in most cases. Specifically, the assumption of equal regression slopes could not be satisfied for the athletes and control,

**Table 5 - Summary of ANOVA Comparing SAT
and GPA across Target Groups by Year**

| Source of variance/year | df | SS | MS | F | p-value |
|-------------------------|-----|----------|--------|-------|---------|
| 1993-94 | | | | | |
| SAT | | | | | |
| Group | 2 | 781105 | 390552 | 17.24 | 0.0001 |
| Error | 479 | 10850357 | 22652 | | |
| Total | 481 | 11631462 | | | |
| GPA | | | | | |
| Group | 2 | 0.26 | 0.13 | 0.42 | 0.6600 |
| Error | 479 | 150.47 | 0.31 | | |
| Total | 481 | 150.73 | | | |
| 1994-95 | | | | | |
| SAT | | | | | |
| Group | 2 | 1270289 | 635144 | 35.20 | 0.0001 |
| Error | 369 | 6658866 | 18045 | | |
| Total | 371 | 7929155 | | | |
| GPA | | | | | |
| Group | 2 | 12.32 | 6.16 | 12.96 | 0.0001 |
| Error | 369 | 175.47 | 0.47 | | |
| Total | 371 | 187.79 | | | |

and fraternities and control for both the 1993-94 and 1994-95 samples. As a result, the previously reported dependent t -tests were used to test for differences in mean GPAs. Nonetheless, the relationships between SAT scores and GPAs were of interest in themselves. The regression equations fit to each target group and their respective control group are presented in Tables 6 and 7 for the 1993-94 and 1994-95 cohorts respectively. Graphic displays of these regressions are shown in Figures 1 and 2 for the athletes, in Figures 3 and 4 for the cadets, and in Figures 5 and 6 for the fraternities. These graphic displays with confidence limits (CLMs) are presented in Appendix A. Graphs of the three target groups and the entire freshman class are included in Figures 7 and 8 for 1993-94 and 1994-95 respectively.

Generally, one would expect the GPAs to rise with increasing SAT scores and this was indeed the case for the cadets and their control group as evident in Figures 3 and 4. However, with regard to the athletes, Figures 1 and 2 show that while the relationship between SAT scores and GPAs tends to be curvilinear, the regression line for athletes is nearly flat. The situation for the fraternities and their control groups is most curious. The regression lines for fraternities in Figures 5 and 6 are nearly flat and not significant for the target groups; whereas the regression line for the control groups is distinctly curvilinear. Indeed, the GPAs for the

**Table 6 - 1993-94 Slopes and Intercepts for GPA
Regressed on SAT Composite by Group**

| Group/year | Parameter estimate | SE of estimate | T for Ho: | p-value |
|---------------------|--------------------|----------------|-----------|---------|
| Athletes | | | | |
| Slope | -0.004842 | 0.002871 | -1.68 | 0.0936 |
| Slope**2 | 0.000003 | 0.000001 | 2.26 | 0.0248 |
| Intercept | 4.022592 | 1.431223 | 2.81 | 0.0055 |
| Control | | | | |
| Slope | 0.001 | 0.0002 | 5.47 | 0.0001 |
| Intercept | 1.167 | 0.2750 | 4.24 | 0.0001 |
| Cadets | | | | |
| Slope | 0.0015 | 0.0003 | 4.26 | 0.0001 |
| Intercept | 0.8424 | 0.4003 | 2.10 | 0.0377 |
| Control | | | | |
| Slope | 0.0009 | 0.0003 | 2.51 | 0.0133 |
| Intercept | 1.5847 | 0.4369 | 3.62 | 0.0004 |
| Fraternities | | | | |
| Slope | 0.0004 | 0.0002 | 1.78 | 0.0767 |
| Intercept | 2.0403 | 0.2475 | 8.24 | 0.0001 |
| Control | | | | |
| Slope | -0.009420 | 0.002795 | -3.37 | 0.0009 |
| Slope**2 | 0.000004 | 0.000001 | 3.73 | 0.0002 |
| Intercept | 7.106300 | 1.492987 | 4.76 | 0.0001 |
| All Freshman | | | | |
| Slope | -0.001944 | 0.000669 | -2.90 | 0.0037 |
| Slope**2 | 0.000001 | 0.000001 | 4.43 | 0.0001 |
| Intercept | 3.047063 | 0.358218 | 8.50 | 0.0001 |

**Table 7 - 1994-95 Slopes and Intercepts for GPA
Regressed on SAT Composite by Group**

| Group/year | Parameter estimate | SE of estimate | T for Ho: | p-value |
|---------------------|--------------------|----------------|-----------|---------|
| Athletes | | | | |
| Slope | -0.006142 | 0.003414 | -1.79 | 0.0743 |
| Slope**2 | 0.000004 | 0.000001 | 2.47 | 0.0147 |
| Intercept | 4.153457 | 1.649062 | 2.51 | 0.0129 |
| Control | | | | |
| Slope | 0.0005 | 0.0002 | 1.79 | 0.0746 |
| Intercept | 2.1575 | 0.2842 | 7.59 | 0.0001 |
| Cadets | | | | |
| Slope | 0.0015 | 0.0005 | 3.03 | 0.0030 |
| Intercept | 0.8004 | 0.5793 | 1.38 | 0.1700 |
| Control | | | | |
| Slope | 0.0010 | 0.0005 | 2.17 | 0.0318 |
| Intercept | 1.4181 | 0.5678 | 2.49 | 0.0141 |
| Fraternities | | | | |
| Slope | 0.0002 | 0.0005 | 0.58 | 0.5627 |
| Intercept | 1.7835 | 0.5431 | 3.28 | 0.0013 |
| Control | | | | |
| Slope | -0.018264 | 0.007475 | -2.44 | 0.0160 |
| Slope**2 | 0.000008 | 0.000003 | 2.45 | 0.0155 |
| Intercept | 12.170117 | 3.983573 | 3.05 | 0.0028 |
| All Freshman | | | | |
| Slope | -0.000823 | 0.000801 | -1.02 | 0.3044 |
| Slope**2 | 0.000001 | 0.000001 | 2.75 | 0.0059 |
| Intercept | 2.227210 | 0.429728 | 5.18 | 0.0001 |

control group are as high for low SAT scores as they are for high SAT scores.

The curvilinear effect for athletes prompted a further investigation to determine if the quadratic component in the regression equation was yielding the dramatic upturn of the regression line at high SAT scores. To determine if the GPAs of athletes at high SAT scores were indeed higher than their control, the SAT scores were blocked in ranges of 130 with the mean SAT score plotted against the mean GPA. The graphs in Figures 9 and 10 show that the higher GPAs depicted in the regression lines (Figures 1 and 2) for athletes were not an artifact of the quadratic term in the regression equation.

Retention Results

The retention of students is reported in Tables 8 and 9 based on the number of students who returned for their sophomore year of study. Generally, the results were inconsistent across the two years with the number of nonpersisters too small to make effective use of most statistical procedures to test for differences in retention rates. However, McNemar's test for change can be used to test for the equality of proportions between groups when the dependent variable is dichotomous (Ekbohm, 1982) and thus was used.

From Table 8, the 1993-94 sample shows athletes having a slightly lower return rate of 91.0% when compared to their

Table 8 - 1993-94 Retention by race and group

| Group/Control | N | Black | Am Indian | Asian | Hispanic | White | Total Percent |
|-----------------------|------|-------|-----------|-------|----------|-------|---------------|
| Athletes | 179 | | | | | | |
| Persisters | 163 | 26 | 0 | 3 | 1 | 133 | 91.0% |
| non-persisters | 16 | 5 | 0 | 0 | 1 | 10 | 9.0% |
| Control | 179 | | | | | | |
| persisters | 164 | 11 | 0 | 5 | 2 | 146 | 91.6% |
| non-persisters | 15 | 3 | 0 | 1 | 0 | 11 | 8.4% |
| Cadets | 112 | | | | | | |
| Persisters | 112 | 10 | 0 | 9 | 2 | 91 | 100.0% |
| non-persisters | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% |
| Control | 112 | | | | | | |
| Persisters | 107 | 3 | 0 | 5 | 1 | 98 | 95.5% |
| non-persisters | 5 | 1 | 0 | 0 | 0 | 4 | 4.5% |
| Fraternities | 191 | | | | | | |
| Persisters | 190 | 0 | 1 | 1 | 1 | 187 | 99.5% |
| non-persisters | 1 | 0 | 0 | 0 | 0 | 1 | 0.5% |
| Control | 191 | | | | | | |
| Persisters | 177 | 6 | 0 | 5 | 2 | 164 | 92.7% |
| non-persisters | 14 | 0 | 0 | 0 | 0 | 14 | 7.3% |
| All Targets | 482 | | | | | | |
| Persisters | 465 | 36 | 1 | 13 | 4 | 411 | 96.5% |
| non-persisters | 17 | 5 | 0 | 0 | 1 | 11 | 3.5% |
| All Controls | 482 | | | | | | |
| Persisters | 448 | 20 | 0 | 15 | 5 | 408 | 93.0% |
| non-persisters | 34 | 4 | 0 | 1 | 0 | 29 | 7.0% |
| Total Freshman | 4881 | | | | | | |
| Persisters | 4415 | 193 | 8 | 241 | 70 | 3903 | 90.5% |
| non-persisters | 466 | 36 | 0 | 35 | 8 | 387 | 9.5% |

Table 9 - 1994-95 Retention by race and group

| Group/Control | N | Black | Am Indian | Asian | Hispanic | White | Total Percent |
|-----------------------|-------------|-------|-----------|-------|----------|-------|---------------|
| Athletes | 140 | | | | | | |
| persisters | 128 | 26 | 0 | 5 | 5 | 92 | 91.4% |
| non-persisters | 12 | 2 | 0 | 1 | 0 | 9 | 8.6% |
| Control | 140 | | | | | | |
| persisters | 133 | 11 | 1 | 5 | 1 | 115 | 95.0% |
| non-persisters | 7 | 0 | 0 | 1 | 0 | 6 | 5.0% |
| Cadets | 107 | | | | | | |
| persisters | 92 | 4 | 0 | 2 | 3 | 83 | 86.0% |
| non-persisters | 15 | 1 | 0 | 1 | 0 | 13 | 14.0% |
| Control | 107 | | | | | | |
| persisters | 99 | 3 | 0 | 6 | 0 | 90 | 92.5% |
| non-persisters | 8 | 0 | 0 | 0 | 0 | 8 | 7.5% |
| Fraternities | 125 | | | | | | |
| persisters | 112 | 1 | 0 | 4 | 0 | 107 | 89.6% |
| non-persisters | 13 | 0 | 0 | 0 | 0 | 13 | 10.4% |
| Control | 125 | | | | | | |
| Persisters | 112 | 1 | 0 | 1 | 0 | 110 | 89.6% |
| non-persisters | 13 | 0 | 0 | 0 | 0 | 13 | 10.4% |
| All Targets | 372 | | | | | | |
| persisters | 332 | 31 | 0 | 11 | 8 | 282 | 89.2% |
| non-persisters | 40 | 3 | 0 | 2 | 0 | 35 | 10.8% |
| All Controls | 372 | | | | | | |
| Persisters | 344 | 15 | 1 | 12 | 1 | 315 | 92.5% |
| non-persisters | 28 | 0 | 0 | 1 | 0 | 27 | 7.5% |
| Total Freshman | 4422 | | | | | | |
| persisters | 3890 | 159 | 15 | 212 | 60 | 3444 | 88.0% |
| non-persisters | 532 | 25 | 3 | 29 | 7 | 468 | 12.0% |

control group return rate of 91.6%. For the same year, cadets had a perfect 100% return rate with its control group posting a lower return rate of 95.5%. The fraternities had a higher return rate of 99.5% when compared to their control group return rate of 92.7%. The change in retention status for match-mates (returning versus not returning for the sophomore year) was tested using McNemar's "Test of Significance Change." The test statistic for the McNemar test yielded values of .04, 5.0, and 11.26 for athletes, cadets, and fraternities, respectively, for the 1993-94 sample. The critical region ($\alpha=.05$) corresponds to all values greater than 3.841 from the Chi-Square distribution for one degree of freedom. There was a significant change in the retention status of match-mates in the corps of cadets and fraternities for the 1993-94 sample. More fraternity members and cadets returned for their sophomore year when retention was examined for each match-mate in the 1993-94 sample.

The results of the 1994-95 analysis (Table 9) showed little consistency in the retention rates between target groups and their control groups when compared to the 1993-94 sample. The difference in return rates of 91.4% for athletes and 95.0% for their control was much greater than the previous year. In contrast to the previous year, the cadets had a lower return rate of 86.0% when compared to its control group return rate of 92.5%. The fraternities had a return rate of 89.6% that was equal to its control group return rate of

89.6%. The test statistic for the McNemar test yielded values of 1.32, 2.33, and 0.0 for athletes, cadets, and fraternities, respectively, for the 1994-95 sample. None of the three tests yielded a test statistic greater than the critical value of 3.841. Therefore, no significant change was found in the retention status of match-mates for the 1994-95 sample.

The breakdown of persisters and nonpersisters by individual target and control groups resulted in too few nonpersisters to test for differences in SATs and GPAs. The SAT and GPA means and standard deviations for persisters and nonpersisters are reported in Table 10 and Table 11 for the different groups. In all cases, persisters and nonpersisters of control groups had higher GPAs than their respective target groups; although the differences were larger for nonpersisters. Inconsistencies can be seen in SATs for targets and controls favoring persisters and nonpersisters differently between years. Within target groups, the GPAs of persisters were higher than nonpersisters; however, no consistency was seen in SAT scores. SAT scores among all freshman show very small differences between persisters and nonpersisters; whereas the differences in GPAs are very pronounced.

**Table 10 - 1993-94 Means and Standard Deviations of SATs
and GPAs for Persisters and non-Persisters**

| Group | N | Persisters | | Non Persisters | | |
|---------------------|------|------------------|-----------------|----------------|------------------|-----------------|
| | | SAT Composite | Freshman GPA | N | SAT Composite | Freshman GPA |
| Athletes | 163 | | | 16 | | |
| Mean | | 1022 | 2.54 | | 989 | 2.17 |
| SD | | 160 | 0.59 | | 114 | 0.96 |
| Control | 164 | | | 15 | | |
| Mean | | 1023 | 2.67 | | 980 | 2.49 |
| SD | | 155 | 0.59 | | 170 | 0.74 |
| Cadets | 112 | | | 0 | | |
| Mean | | 1124 | 2.54 | | | |
| SD | | 139 | 0.56 | | | |
| Control | 107 | | | 5 | | |
| Mean | | 1130 | 2.67 | | 982 | 2.71 |
| SD | | 137 | 0.58 | | 113 | 0.71 |
| Fraternities | 190 | | | 1 | | |
| Mean | | 1077 | 2.48 | | 970 | 1.48 |
| SD | | 150 | 0.47 | | | |
| Control | 177 | | | 14 | | |
| Mean | | 1073 | 2.69 | | 1112 | 2.50 |
| SD | | 153 | 0.56 | | 110 | 0.68 |
| All Targets | 465 | | | 17 | | |
| Mean | | 1069 | 2.52 | | 988 | 2.12 |
| SD | | 156 | 0.53 | | 110 | 0.94 |
| All Controls | 448 | | | 34 | | |
| Mean | | 1068 | 2.68 | | 1035 | 2.53 |
| SD | | 155 | 0.57 | | 151 | 0.69 |
| All Freshman | 4415 | | | 466 | | |
| Mean | | 1068 | 2.63 | | 1063 | 2.00 |
| SD | | 149 | 0.64 | | 157 | 0.95 |

**Table 11 - 1994-95 Means and Standard Deviations of SATs
and GPAs for Persisters and non-Persisters**

| Group | N | Persisters | | Non Persisters | | |
|---------------------|------|------------------|-----------------|----------------|------------------|-----------------|
| | | SAT Composite | Freshman GPA | N | SAT Composite | Freshman GPA |
| Athletes | 128 | | | 12 | | |
| Mean | | 982 | 2.45 | | 983 | 1.64 |
| SD | | 165 | 0.74 | | 130 | 0.72 |
| Control | 133 | | | 7 | | |
| Mean | | 973 | 2.66 | | 1135 | 2.66 |
| SD | | 160 | 0.53 | | 139 | 0.87 |
| Cadets | 92 | | | 15 | | |
| Mean | | 1130 | 2.62 | | 1089 | 2.10 |
| SD | | 112 | 0.58 | | 94 | 0.54 |
| Control | 99 | | | 8 | | |
| Mean | | 1120 | 2.66 | | 1177 | 2.50 |
| SD | | 107 | 0.57 | | 142 | 0.65 |
| Fraternities | 112 | | | 13 | | |
| Mean | | 1058 | 2.12 | | 1130 | 1.87 |
| SD | | 116 | 0.61 | | 98 | 0.91 |
| Control | 112 | | | 13 | | |
| Mean | | 1062 | 2.56 | | 1090 | 2.22 |
| SD | | 118 | 0.56 | | 100 | 0.92 |
| All Targets | 332 | | | 40 | | |
| Mean | | 1048 | 2.39 | | 1070 | 1.89 |
| SD | | 148 | 0.68 | | 120 | 0.74 |
| All Controls | 344 | | | 28 | | |
| Mean | | 1045 | 2.63 | | 1126 | 2.42 |
| SD | | 146 | 0.55 | | 124 | 0.83 |
| All Freshman | 3890 | | | 532 | | |
| Mean | | 1063 | 2.59 | | 1067 | 2.07 |
| SD | | 147 | 0.70 | | 150 | 0.96 |

Discussion

This study investigated the impact of participation in three different extracurricular organizations on freshman GPA while controlling for extraneous variables known to have an effect on GPA. Athletics, corps of cadets, and social fraternities comprised the three target groups that were the primary focus of the study. The challenge was to identify comparison groups for each of these target groups that would permit a valid comparison of GPA; while at the same time controlling for extraneous variables. This was accomplished by searching the data base for a match-mate for each participant in each of the three target groups. Matching was done on the SAT composite score, college, race, sex, and major of each student. By limiting the study to a single institution, it was possible to obtain comparison groups that were similar to the different target groups. Of course, this also limits the generalizability of the findings to an extent.

This study showed a significant difference in GPA between target and control groups for athletes and fraternities when SAT composite, college, race, sex, and major were controlled. The significant difference in mean GPAs between target and control groups provided evidence, that on average, students were adversely affected by participation in athletics and fraternities; however, the

effect was not significant for the corps of cadets. The use of carefully matched control groups provided a basis to conclude that participation in athletics and fraternities can affect a student's academic performance when compared to non-participants. However, secondary analyses indicated that the effect of participation appears to depend on the academic ability level of the student as measured by the SAT. The effect of participation in these organizations on retention was not sufficiently consistent to support any conclusions.

Primary Findings and Discussion

The primary findings show the mean GPA for athletes, cadets, and fraternities to be lower than the mean GPA of their matched control group for both years under study. For athletes and fraternities, the observed mean GPAs differed significantly from the mean GPA of their control groups for both the 1993-94 and 1994-95 studies. The difference in mean GPAs between cadets and their control group was only significant for the 1993-94 sample. Based on these findings, it can be inferred that the significant difference in mean GPA between the target and their matched control group may be a result of participating in athletics and fraternities and not a result of the pre-college characteristics (SAT, college, major, sex, race) that were used for matching. However, it is inappropriate to conclude from the primary

findings that the GPAs of all participants are adversely affected.

Of the three target groups, the SAT scores for cadets and fraternities were higher than the SAT scores for the entire freshman class (see Table 4) for both years being studied. While the mean SAT scores of the cadets were substantially higher than the mean SAT score of the entire freshman class, the mean SAT score for fraternities was only slightly higher. The mean SAT score for athletes was markedly lower (approximately 1/3 to 1/2 standard deviation for both years) than the mean SAT score of the entire freshman class. However, it should be noted that the mean SAT scores for athletes in this study were higher than the national average for the same study years. ETS (1996) reports the national SAT averages as 902 for both 1993 and 1994. By contrast, the mean SAT scores for the athletes in the study were 1019 and 982 for 1993-94 and 1994-95 respectively.

These three extracurricular organizations were chosen because of the amount of time required to participate in each of them. Extracurricular organizations that require a large amount of students' time or that result in students being away from campus may affect the quantity and quality of academic involvement. One plausible explanation for the lower mean GPAs among fraternities and athletics may be the reduced amount of time available for academic involvement. Alternatively, it may be that for these students

participating in their respective organizations becomes the dominant aspect of college life and academics assume a secondary role.

Students participating in athletics must devote several hours on a daily basis, including weekends, to the organization. Interviews with coaches and advisors in the athletic department suggest a typical day will include medical treatment early in the morning, followed by classes ending by noon and with afternoons available for practice. Several hours of practice followed by the evening meal leaves little time for studying. Athletes may be too tired to study which compounds the issue of academic involvement. Freshman athletes are required to attend 10 hours of study hall per week where English and computer skills tutoring is available. Tutors in other academic disciplines are only provided when needed. The student-athletes participating in this structured environment must manage their free time wisely to have the best chance for academic success.

Information from the commandant's office describes the freshman year for cadets as being a highly regimented lifestyle that requires a level of commitment unlike other organizations. Freshman cadets have to contend with interaction with higher ranked cadets along with the daily responsibilities required of all cadets. The corps of cadets requires freshman to enroll in a study skills course to enhance each cadet's time-management skills and abilities.

Tutoring is provided in math, chemistry, and physics with cadets helping cadets in other areas of academics. Mandatory quiet hours in the evening are an everyday occurrence, and cadets that fall below a 2.0 at the end of every term receive counseling. The members of the corps of cadets participate in a system that encourages academic involvement and better management of free time.

The significant difference in mean GPA between fraternities and their control group is not easily explained. The fraternity system is less structured with fewer responsibilities scheduled on a daily basis than the other two organizations. Unlike athletics and the corps of cadets, time management alone is not a realistic explanation for an academic performance below that of their control group, especially with mean SAT scores just below 1100 for both years. According to the office of Greek affairs, all participants in the fraternity system must maintain a university required GPA of 2.0 with some fraternities setting their own higher GPA requirement. No academic support or other resources are provided by the university except for monitoring the GPA of participants. Any tutoring would have to be provided and paid for by the fraternity. It is apparent there are fewer resources expended on the academic involvement of fraternities as compared to athletics and cadets, but this hardly explains why the participants in fraternities have GPAs lower than the control group. The

resources of each organization will determine the quality and quantity of counseling and academic tutoring that is available to participants.

Secondary Findings and Discussion

The relationship between SAT scores and GPAs for the target groups and their control group is plotted with separate regression lines in Figures 1-6 (Appendix A). There was a lack of similarity in regression lines between athletes and their control group. The regression of GPA on SAT score for athletes resulted in a curvilinear relationship which is depicted in Figures 1 and 2 for 1993-94 and 1994-95, respectively. The differences in GPA between athletes and their control group decrease at the lower and higher ranges of SAT scores for 1993-94 and 1994-95.

Academic support is often provided to the athletes with weaker academic ability. One explanation for the similarity in GPAs between athletes and their control group at the low range of SAT scores is that those athletes are labeled "at risk" and are carefully monitored by advisors and provided tutorial help when needed. "At risk" athletes are required to attend special study sessions as a way of making sure academic assignments are completed. Study sessions are not specific to this institution, but are common at most institutions with athletic programs. Another explanation for similar GPAs in the range of low SAT scores may be a function

of remedial instruction or a sub-population of athletes specific to a particular sport. The average student-athlete may realize that maintaining athletic eligibility requires only a minimal devotion to academics and this effect can be seen in the graphs for SAT scores that are in the mid to lower portion of the curve.

Figures 1 and 2 show the trend for athletes to outperform their match-mates in the region of high SAT scores. To further investigate this rise in GPA for athletes, the athletes were blocked by SAT scores into several different groups. This blocking was done to determine if the higher GPAs, as depicted in the graphs, were a result of the squared (quadratic) term in the regression analysis. Figures 9 and 10 plot the mean SAT scores for the different blocks against the mean GPA showing athletes with a higher GPA in the upper most block. The tutoring and academic support provided by the athletic department may give the athletes with high SAT scores an advantage over their match-mates in the classroom since all athletes have access to tutors. These findings for athletes were consistent for the 1993-94 and 1994-95 samples.

With regard to cadets and their control group, no significant interaction was found when GPA was regressed on SAT. Graphs of the separate regression lines were included in Figures 3 and 4. Differences that are more pronounced can be seen in GPAs between cadets and their control group as the SAT score decreases. As the SAT score rises, the difference

in GPA between the two groups diminishes. These findings for cadets and their control group were consistent for the 1993-94 and 1994-95 years. The academic support provided by the corps of cadets may be partly responsible for the similarity in regression lines for cadets and their control group.

The regression of GPA on SATs for fraternities and their control group produced a curvilinear relationship in the control group. Figure 5 and Figure 6 show the control group to have higher GPAs at the lower and higher range of SAT scores. Students with low SAT scores are often admitted to college because of their ability to do well in class even when they do not score high on the SAT. Also, students with low SAT scores may be enrolled in easier courses. These findings were consistent for the 1993-94 and 1994-95 groups. One explanation for the curvilinear relationship between GPA and high SAT scores for the control group may be the result of a few high GPAs among a relatively small number of observations in that range of SAT scores. Unknown to this researcher was a student's satisfaction with their major which may also influence the GPA of students. The near horizontal plot of the regression line for fraternities supports the results of previous research studies in that fraternities tend to show conformity within their group in terms of academic performance as measured by GPA.

Retention Findings and Discussion

These findings support the conclusion that there appear to be factors affecting persistence other than participation in athletics, corps of cadets, and fraternities. Participation in these extracurricular organizations did not provide enough information to adequately explain differences in retention rates between participants and non-participants, and the findings were not consistent between years. Previous research described in the review of literature has supported the conclusion that other factors are better predictors of persistence than participation in extracurricular organizations.

McNemar's test of significant change found significant differences in the retention rates of match-mates for fraternities and corps of cadets in only the 1993-94 sample. There were no significant changes in retention rates for any of the three organizations for 1994-95. The inconsistencies in these retention rates between years support the need for more research.

Differences in GPA between control and target groups for nonpersisters are evident, but these differences are based on relatively few students. This fairly large difference in mean GPAs between these groups are important in terms of continued enrollment. It was not known how many nonpersisters dropped completely out of college or how many transferred to other schools. Not enrolling for the sophomore year does not always mean that the student ceased

enrollment. Therefore, the dependent variable measuring retention may be a temporary state of enrollment. The possibility always exists for the student to re-enroll at the same college or at a different college. Transferring to other schools would be more likely for the nonpersisters of the control groups due to higher GPAs. Although the retention rates are not consistent, it is reasonable to assume that students with lower GPAs would have more difficulty in continuing their enrollment.

Summary of Findings

The findings support the conclusion that depending on the SAT score of the student, participation in athletics and fraternities can have an adverse effect on the student's academic performance. The findings from participation in the corps of cadets were inconclusive because of conflicting results between years. The findings suggest that differences in mean GPAs between targets and controls for athletes and fraternities are not likely a result of the pre-college characteristics measured in this study. There was no consistent evidence to conclude that participation in these organizations had any effect on persistence.

The design of this research study helped detect differences for athletes and fraternities that were not always found in previous research studies. Being able to statistically control for "common cause" variables allowed

causal inferences to be made with a high level of confidence. In this research study, the effect on GPA of participating in athletics and fraternities was seen at the end of freshman year, but it is quite possible that the impact of participation in these organizations on the GPA of freshman was more pronounced after one semester.

Large universities make it difficult for students to have common experiences unless the students participate in the same organizations. By studying a single institution, the data collected represented different subenvironments (athletics, fraternities, and corps of cadets), which have potentially different effects on student performance. The results of this single institutional study have an advantage over multi-institutional studies because the results are more specific for the groups of students at one institution. Understanding the effect of participation in extracurricular organizations will become important as academic requirements increase and as more students participate in these organizations.

Implications For Future Research

This study suggests negative outcomes on average in academic performance from participation in athletics and fraternities during the freshman year, but what about long term effects? Would long-term involvement in organizations enhance academic performance and persistence? The causal

inferences made in this study can not be generalized to long-term participation in the same organizations. By studying participants over a more extended time period, academic performance and persistence could be compared to non-participants in order to determine any long term effects. The long-term effects are unknown; however, the short-term effects support the allocation of resources in academic support to the freshman year.

The academic performance and retention of students can presumably be affected by many variables. A broader range of variables would be desirable so as to equalize the comparison groups in order to raise the level of confidence in the inferences. Additional variables such as personality traits, parents' education, students' expectations, and formal and informal activities should be considered important characteristics for further research. Any efforts to study the behavior of students should include information directly obtained from students. It may also be advisable to use the SAT math and verbal scores separately to better equate groups. Research will always be limited by the selection of variables.

The academic performance and retention of students may be different for every subgroup of students. The breakdown of the different organizations into subgroups (same sport, same fraternity, same branch of service) by gender and race would be the next logical step for further analysis. Tracing

the effects of participation in organizations across gender and race is an important direction for future research.

Also, if participant selection is defining the subgroups of students, then future studies should control for this bias by identifying the factors that attract students to specific organizations.

The evidence so far supports the view that the academic performance and retention of students is a complex process, and there is no reason to expect a simple solution. It must be remembered that this study of college freshman dealt with only academic performance and retention; however, there are other aspects of student development such as leadership and personal growth that are just as important. Gains in leadership skills and personal development may come as a result of participation in organizations.

Participating in extracurricular organizations can have significant consequences for students. Campus organizations can help develop non-cognitive abilities of students in addition to the cognitive abilities enhanced in the classroom. Hanks and Eckland (1976) suggest two important reasons for participating in extracurricular organizations: 1) organizations expose students to other achievement-oriented peers; and 2) organizations help students to acquire interpersonal skills and self-confidence. Organizations such as fraternities, corps of cadets, and athletics give students the experience to become leaders in the military and

business, and play professional sports. Are these abilities and characteristics a function of the organization or acquired by some other means? It is often said that the most important skills acquired in college are not learned in the classroom. These skills may have been acquired or enhanced by participation in extracurricular organizations.

The Pace (1979) model for college development suggests that an important measure of student development may be the quality of effort made by students. Effort by students is without question an important aspect of any academic outcome study. Further studies using path analysis could help establish a theoretical framework that may provide better support for the interpretation of these findings and causal inferences in terms of the direct and indirect effects of other variables on academic performance and persistence. The results of this study have practical value in understanding academic performance and retention at other institutions. Future research is needed to determine whether participation in organizations at other institutions has similar effects on academic performance and retention.

Limitations

This study investigated intact groups of students and attempted to approximate the benefits of a true experiment by matching participants with a control group. This method of controlling the "common cause" variables attempts to

accomplish by design what random assignment would have accomplished in a true experiment. The concern with controlling for differences addresses the question, have meaningful common cause variables affecting academic ability been controlled? Although one will have greater confidence in drawing a causal inference from a true experiment than from quasi or non-experiments, researchers do make causal inferences from research studies that are not experiments. By controlling the "common cause" variables, the researcher increases the likelihood of the causal inference being valid.

The principle limitation was that students were not randomly assigned to the target groups. Students decided which extracurricular organization to join and some organizations often determined which students were offered the opportunity to participate. In addition, there was no information on other organizations in which the students may have been involved. Without some statistical control, the different characteristics of the groups would result in different outcomes when there was no effect from participation in the organization. The causal inferences that have been made from this study were reasonably derived from the results, meaning the differences in GPA were attributable to participation in extracurricular organizations. Nevertheless, other uncontrolled variables may have influenced the academic performance and persistence of

students. Also, the interaction of selection and maturity is a potential threat to the internal validity of the study.

To the extent that the findings of the study can be used to infer causality, participation in athletics and fraternities appear to have an adverse effect on GPA. However, there is no reason to assume that the results of this study are unique to the institution where the study was conducted. Any long-term effects drawn from the results of this study must be done with caution because the effect of participation was based on data from the freshman year. Studies on participation over a longer time would better address the issue of causality.

Conclusion

This research study was done to determine how specific campus organizations affect the academic performance and retention of students. The findings will help administrators and faculty representatives of campus organizations better understand the impact of participation in organizations on students and help formulate better support programs for improving academic performance. Knowing which students are at risk can be helpful to colleges and universities planning intervention programs. A report by the National Institute of Education (1984) recommended a reallocation of resources to the freshman year, known as front-loading, for more instruction. A proactive approach to improving academic

performance and persistence may help some students stay enrolled and graduate.

It was apparent from the review of literature that only a few research studies investigated the changes in students from entry into college to exit from college. How students develop and persist while in college is important. The quality of an undergraduate education cannot be improved without a proper balance of student involvement in academic achievement and participation in campus organizations. A recommendation from the results of this study is for colleges and universities to better understand the relationship between organizations and academic performance, and to focus on students with lesser academic ability. Multiple and varied programs may be needed to improve the academic performance and retention of students.

Research has indicated that interaction with faculty is related to satisfaction with college which in turn improves academic performance and persistence. Astin (1991) suggests that there are many outcomes that might be considered relevant to the goals of an undergraduate education, with meaningful contact between the institution and students, important for development. An implication of this research study is that administrators and faculty must recognize that the way students use their time affects their academic performance. The college campus is an environment for increasing the involvement of students in many organizations.

The responsibility for implementing higher levels of academic involvement is often under the control of the organization, and these organizations need to modify the behavior and practices of their members. Another implication of this research study is the need to strengthen the academic involvement of these extracurricular organizations. Participation in extracurricular organizations affects the learning and ultimately the careers of some student participants.

References

- Abrahamowicz, D. (1988). College involvement, perceptions, and satisfaction: A study of membership in student organizations. Journal of College Student Development, 29, 233-238.
- Althausen, R. P., & Rubin, D. (1970). The computerized construction of a matched sample. American Journal of Sociology, 76, 325-346.
- Astin, A. W. (1975). Preventing Students from Dropping Out. San Francisco: Jossey-Bass.
- Astin, A. W. (1977). Four Critical Years. San Francisco: Jossey-Bass.
- Astin, A. W. (1985). Achieving Educational Excellence. San Francisco: Jossey-Bass.
- Astin, A. W. (1991). Assessment for Excellence. New York: Macmillan Publishing Company.
- Avakian, N. A., Mackinney, A. C., & Allen, G. R. (1984). Correlates of student retention: An eight year study. Paper presented at the Annual Forum of the Association for Institutional Research. Fortworth, Texas. (Eric Document No. ED 246 764)
- Ballantine, R. J. (1981). What research says: About the correlation between athletic participation and academic achievement. (Eric Document No. ED 233 994).
- Beil, C., & Shope, J. H. (1990). No Exit: Predicting Student Persistence. Paper presented at the Annual Forum of the Association for Institutional Research, May, Louisville, KY.
- Blai, B., Jr. (1971). Roommate-Impact Upon Academic Performance. A Report by the U.S. Department of Health, Education, and Welfare. Washington, D.C.: Office of Education.

- Bryant, C. W., & Clifton, J. (1990). A comparison of Student-Athletes' Grades In-Season vs. Out-Of-Season at Trenton State University. A conference paper presented at Trenton State University, May, Trenton, NJ.
- Carroll, J. (1988). Freshman retention and attrition factors at a predominantly black urban community college. Journal of College Student Development, 29, 52-59.
- Cook, N. J., & Mottley, R. R. (1985). Predictors for Academic Achievement for College Freshmen Football Players: An Analysis of Findings. A research report conducted by the NCAA, Shawnee, KS.
- Cope, R., & Hannah, W. (1975). Revolving college doors: The causes and consequences of dropping out, stopping out, transferring. New York: Wiley, 1975.
- Dukes, F., & Gaither, G. (1984). A campus cluster program: Effects on persistence and academic performance. College and University, 59, 150-166.
- Educational Testing Service. (1996). Annual College Board Press Release. Princeton, NJ: ETS.
- Ekbohm, G. (1982). On testing the equality of proportions in the paired case with incomplete data. Psychometrika , 47, 115-118.
- Feldman, K., & Newcomb, T. (1969). The impact of college on students. San Francisco: Jossey-Bass.
- Hanks, M., & Eckland, B. (1976). Athletics and Social Participation in the Educational Attainment Process. Sociology of Education, 49, 271-294.
- Jakobsen, L. (1986). Greek affiliation and attitude change: Developmental implications. Journal of College Student Personnel, 27, 523-527.
- Lang, G., Dunham, R. G., & Alpert, G. P. (1988). Factors related to the academic success and failure of college football players: The case of the mental dropout. Youth

and Society, 20, 209-222.

Langer, P., Wilton, J., & Presley, J. B. (1987). A longitudinal study of student retention at an urban commute university. Boston, MA: University of Massachusetts, Boston. (Eric Document No. ED 294 496)

Lenning, O. T., Beal, P. E., & Sauer, K. (1980). Student Retention Strategies. Washington, D.C.: American Association for Higher Education.

Maisel, J. M. (1990). Social Fraternities and Sororities Are Not Conducive to the Education Process. NASPA Journal, 28, 8-12.

Mallingckrodt, B. (1988). Student retention, social support, and dropout intention: Comparison of black and white students. Journal of College Student Development, 29, 60-64.

Marcotte, J. (1986). Comparison of Academic Success between CTC Basketball Players and Nonplayers. A Report by the Office of Developmental Education at Cincinnati Technical College, Cincinnati, OH.

Marlowe, A. F., & Auvenshine, C. D. (1982). Greek membership: Its impact on the moral development of college freshmen. Journal of College Student Personnel, 23, 53-57.

McNemar, Q. (1940). Sampling in Psychological Research. Psychological Bulletin, 37, 331-65.

Moos, R. H. (1979). Evaluating Educational Environments. San Francisco: Jossey-Bass.

Moos, R. H., Deyoung, A. J., & VanDort, B. B. (1976). Differential impact of university living groups. Research in Higher Education, 5, 67-82.

Nelson, R., Scott, T., & Bryan, W. (1984). Precollege characteristics and early college experiences as predictors of freshman year persistence. Journal of College Student Personnel, 25, 50-54.

- Pace, C. (1979). Measuring outcomes of college: Fifty years of findings and recommendations for the future. San Francisco: Jossey-Bass.
- Pantages, T. J., & Creedon, C. F. (1978). Studies of college attrition: 1950-1975. Review of Educational Research, 48, 49-101 & 540-552.
- Pascarella, E. T. (1985). College Environmental Influences on Learning and Cognitive Development: A critical review and synthesis. In J. Smart (ed.), Higher Education: Handbook of theory and research (Vol. 1). New York: Agathon.
- Pascarella, E. T. (1989). The development of critical thinking: Does college make a difference? Journal of College Student Development, 30, 19-26.
- Pascarella, E. T., & Chapman D. (1983a). A multi-institutional, path analytic validation of Tinto's model of college withdrawal. American Educational Research Journal, 20, 87-102.
- Pascarella, E. T., & Chapman D. (1983b). Validation of a theoretical model of college withdrawal: Interaction effects in a multi-institutional sample. Research in Higher Education, 19, 25-48.
- Pascarella, E. T., Duby, P., Miller, V., & Rasher, S. (1981). Preenrollment variables and academic performance as predictors of freshman year persistence, early withdrawal, and stopout behavior in an urban, nonresidential university. Research in Higher Education, 15, 329-349.
- Pascarella, E. T., Smart, J., Ethington, C., & Nettles, M. (1987). The influence of college on self-concept: A consideration of race and gender differences. American Educational Research Journal, 24, 49-77.
- Pascarella, E. T., Smart, J., & Stoecker, J. (1989). College race and the early status attainment of black students.

Journal of Higher Education, 60, 82-107.

- Pascarella, E. T., & Terenzini, P. T. (1976). Informal interaction with faculty and freshman ratings of academic and non-academic experience of college. Journal of Educational Research, 70, 35-41.
- Pascarella, E. T., & Terenzini, P. T. (1978). Student-faculty informal relationships and freshman year educational outcomes. Journal of Educational Research, 71, 183-189.
- Pascarella, E. T., & Terenzini, P. T. (1979a). Interaction effects in Spady's and Tinto's conceptual models of college dropout. Sociology of Education, 52, 197-210.
- Pascarella, E. T., & Terenzini, P. T. (1979b). Student-faculty informal contact and college persistence: A further investigation. Journal of Educational Research, 72, 214-218.
- Pascarella, E. T., & Terenzini, P. T. (1980). Predicting freshman persistence and voluntary dropout decisions from a theoretical model. Journal of Higher Education, 51, 60-75.
- Pascarella, E. T., & Terenzini, P. T. (1982). Contextual analysis as a method for assessing residence group effects. Journal of College Student Personnel, 23, 108-114.
- Pascarella, E. T., & Terenzini, P. T. (1991). How College Affects Students: Findings and Insights from Twenty Years of Research. San Francisco: Jossey-Bass.
- Pascarella, E. T., Terenzini, P. T., & Wolfle, L. (1986). Orientation to college and freshman year persistence/withdrawal decisions. Journal of Higher Educational, 57, 155-175.
- Pennington, D. C., Zvonkovic, A. M., & Wilson, S. L. (1989). Changes in college satisfaction across an academic term. Journal of College Student Development, 30, 528-535.

- Pike, G. R., & Askew, J. W. (1990). The Impact of Fraternity or Sorority Membership on Academic Involvement and Learning Outcomes. NASPA Journal, 28, 13-19.
- Porta, A. D. (1991). Independents, Actives, and Pledges: A Comparison of Academic Achievement. A technical report conducted by Murray State University, Murray, Kentucky.
- Schrager, R. H. (1986). The impact of living group social climate on student academic performance. Research in Higher Education, 25, 265-276.
- Strange, C. (1986). Greek affiliation and goals of the academy: A commentary. Journal of College Student Personnel, 27, 519-523.
- Study Group on the Conditions of Excellence in Higher Education. (1984). Involvement in Learning: Realizing the Potential of American Higher Education. Washington, D.C.: National Institute of Education.
- Terenzini, P. T., & Pascarella, E. T. (1978). The relation of students' precollege characteristics and freshman year experience to voluntary attrition. Research in Higher Education, 9, 347-366.
- Terenzini, P. T., & Pascarella, E. T. (1980). Student/faculty relationships and freshman year educational outcomes: A further investigation. Journal of College Student Personnel, 21, 271-282.
- Terenzini, P. T., & Pascarella, E. T. (1982). Freshman Attrition and the Residential Context. Paper presented at the Annual Meeting of the American Educational Research Association, March, New York, NY.
- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. Review of Educational Research, 45, 89-125.
- Tinto, V. (1987). Leaving College: Rethinking the Causes and Cures of Student Attrition. Chicago: University of Chicago Press.

- Weidman, J. (1984). Impacts of campus experiences and parental socialization on undergraduates' career choices. Research in Higher Education, 20, 445-476.
- Wilder, D. H., Hoyt, A. E., Doren, D. M., Hauck, W. E., & Zettle, R. D. (1978). The impact of fraternity or sorority membership on values and attitudes. Journal of College Student Personnel, 19, 445-449.
- Wilder, D. H., Hoyt, A. E., Surbeck, B. S., Wilder, J. C., & Carney, P. I. (1986). Greek affiliation and attitude change in college students. Journal of College Student Personnel, 27, 510-519.
- Winston, R. B., Hutson, G. S., & McCaffrey, S. C. (1980). Environmental influences on fraternity academic achievement. Journal of College Student Personnel, 21, 449-455.
- Wofle, Lee M. (1980). The enduring effects of education on verbal skills. Sociology of Education, 53, 104-114.

Appendix A

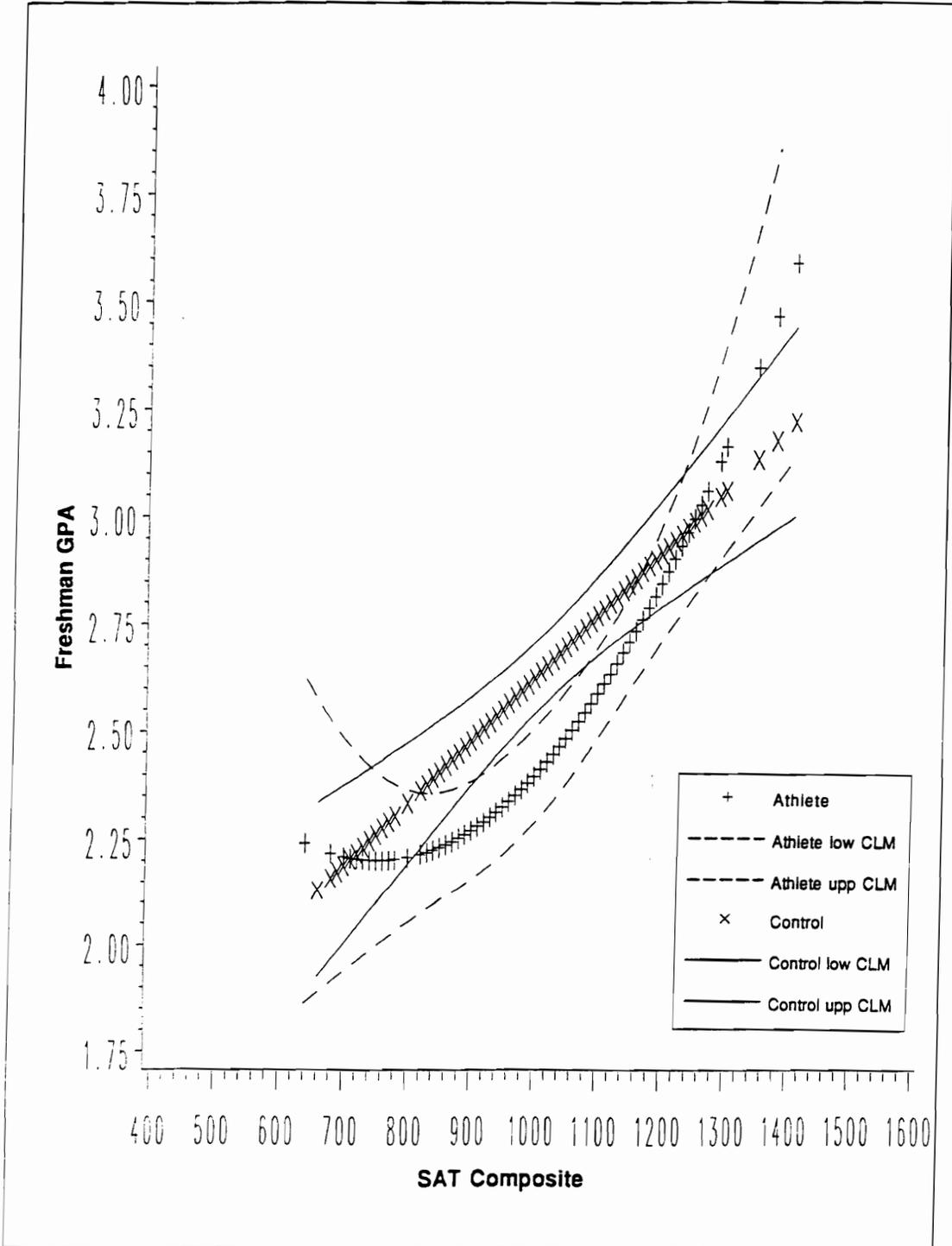


Figure 1 - Regression Lines of GPA on SAT for 1993-94 athletes and control

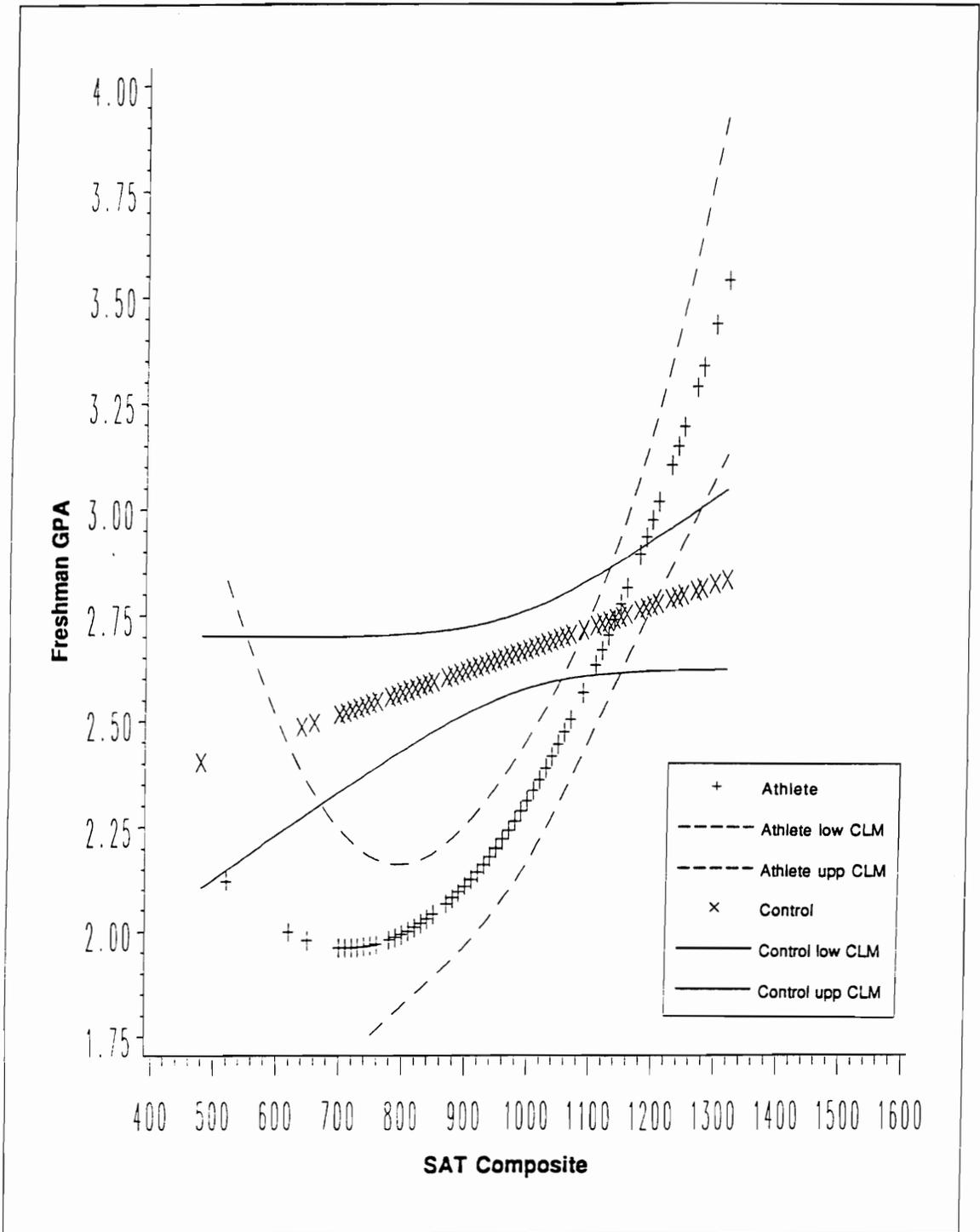


Figure 2 - Regression Lines of GPA on SAT for 1994-95 athletes and control

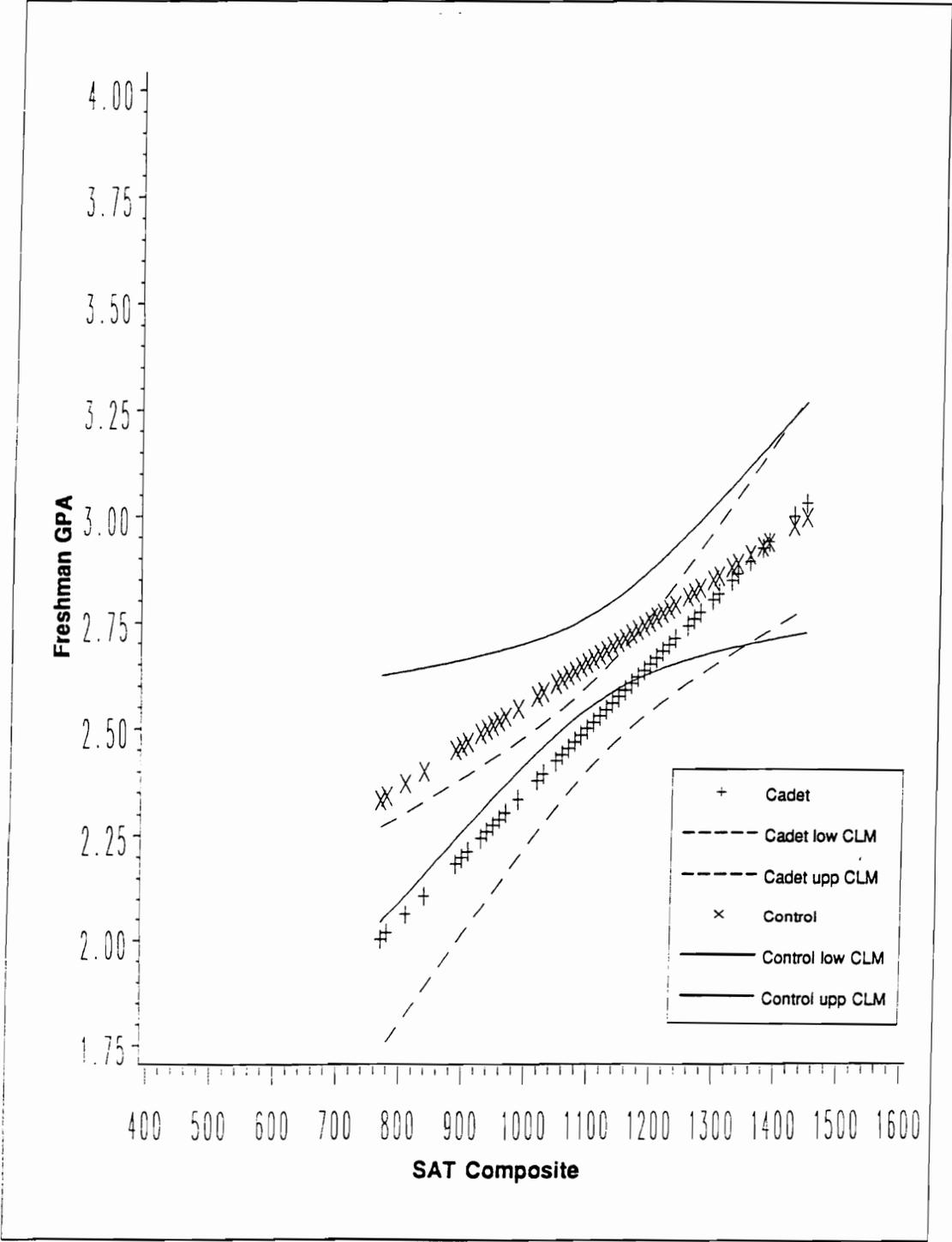


Figure 3 - Regression Lines of GPA on SAT for 1993-94 cadets and control

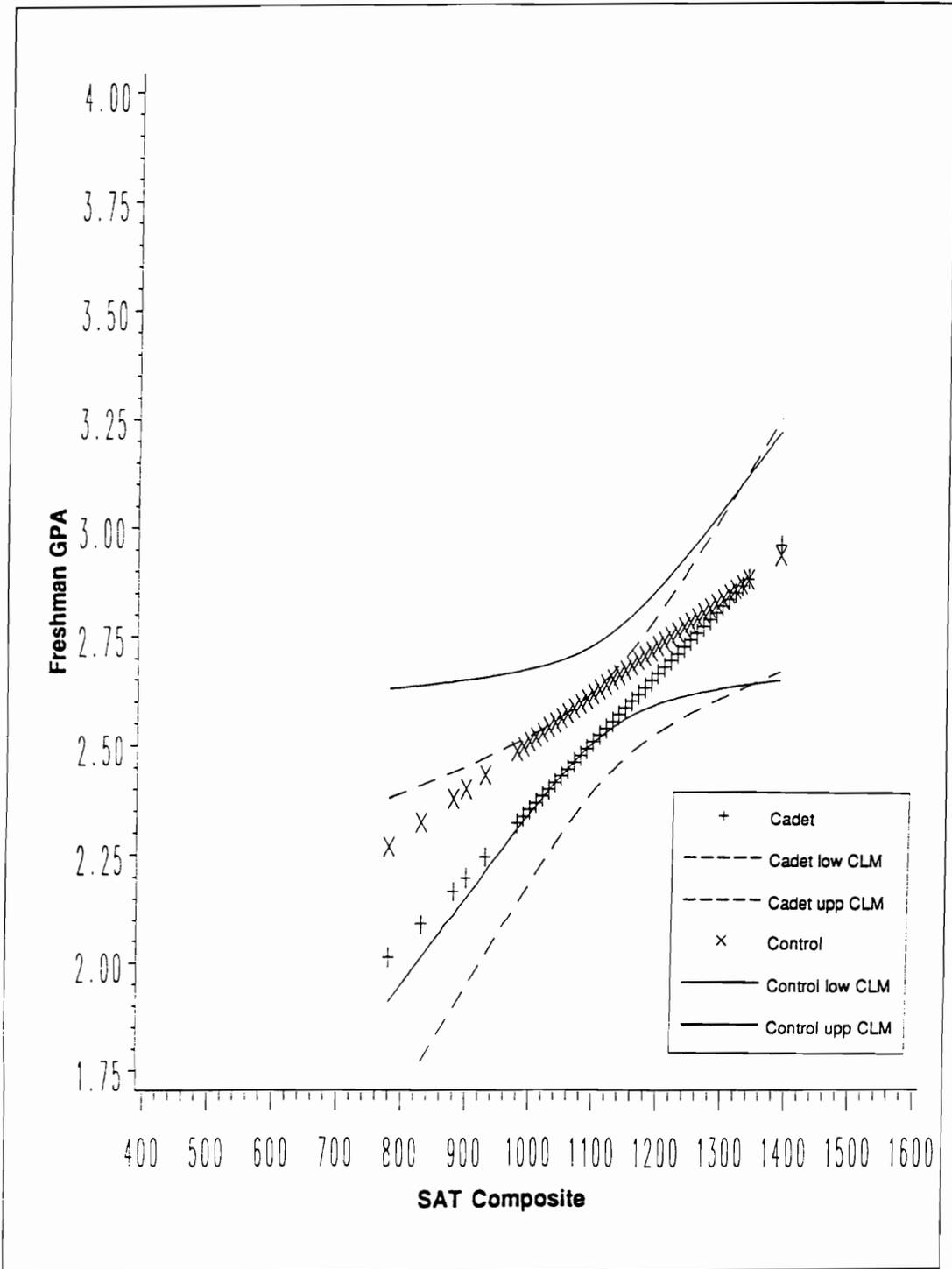


Figure 4 - Regression Lines of GPA on SAT for 1994-95 cadets and control

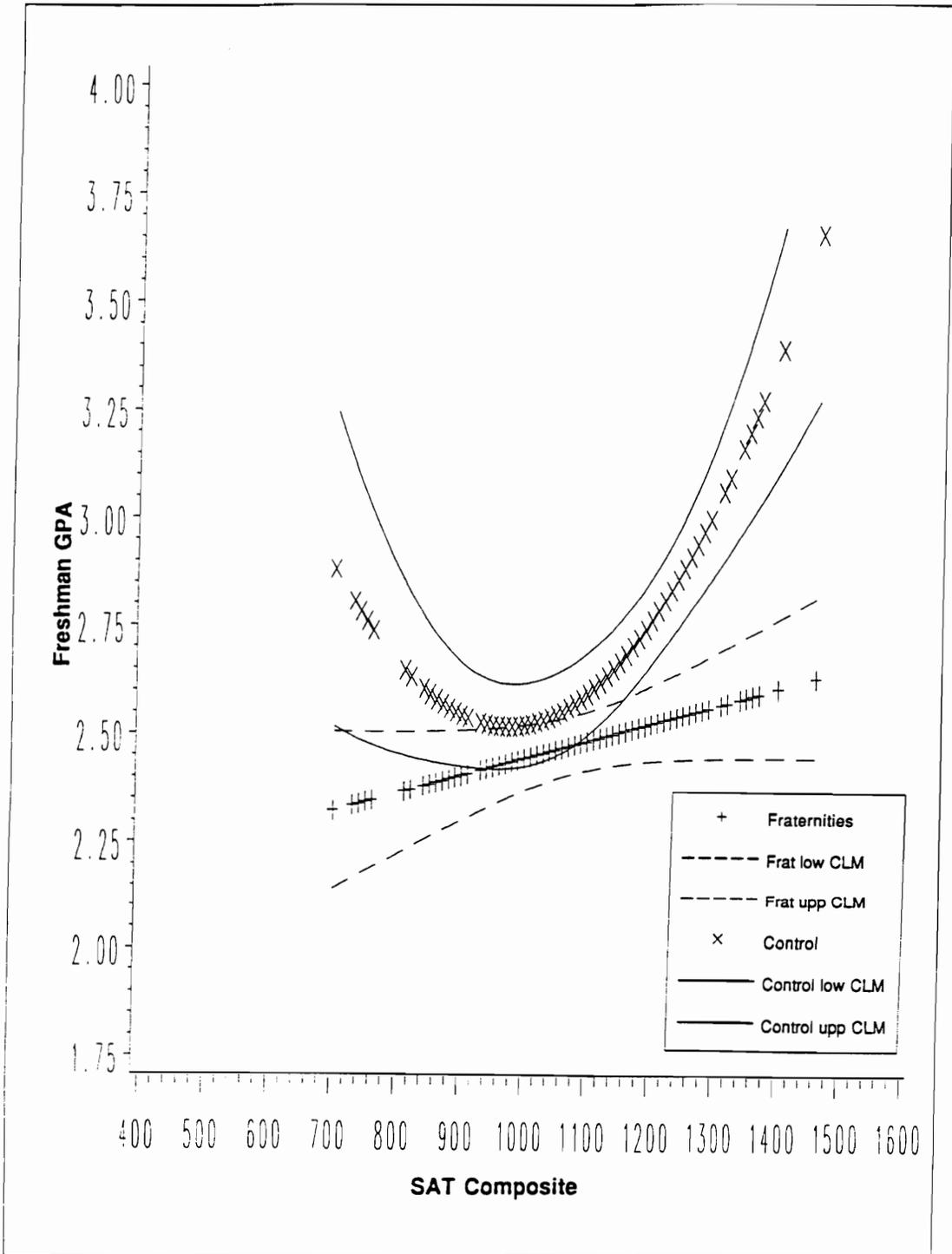


Figure 5 - Regression Lines of GPA on SAT for 1993-94 fraternities and control

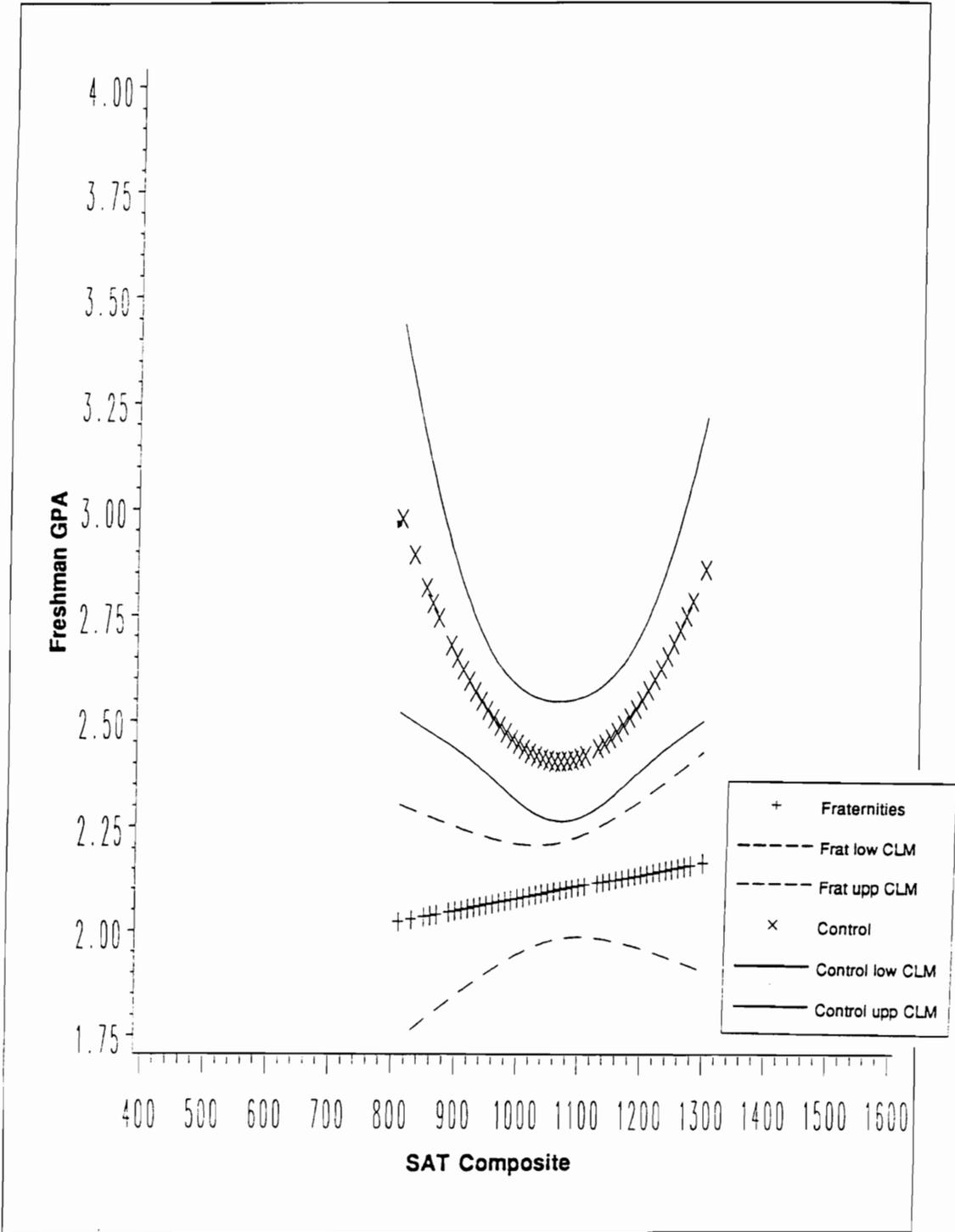


Figure 6 - Regression Lines of GPA on SAT for 1994-95 fraternities and control

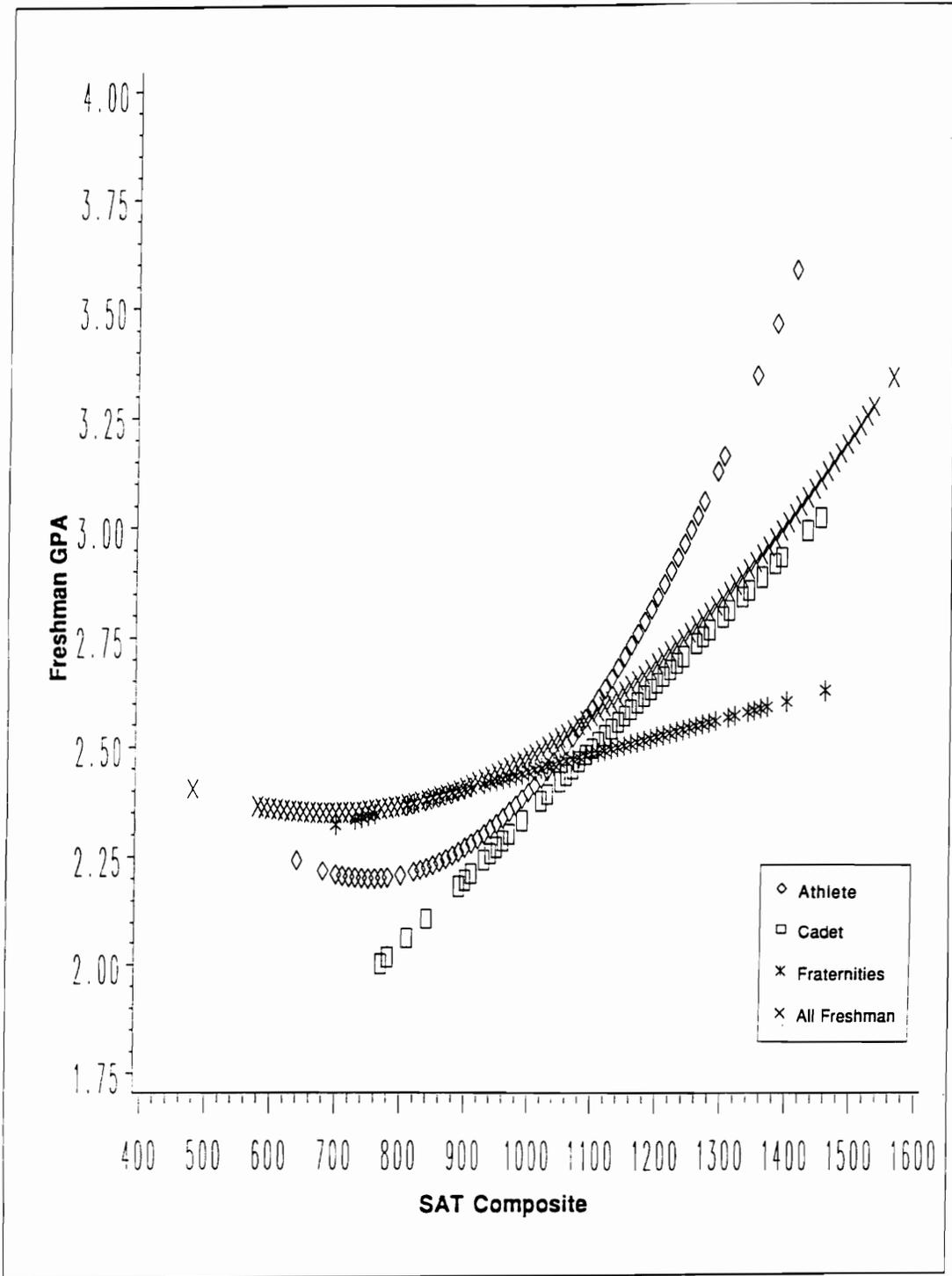


Figure 7 - Regression Lines of GPA on SAT for 1993-94 targets and freshman

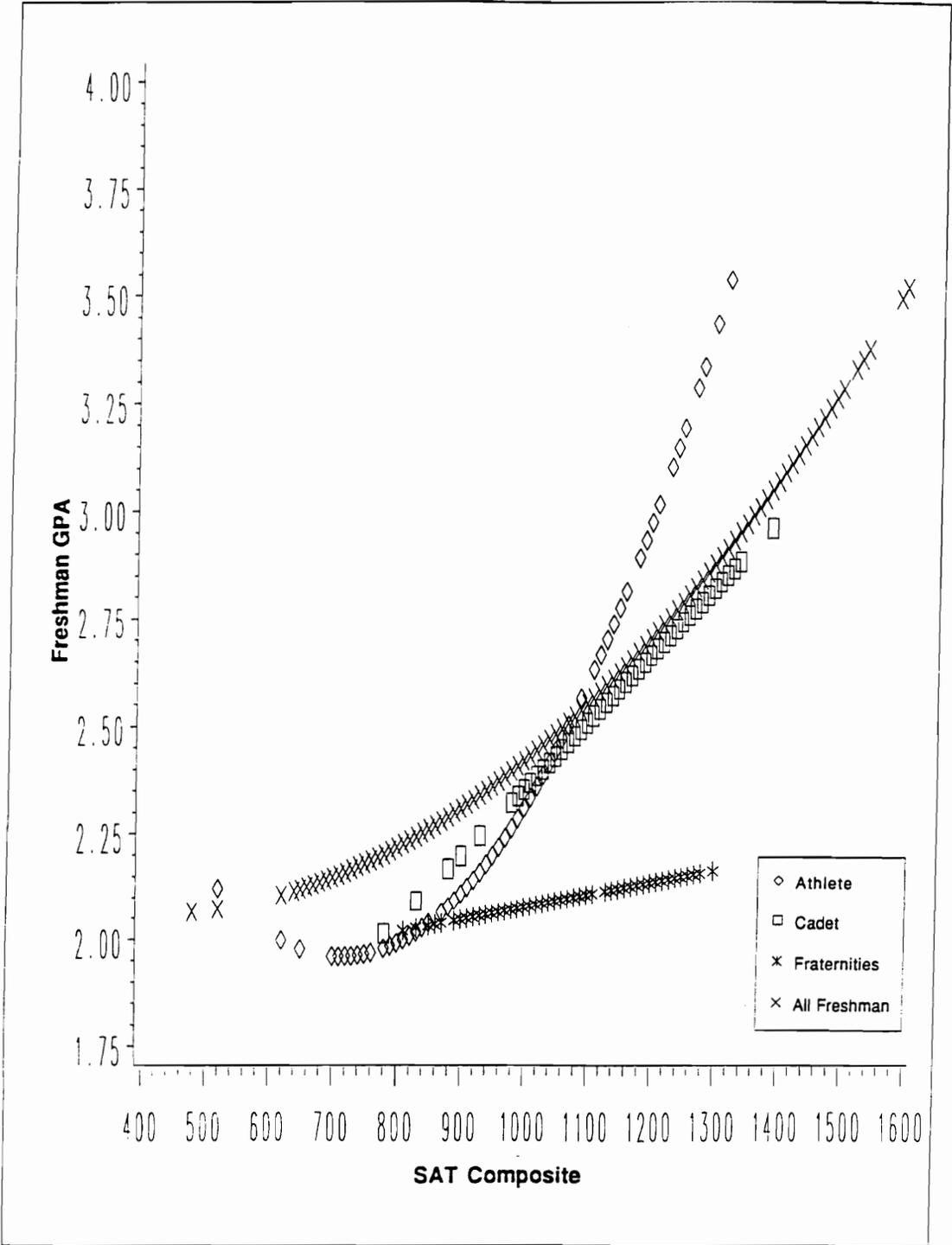


Figure 8 - Regression Lines of GPA on SAT for 1994-95 targets and freshman

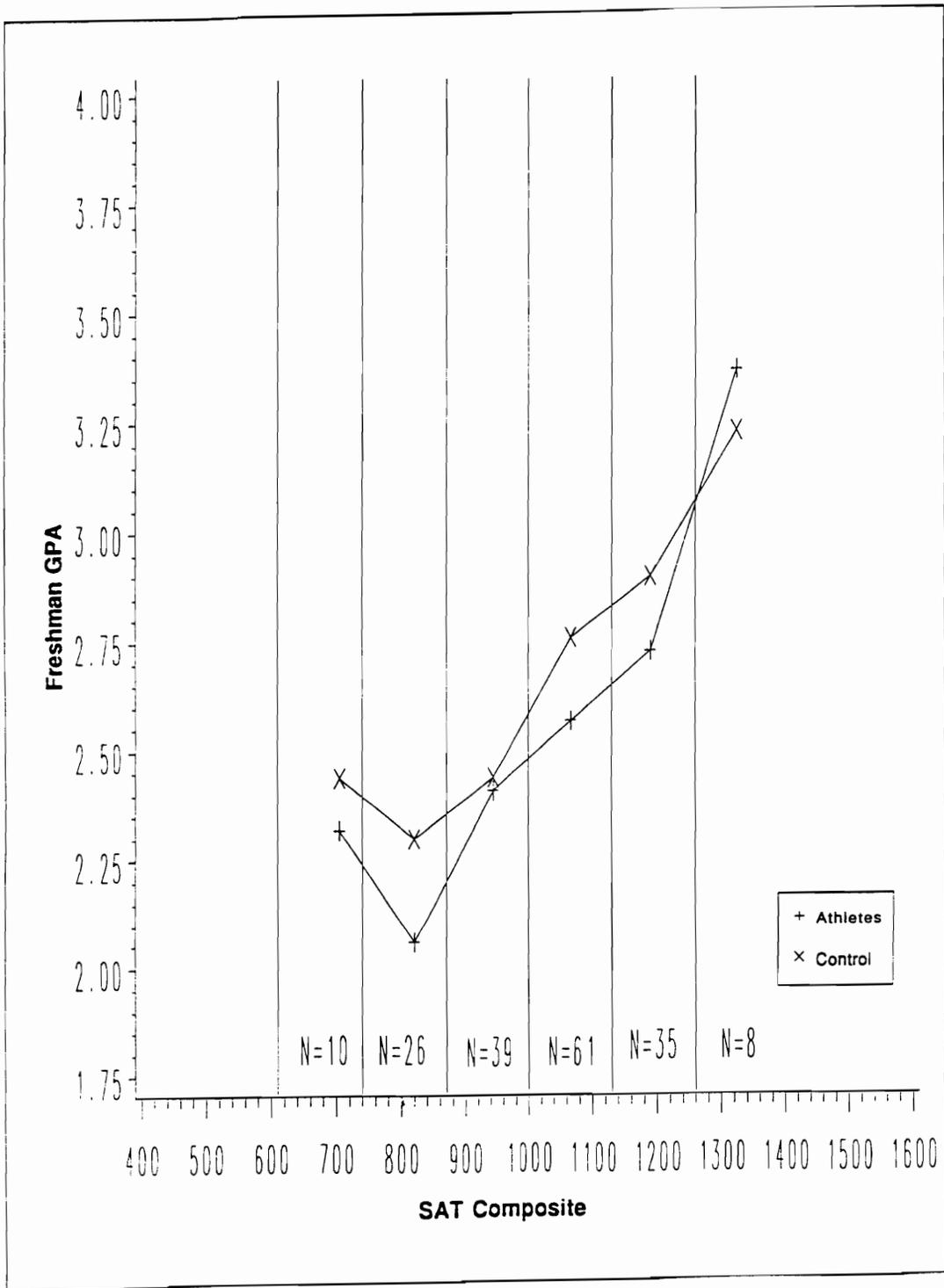


Figure 9 - Plot of mean GPA and mean SAT for blocks of 1993-94 athletes (n=179) and control (n=179)

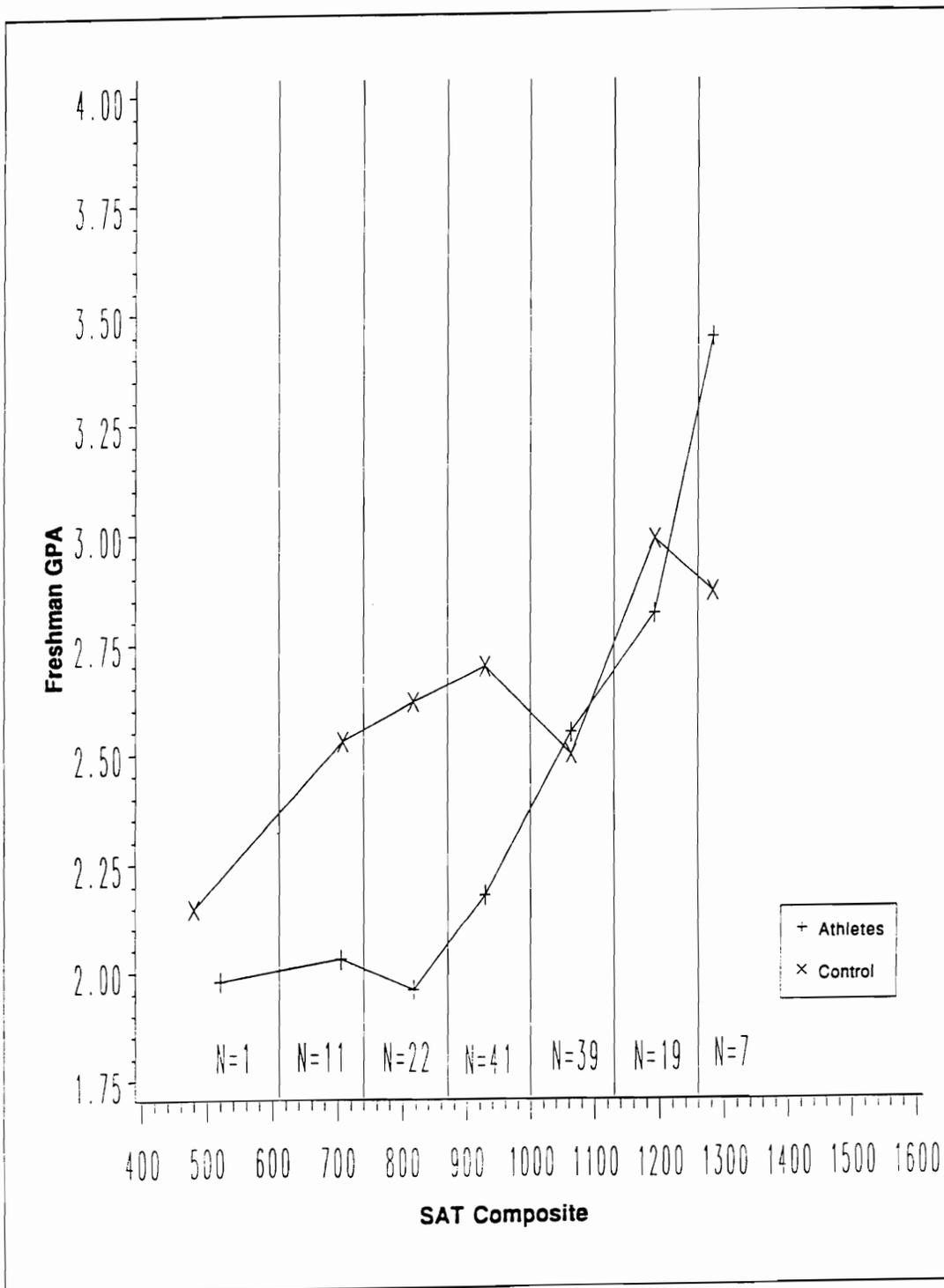


Figure 10 - Plot of mean GPA and mean SAT for blocks of 1994-95 athletes (n=140) and control (n=140)

Vita

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Career Objective:

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