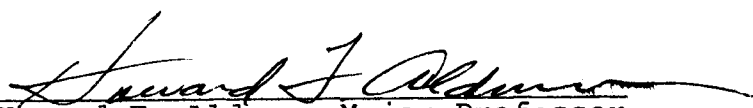


To the Graduate Council:

I am submitting herewith a dissertation written by Jimmy Lee Thomas entitled "Attrition and Retention Factors at Four Private Institutions." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Educational Administration and Supervision.


Howard F. Aldmon, Major Professor

We have read this dissertation
and recommend its acceptance:





Accepted for the Council:


Vice Chancellor
Graduate Studies and Research

ATTRITION AND RETENTION FACTORS AT
FOUR PRIVATE INSTITUTIONS

A Dissertation
Presented for the
Doctor of Education
Degree
The University of Tennessee, Knoxville

Jimmy Lee Thomas

June 1982

3060847

DEDICATION

This dissertation is dedicated to my loving wife, Patra, and my precious daughter, Katie. Without their Christian love, support, and encouragement, this project would never have been completed. For all the goals that I reach, they deserve the major honor.

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This accomplishment was not achieved without the help of numerous individuals and groups that must be singled out.

I am grateful to Dr. Earl Dennis for encouraging me to pursue this degree in the beginning.

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ABSTRACT

The reduction in the pool of 18-year-olds available for college recruitment has forced many institutions to examine retention procedures. This study was designed to determine retention rates and to identify variables that influence retention at four private church-related institutions.

The 2313 subjects were obtained from the entering freshman class of the Fall 1975 term. The American College Testing Program provided a magnetic tape of student data. A list of freshman names was generated from the tape and a transcript covering five academic years was furnished by the institutions for their subjects. The subjects were then classified into one of three categories: Persisters, Voluntary Withdrawals, or Academic Withdrawals.

Two statistical procedures were used--a two way Crosstabulation and a Stepwise Discriminant Analysis. The two way Crosstabulation indicated that the institutions varied in retention rates from 34.8 percent to 51.1 percent.

The Stepwise Discriminant Analysis examined Academic, Sociological, Financial, Personal, and Miscellaneous variables. The Stepwise Discriminant Analysis identified factors that accurately classified between 60.47 percent and 66.89 percent of the students into 1 of the 3 classification categories. The best predictor variable at each

institution was the first term grade-point average.

The results of this study allowed two observations.

(1) Only one institution fell below the average national retention rate. (2) There are factors capable of predicting retention behavior of a substantial portion of the student population at the four institutions examined.

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CHAPTER I

INTRODUCTION

During the twentieth century, attrition rates in the United States have hovered around the 50 percent mark of the entering freshman class (Mayhew, 1979, p. 192). Not until recently have the nation's colleges and universities become interested in the figures created by the attrition rates. In 1975, Cope and Hannah (1975, p. 4) stated:

Another facet of the withdrawal phenomenon is that the proportion leaving most colleges is not known. The administration and faculty simply do not know how many students are leaving and do not make inquiry because it always seems the dropout rate is low.

Retention studies are now creating major interest at institutions around the country (Middleton, 1978, p. 1). This attitudinal change is being created by the drop in potential student population, and demands of austerity in difficult economic times.

The previous answer to college and university enrollment problems has been to simply recruit more vigorously and thereby gain increasing numbers of entering freshmen. That task is becoming more difficult. The May 5, 1980 issue of The Chronicle of Higher Education reported enrollments the previous fall represented a modest 1.9 percent increase at state institutions. Institutions of higher education

are examining attrition and retention studies, therefore, in order to hold enrollment and remain financially viable.

Reducing attrition rates is not a simple task. The history of research studies on attrition and retention goes back 50 years. There should be a relatively conclusive formula for eliminating the high attrition rates of colleges and universities, but the significant research is not that overwhelming and the formulas for attrition reduction are nonexistent. "Once one has read Iffert, Summerskill, Pervin, and Astin, one has viewed the conventional wisdom" (Mayhew, 1979, p. 222). Therefore, administrators in a time of need find there is no real theoretical or sound model for use in attrition and retention prediction. While the situation demands a solution, administrators must attempt to arrive at some answer based on trial and error.

One of the chief problems in unifying knowledge on attrition is that withdrawal has been defined in diverse ways by various researchers in the field. Tinto (1975, p. 89) identified this problem of classification as one of the major reasons that some type of theoretical model for predicting attrition has not been produced through 50 years of research. Since the problem itself has had no clear definition, the research often appears to be contradictory or misleading in its conclusion.

In examining attrition, various studies have examined characteristics of students entering a freshman class

and examined characteristics of individuals who graduated approximately four years later. On the surface, that model represents one account of the attrition rate. However, such a model makes no distinction regarding Stopouts (those individuals who withdraw from an institution and return to school three or four years later); Dropouts (those individuals who withdraw from an institution and do not re-enter an institution within a designated period of time); Academic Dismissals (those individuals who for reasons such as low grade-point averages, withdraw from an institution involuntarily); Transfers (those individuals who move to another institution and continue their program of study); and Social Dismissals (those individuals who are asked to leave for violating social rules).

When these types of withdrawals, representing a variety of reasons for withdrawal, are grouped under the heading of attrition, it is easy to see why a theoretical framework has not been developed. Due to this type of group classification, "administrators may be unable to identify target populations requiring specific forms of assistance" (Tinto, 1975, p. 90).

There is another variable that impacts upon the attrition rate: the type of institution that the student attends. "Data that ignore the institutional context will rarely be useful or generalizable to other institutions" (Cope, 1978, p. 2). In examining religious and nonreligious

institutions, Astin (1975, p. 116) stated, "Apparently, the slight negative effect on persistence within the four-year institutions is accounted for entirely by the nondenominational colleges." In a later study, Astin (1978, p. 20) stated:

Student dropout rates differ widely among different types of institutions. Students entering private universities for example, are much more likely to complete four years of undergraduate work than are students initially entering other types of institutions.

Cope and Hannah (1975, p. 76) reported:

Whether a student becomes a dropout depends not only on the particular background and personal characteristics he brings with him to college, but also on the characteristics of the institution he meets when he arrives.

After reviewing such research, Timmons (1977, p. 652) wrote:

When such large discrepancies between types of colleges are found, one can question the advisability of combining data to derive general trends of withdrawal from higher education.

From these studies, it is imperative that any study of attrition focus on more than the individual. The type of withdrawal and the type of institution must also be considered.

Purpose of the Study

The purposes of this study were to determine retention rates and to develop discriminant functions capable of predicting student attrition at four small, private, church-related institutions. Through the use of these functions,

the institutions could readily identify potential dropouts, engage in advanced planning to facilitate retention, and intervene in the decision-making process of dropout prone students.

Research Questions

1. Of the entering freshmen in the Fall of 1975, what percentage of students graduated or persisted in enrollment through five academic years at each institution?
2. Which of the variables examined in this study contributed to the Stepwise Discriminant Analysis function at each institution?
3. What factors did the institutions have in common in contributing to the discriminant functions?

Definition of Terms

1. Graduate--A Graduate is an individual beginning enrollment in the Fall of 1975 and graduated within the five academic years examined.
2. Persister--A Persister is an individual beginning enrollment in the Fall of 1975, not graduated, and still enrolling at the end of the five academic years examined.
3. Stopout--A Stopout is an individual beginning enrollment in the Fall term of 1975, dropping out for a one-year period of time or longer, re-enrolling and continuing to enroll at the end of the five academic years examined.

4. Voluntary Withdrawal--A Voluntary Withdrawal is an individual beginning enrollment in the Fall term of 1975, dropping out of the institution with a grade-point average of 2.00 or higher at the time of withdrawal and not returning by the end of the five academic years examined.

5. Academic Withdrawal--An Academic Withdrawal is an individual beginning enrollment in the Fall term of 1975, dropping out of the institution with a grade-point average of less than 2.00, and not returning by the end of the five academic years examined.

Procedure

The small, private, church-related institutions examined were Abilene Christian University, David Lipscomb College, Freed-Hardeman College, and Harding University. Data of the entering freshman class of the Fall term, 1975, were drawn from the ACT Student Profile Report and the college transcripts. Students were grouped according to classification. The classification was determined through examination of five academic years. The data were analyzed through a two-way Crosstabulation and a three factor Discriminant Analysis.

Organization of the Study by Chapters

Chapter II is a review of the pertinent literature related to attrition and retention. This chapter provided

the basis for the selection of variables used in the study.

Chapter III identifies the procedures utilized in this study. The statistics used and the final methodology adopted are identified.

Chapter IV examines each of the research questions and indicates the findings based upon the computer manipulation of the data. Questions for future research are raised under each of the sections.

Chapter V discusses comparisons of the institutions and the factors that were major discriminators at each of the institutions. Implications for future research are indicated under each question.

Chapter VI provides a brief summary of the findings and the procedures followed in this study. This chapter also identifies areas for future analysis if questions raised by the study are to be answered.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The Beal and Noel review of the literature on attrition and retention produced this conclusion: there is no single variable capable of predicting attrition at any given institution (Beal and Noel, 1980, p. 3). The causes of attrition involved interacting variables resulting in a dropout decision (Astin, 1975; Fetters, 1977; Howell, Perkins and Young, 1979; Keller, 1979; Kohen, Nestel, and Karmas, 1976; Pantages and Creedon, 1978; Vorreyer, 1963; Williams, 1966). Marsh (1966, p. 480) stated:

The hope for one or two neatly packaged single predictors is quite unlikely, and the need for greater precision and more research on the multi-dimensional level has become obvious.

Future research should look toward multiple causes of the attrition problem.

Hanson and Taylor (1970, p. 545), having examined multiple causalities, suggested that there were minimally two independent dimensions of successful and unsuccessful students: previous high school achievement and personality characteristics. Knoell (1966, p. 72), in her review of the literature up to 1962, suggested the same two dimensions:

Students enter college with certain skills, abilities, achievements, interests, values, motivations, dispositions, and resources. While the first three factors tend to set an upper limit on their performance in college, the effective utilization of their talents depends in large part upon the remaining factors.

The successful engagement of a student with the environment at an institution depended upon the ability of the student to meet both the academic and social system demands (Spady, 1971, p. 39).

In an examination of 400 freshmen, the ability of a student was a determinant of the academically successful or unsuccessful student, while the personality of the student was a major determinant of the student who withdrew or persisted (Hanson and Taylor, 1970, p. 545). The rates of attrition and retention depend largely, therefore, upon the interaction of student characteristics with environmental characteristics (Hackman, 1970, p. 323; Knoell, 1966, p. 63; Nelson, 1966, p. 1050; Pascarella and Terenzini, 1979, p. 208; Spady, 1970, p. 77; Williams, 1966, p. 108).

Further exploration of interaction variables revealed the student, the institution, and the specific type of withdrawal (passing or failing) should be taken into account in attrition research (Johannson and Rossmann, 1978, p. 8). Many academically qualified students withdrew from institutions due to factors other than academic failure (Pantages and Creedon, 1978, p. 50; Chase, 1970, p. 66; Lanning, 1977, p. 37). Cope and Hewitt (1971, p. 50) reported that the

environment of an institution may produce difficulties for students and, therefore, precipitate an early withdrawal.

Feldman and Newcomb (1970, p. 291) summarized the findings of attrition and retention research when they reported that, "findings across studies are far from clear, consistent, or generalizable." Irvine (1966, p. 89) reflected the ineffectiveness of generalizing results of any study to students in general:

The accuracy of predicting graduation may vary greatly from one institution to another and from time to time at the same institution, depending upon such factors as the present and past selection policies, various characteristics of the student body, and type of institution.

Attrition prediction is a complex task at any institution. As the research indicates, the causes of attrition are complicated issues needing further investigation. This chapter examines the literature relating to Academic Factors, Sociological Factors, Financial Factors, Personal Factors, and Miscellaneous Factors not incorporated into the other major categories.

Academic Factors

Categorization of dropouts. The literature indicated that the design of attrition research was inadequate if it merely divided students into persisters and non-persisters. The design should have reflected and controlled the type of student withdrawal (Coker, 1968, p. 101; Knoell, 1962, p.

75; Lea, Sedlacek, and Stewart, 1979, p. 3; Pedrini and Pedrini, 1977, p. 157; Rose, 1966, p. 344; Rossmann and Kirk, 1970, p. 61; Simpson, Baker and Mellinger, 1980, p. 203; Spady, 1970, p. 66; Timmons, 1977, p. 651; Vaughn, 1968, p. 689).

Although persistence was easily categorized, withdrawal needed subdividing to indicate the type of withdrawal. Stoner (1979, p. 113) suggested in his study at The University of Tennessee, Knoxville, that division of the sample into subgroups with attempts to form an attrition prediction equation for each subgroup would be more useful than attempts to derive an equation for the average student. Pedrini and Pedrini (1977, p. 157) agreed with Stoner in that their research revealed separate regression equations developed for various subgroups provided more accurate results than previously obtained.

Having used sample categorization, Hutchison and Johnson (1980, p. 43) correctly identified 80 percent of the academic dropouts, 63.4 percent of the persisters, and 39.1 percent of the voluntary withdrawals. Krishnan and McClelland (1973, p. 30) increased their prediction percentage to more than 90 percent of their subjects by having distinguished between graduates and academic dropouts as opposed to merely dropouts.

Pre-college characteristics can distinguish between persisters, voluntary withdrawals, and academic dismissals

(Hackman and Dysinger, 1970, p. 323). By dividing a sample into subgroups, there is a greater chance of predicting persistence by examination of pre-college characteristics.

Length of matriculation. A four-year period of time is no longer adequate to examine matriculation to completion of a degree (Cope, Paithrop, and Trapp, 1971, p. 191; Jex and Merrill, 1964, p. 231; Trent and Ruyle, 1965, p. 66; Wallace and Harris, 1978, p. 253). Although the literature revealed that the largest portion of students graduated within a four-year period of time, a significant portion of the class took longer than four years to graduate (Chase, Dalton, Johnson, and Anastasiow, 1976, p. 7). Spady (1971, p. 41) reported that after 4-1/2 years at the University of Chicago, 51 percent of the class had graduated, but an additional 11 percent were still enrolled. As a norm, 40 percent to 50 percent of the students graduated within a 4-year period of time, and 20 percent to 30 percent graduated at a later date (Cope and Hannah, 1975, p. 101; Iffert, 1958, p. 100).

This trend of longer matriculation indicated a new normality. A study at the University of Illinois found that if four years were considered to be a normal college enrollment period prior to graduation, then fewer than half of the students were "normal" (Eckland, 1964, p. 406). Reflecting this trend, the percentages of entering freshman

classes that continued to enroll after four years at Spring Arbor College increased with each new entering class studied (Newby and Kline, 1974, p. 35).

The longer periods of enrollment are also exemplified in the cumulative graduation percentage rates following a four-year period of time. Bayer (1968, p. 308) indicated that 60.5 percent of the students examined in project TALENT completed the degree within a five-year period of time. Approximately 60 percent of the entering freshmen at Macalester College graduated within a five-year period of time (Johansson and Rossmann, 1973, p. 2). At North Carolina State University, examination of a six-year period yielded a graduation rate of 54.4 percent (Gracie, 1978, p. 2). The City University of New York produced a four-year graduation rate of 48 percent and a 7-year rate of 71 percent (Max, 1969, p. 70). The graduation rate at the University of Illinois 10 years after a class entered was twice as high as the four-year graduation rate (Eckland, 1964, p. 415). All of these graduation percentages ranked above the four-year normal rate of 50 percent (Summerskill, 1962, p. 630; Cope and Hannah, 1975, p. 101).

One major reason for matriculation longevity was that students increasingly stopped-out, re-enrolled, and persisted to graduation. A follow-up of stopouts at Indiana University revealed that 32 percent of the stopouts returned to college within three years after leaving the

freshman class (Chase, 1970, p. 70). Endo and Harpel (1979, p. 5) stated that the freshman class of 1975 at a state university had a 54 percent attrition rate in three years with a re-enrollment rate of 12 percent. A national study of the 1972 high school graduating class indicated students who withdrew before the fall of 1973 returned at a rate of 24 percent (Kolstead, 1977, p. 4). In a 10-year follow-up of stopouts at the University of Illinois, the stopouts produced a 70 percent re-enrollment rate (Eckland, 1964, p. 405). Of those male stopouts who re-enrolled, 55 percent graduated (Eckland, 1964, p. 39).

There were some differences recorded in the time and rate of graduation in relation to the sex of the individual. The graduation rates in four years favored females over males with rates of 31.2 percent and 29.2 percent, respectively (Irvine, 1965, p. 35). However, eight years from date of enrollment, the graduation rates favored males over females 46.8 percent to 42.1 percent respectively.

Astin (1973, p. 207) stated correctly the problem of attempting to set a cut-off time and determine accurate graduation rates:

There can never be a wholly satisfactory definition of the term dropout until all students either obtain their degrees or die without obtaining them; any former student can, in theory, return to college any time to complete a degree.

High school rank. The literature provided findings that a student's high school rank was an important factor in attrition and retention. The higher the rank in the high school class, the greater the chance of persistence (Astin, 1975, p. 31; Blanchfield, 1971, p. 3; Chase, 1970, p. 69; Demitroff, 1974, p. 559; Iffert, 1965, p. 2; Wegner and Sewell, 1970, p. 671). However, the research was not in complete agreement as to the consistency of the effect.

A study at Cumberland College reported that most of the withdrawals came from the lower quartile of their high school class, but a substantial portion was ranked in the top 10 percent of the high school graduating class (Baker and Baker, 1977, p. 11). Novak, Naughter and Rogers (1978, p. 8) in their study at North Texas State University found that 46.3 percent of the students not returning ranked in the top quartile of their high school graduating class. Iffert (1958, p. 99) reported of the students who graduated in the top half of their class, that approximately 75 percent eventually graduated from college. Blanchfield (1971, p. 3) accounted for this variance in stating, "The rank is biased in that a good student in stiff competition may have a low rank while a poorer student may rank high in a less competitive situation."

Other research indicated that the high school rank of the individual seemed to be a predictor of the academically deficient individual, but not of the persister or

the voluntary withdrawal (Chase, Dalton, Johnson, and Anastasiow, 1976, p. 9). Supporting this concept for males, Johansson and Rossmann (1973, p. 3) found that male voluntary withdrawals had a significantly higher rank in high school than did males who failed.

The race of an individual appeared to mediate the functioning of the high school rank. Regarding Black students attending White colleges, Astin (1975, p. 32) stated, "For these students, rank in high school class is a more potent predictor of dropping out than average high school grade."

The research indicated the high school rank was a better predictor than common forms of assessment; the standing of an individual in a high school graduating class was a better predictor than the standing received on placement test scores (Iffert, 1958, p. 95). High school grades, however, were a better predictor than high school rank due to the fact that grades more closely represented the individual's ability to achieve within an educational setting (Tinto, 1975, p. 100).

Novak, Naughter, and Rogers (1978, p. 8) inserted the size of the high school in determining the impact of high school rank. They found that the largest percentage of student withdrawals came from high schools with over 150 students and students who ranked in the top quartile of their class. This finding may suggest that those

students who graduate from a smaller high school stand a greater chance of persistence.

The type of institution interacts with the rank of students admitted and thereby persistence rates. The church-related institutions accepted students with a lower rank in high school class than publicly controlled institutions, and yet religious institutions graduated a higher percentage of students than the publicly controlled institutions (Iffert, 1958, p. 18).

The literature revealed that high school rank may be a significant predictor of retention. The results are not consistent and should be examined at each institution.

High school performance. The research reviewed indicated that the student who persisted had a higher high school grade-point average than did the student who withdrew (Simpson, Baker, and Mellinger, 1980, p. 209; Astin, 1975, p. 45; Panos and Astin, 1967, p. 8; Cohen, Man, and Shepherd, 1979, p. 5; Bean and Creswell, 1980, p. 325; Fullerton and Britton, 1976, p. 303; Coker, 1968, p. 103). Summerskill (1962, p. 634) in his review of literature stated:

The writer found that in ten of eleven studies specifically concerned with this question, college dropouts had lower average grades in secondary school than did graduates.

Utica College was the only institution reviewed which showed no relationship between persistence or withdrawal

and high school grade-point average (Blanchfield, 1971, p. 3).

A study of high schools in Portland, Oregon, found that the high school grade-point average was the "only significant predictive source of data in discriminating the college graduates and the college drop-outs" (Gadzella and Bentall, 1967, p. 354). Astin (1975, p. 30) stated the student's high school grades were the most "consistently potent predictor of college attrition."

In an earlier study, Astin compared high school grades and standardized tests as predictors of collegiate success. Astin (1973, p. 302) concluded:

. . . decision-makers should pay considerably more attention to academic performance in high school than to the scores on tests of academic ability.

The grade-point average of a student in high school was an indication of the odds a student would persist to a B. A. degree. Astin (1973, p. 302) stated, "the odds go up to almost 70 percent among students who had an A average in high school and go down to nearly 25 percent if the student has a D average." Of those students graduated within 20 consecutive quarters of admission at The University of Tennessee, Knoxville, "92.9 percent had a 2.25 or higher high school grade point average at date of admissions" (Stoner, 1979, p. 108).

The high school performance occurs in a similar academic environment to the collegiate academic environment. It is not surprising, therefore, that the literature reflects high school performance is a major predictor of college performance.

Academic aptitude. In defining the relationship between aptitude scores and student persistence, Demitroff (1974, p. 554) stated, "And predictably, students with higher ACT scores and higher rank in their high school graduating class were more likely to persist to the degree." The literature reflected that persisters possessed a higher academic aptitude than students classified as academic withdrawals (Coker, 1968, p. 100; Endo and Harpel, 1979, p. 9; Garni, 1979, p. 243; Howell, Perkins, and Young, 1979, p. 26; Morgan, 1974, p. 285; Neely, 1977, p. 969; Stoner, 1979, p. 111; Vaughn, 1968, p. 686). In his review of the literature in 1962, Summerskill (1962, p. 635) summarized the findings on academic aptitude:

There have been at least 19 investigations of scholastic aptitude test scores in relation to subsequent attrition. Average scholastic aptitude scores were found to be lower for dropouts than for graduates in 16 of these investigations.

It should be noted, however, that Blanchfield (1971, p. 3) in his study at Utica College found that there were no significant differences between college dropouts and successful students on the SAT Verbal and Mathematics portions.

Also, Pedrini and Pedrini (1977, p. 146) reported the ACT Composite score had no relationship to attrition or persistence.

The type of withdrawal may mediate the discrimination of aptitude measurements. Vaughn (1968) concluded that academically dismissed students appeared to be more "limited" than voluntary withdrawals. The voluntary withdrawal resembled the persisting student rather than the academic dismissal; the SAT scores and the high school rankings of the voluntary withdrawals and the persisting students yielded similar profiles (Brigman and Stager, 1979, p. 2; Johansson and Rossmann, 1973, p. 3). In support of this finding, Coker (1968, p. 100) stated that the voluntary withdrawal consistently made higher scores on the ACT subscales than did the academic dropout.

These findings should not be interpreted as suggesting that only superior students persist. Morgan (1974, p. 285) reported that the students at the University of Kentucky who still attended the institution after seven semesters were classified by ACT scores as above average in ability, but not as the most outstanding students. The group with the highest ACT Composite score was comprised of men who withdrew on a voluntary basis and who had not attempted to re-enroll by the end of the study (Morgan, 1974, p. 285).

The relationship of academic aptitude to withdrawal reportedly knows no sexual barriers. The academic dropouts demonstrated less academic ability than did the persisters across sexual lines (Cope, Paithrop, and Trapp, 1971, p. 190; Dalton, Anastasiow, and Brigman, 1977, p. 502; Zaccaria and Creaser, 1971, p. 287).

In summation, Chase, Dalton, Johnson, and Anastasiow (1976, p. 12) found that persisters and voluntary withdrawals tended to exhibit similar academic profiles; academic dismissals tended to be slightly lower in SAT scores than either persisters or nonacademic dropouts. Grouping individuals by type of withdrawal allowed distinctions regarding academic aptitude and withdrawal behavior (Bean and Covert, 1973, p. 411).

Institutional academic performance. Spady (1971, p. 38) succinctly stated, "Over a four-year period, however, formal academic performance is clearly the dominant factor in accounting for attrition among both sexes." Exemplifying this concept in his review of the research, Summerskill (1962) reported that one out of three dropouts from college occurred for academic reasons. Iffert (1958, p. 94) disclosed a similar finding in that approximately 25 percent of the men and 20 percent of the women who dropped out of college did so for academic reasons. The collegiate grade-point average of a student, with few exceptions, was an

important factor related to persistence (Astin, 1975, p. 98; Lanning, 1977, p. 36; Maudal, Butcher, and Mauger, 1974, p. 563; Pedrini and Pedrini, 1977, p. 109; Spady, 1971, p. 6).

The impact of grades on the student was in effect from the first term completed. This first term grade-point average appeared in the literature as one of the major variances in students who persisted and those who withdrew (Astin, 1975, p. 148; Blanchfield, 1971, p. 3; Dallam and Dawes, 1981, p. 159; Marks, 1967, p. 220; Maudal, Butcher, and Mauger, 1974, p. 563). It should be noted, however, that a study of students at Syracuse University reported that the freshman grade performance was not a significant factor in distinguishing between persisters and voluntary withdrawals (Pascarella and Terenzini, 1980, p. 68).

This strong relationship of demonstrated academic ability to attrition was reflected throughout the college career. According to Summerskill (1962, p. 636), "The probability of dropping out varies inversely with grade point averages throughout the whole distribution of grades at a given college." In agreement with Summerskill, Astin believed grade-point averages and attrition rates had an inverse relationship. The higher the grade-point average of the student, the less likely the student was to withdraw (Astin, 1975, p. 98). Spady (1971, p. 61) stated,

"The answer among both sexes appears to be that persistence and academic achievement become more synonymous over time."

Time of withdrawal. Research on the time students most often withdrew indicated that the freshman year was a critical period of time (Fetters, 1977, p. 23; Garni, 1979, p. 245, Halladay and Andrew, 1958, p. 212; Iffert, 1958, p. 100; Marsh, 1966, p. 475; Mannan and Preusz, 1980, p. 10; Newby and Kline, 1974, p. 5; Novak, Naughter, and Rogers, 1978, p. 8; Stoner, 1979, p. 108). Following the freshman year, the withdrawal rates began to decline (Kohen, Nestel, and Karmas, 1976, p. 242). In contradiction to this research, Garni (1979, p. 245) reported that dropout rates in the junior and senior years were higher than dropout rates in the freshman year at Suffolk University.

The research studies supported the finding that withdrawal rates were highest by the end of the freshman year. The students at North Carolina State University withdrew at a rate of approximately 21 percent to 26 percent during the first two years of enrollment. The greater percentage of the withdrawals came during or at the end of the freshman year (Gracie, 1978, p. 2). Endo and Harpel (1979, p. 5) reported that 53 percent of the non-returning students at the University of Colorado withdrew by the end of the freshman year. Western Illinois University produced a freshman attrition rate of approximately 29 percent for two

consecutive years (Lueck and Gilbert, 1978, p. 3). Old Dominion University yielded a withdrawal rate from the freshman year to the sophomore year of approximately 35 percent (Howell, Perkins, and Young, 1979, p. 2). At Temple University, 32 percent of the entering class did not re-enroll one year later (Gekoski and Schwartz, 1961, p. 192). Iffert (1958, p. 17), in examining church-related institutions, reported a loss of approximately 29.3 percent of the students by the end of the first year.

The freshman year represents a major factor in attrition and retention research. This initial experience of students with the academic, social, and institutional characteristics deserves more research.

Degree aspirations. Various literature revealed that the higher the degree aspirations of a student, the more likely the student was to persist (Astin, 1973, p. 304; Astin, 1975, p. 38; Astin, 1978, p. 219; Cohen, Man, and Shepherd, 1979, p. 5; Fetters, 1977, p. 93; Novak, Naughter, and Rogers, 1978, p. 9; Panos and Astin, 1967, p. 8; Tinto, 1975, p. 102). Students who indicated high degree aspirations assigned lower withdrawal probabilities to themselves than students who indicated low degree aspirations (DiCesare, Sedlacek, and Brooks, 1972, p. 323; Marks, 1967, p. 215).

In disagreement with these findings, Rossmann and Kirk (1970, p. 60) found that Berkeley students showed no

differences in degree aspiration between the students who persisted and the students who withdrew passing. This finding was not surprising in that these two classifications of students possessed similar profiles on other characteristics also.

Fullerton and Britton (1976, p. 303) reported in a study of males at the University of Pennsylvania that the student who persisted at an institution indicated a degree goal to be at the bachelor's or master's level. The non-persister indicated the degree goal to be at the master's or doctoral level.

Major field of interest. The literature contained studies that indicated the specific major field or college of interest a student selected had no effect upon persistence or dropping out (Panos and Astin, 1967, p. 8; Womack and McCluskey, 1973, p. 46). Although Dallam and Dawes (1981, p. 156) found at Kansas State University that when the persistence rate was based on the major the student ultimately decided upon, the rate for the College of Arts and Sciences presented an approximately 25 percent graduation rate and the College of Education presented an approximate 52 percent graduation rate. This high rate of persistence in education majors was confirmed in other studies also (Astin, 1978, p. 304; Lueck and Gilbert, 1978, p. 9).

Most of the dropouts at New College appeared to be in the major areas of Humanities and the Social Sciences. Students studying the Humanities dropped out more frequently than students studying the Social Sciences (Baldwin and Kinsel, 1975, p. 2).

The Computer and Informational Sciences appeared as strong areas of retention. Students in Computer and Informational Sciences showed a 13.64 percent dropout rate while the Fine Arts and Applied Arts had rates of 40.83 percent (Lueck and Gilbert, 1978, p. 3).

One major area of high persistence was the Health Sciences (Astin, 1975, p. 39). Students engaged in the School of Sciences and Health Professions at Old Dominion University had higher GPAs and higher persistence rates than did other students (Howell, Perkins, and Young, 1979, p. 26).

The literature indicated the student with a decided major had a better chance of persisting than a student without a decided major (Chase, Dalton, Johnson, and Anastasiow, 1976, p. 19; Foote, 1980, p. 31; Muskat, 1979, p. 20; Wessell, Engle, and Smidchens, 1978, p. 29; Womack and McCluskey, 1973, p. 46). Wessell, Engle, and Smidchens (1978) discovered that even in transfer students this relationship of decided major and persistence appeared to hold true. Decided major transfer students yielded a drop rate of 25.5 percent, while the undecided major group yielded

a 56.9 percent drop rate (Wessell, Engle, and Smidchens, 1978, p. 29).

There was a difference in the sex of the student and the decided major or undecided major status (Foote, 1980, p. 31). Females rather than males were likely to be in the decided group. Astin (1964, p. 22) concurred and identified indecision about a major as a factor that distinguished male dropouts from female dropouts.

The initial decision a student made regarding a major was not consistently the final major of the individual. Iffert (1958, p. 104) reported that during a college career, more than half of the students changed their major field of study. Astin (1965, p. 31) stated, "The student's initial career choice and major field contributed by far the greatest weight in determining his final career choice at graduation." Iffert (1958, p. 79) concluded that the change was positive in that the individuals who changed subject fields had a higher persistence rate than individuals who did not change fields.

Consideration should be given to major field in connection with attrition research (Cope and Hannah, 1975, p. 80). Since individual characteristics vary and the factors influencing an individual to select a particular major vary, the cause of attrition in major programs may be different.

Sociological Factors

Place of residence. The place of residence of a student while enrolled at an institution favored living in a dormitory as opposed to being a commuter (Astin, 1973, p. 208; Astin, 1973, p. 305; Astin, 1975, p. 90; Astin, 1978, p. 109; Garni, 1979, p. 246; Howell, Perkins, and Young, 1979, p. 3; Iffert, 1958, p. 74). Astin (1975, p. 90) contended that living in a dormitory in place of other types of residences would generally decrease by 10 percent the chances of a student dropping out. Conversely, there was a gain of approximately 12 percent to a student's chances of finishing college by living in the dormitory rather than with parents or in another private residence (Astin, 1978, p. 109). Astin (1975, p. 158) did not limit findings of this research by race, sex, or type of institution. He found that in all cases it was better for a student to live in a dormitory during the freshman year than to live elsewhere if a degree were being sought. Astin (1973, p. 206) had reported earlier, however, that living in a private room or apartment away from home and parents rated along with living in a dormitory.

The alternative types of housing had differing effects based upon the sex of the individual. Men had greater chances of graduating if they lived in a private room or apartment rather than at home. Conversely, women

had greater chances of dropping out if they lived in a private room or apartment (Astin, 1975, p. 159).

Various differences made by the residence status were determined by a review of the more pertinent literature regarding specific differences. The two dominant authors for such an examination were Chickering (1975) and Astin.

Chickering reported that there appeared to be a difference in academic orientation between the commuter and the resident that was detectable during the high school years. Commuters appeared to have achieved lower grades in high school: a major determinant of withdrawal (Chickering, 1975, p. 45). Commuters also seemed to have lower degree aspirations at the rate of three to one (Chickering, 1975, p. 49). These differences between the resident and the commuting student were apparent at the start of the freshman year and continued throughout the college experience (Chickering, 1975, p. 63).

Astin (1973, p. 207) found that living in a dormitory increased the satisfaction level of the student and the student's interpersonal competency. Dormitory living appeared as a good socializing agent and was significant in adjustment and satisfaction at an institution (Pantages and Creedon, 1978, p. 78). Those students who lived at home were less satisfied with the atmosphere at the institution.

The involvement in campus life of the residents as compared to the commuting students indicated a distinction between the two groups. Residents became more involved in campus life and thereby tended to persist (Astin, 1973, p. 207; Astin, 1978, p. 249; Chickering, 1975, p. 54). Specifically referring to involvement in extra-curricular activities, it appeared from Chickering's research that residents were far more involved in activities than commuters. In a listing of 12 activities, residents ranked higher on 11 of the 12 items (Chickering, 1975, p. 48).

The research indicated living in a dormitory was a positive factor in student retention. Astin and Chickering specifically reported greater retention rates by residents than commuters.

Extra-curricular involvement. The effect of involvement in extra-curricular activities was a disputed factor in relation to persistence. In partial explanation of this disputation, Spady (1971, p. 61) stated in the freshman year of a college experience, academics were the major factor that affected the satisfaction of males followed by social factors. However, social aspects were the major factors that affected the satisfaction of females. The components of social satisfaction for both men and women were extra-curricular activities, dating habits, and faculty interaction (Spady, 1971, p. 46).

In identifying the impact of extra-curricular activities, Gekoski and Schwartz (1961, p. 193) stated that 63 percent of the persisting students at Temple University rated extra-curricular activities as good while only 42 percent of the withdrawals rated extra-curricular activities as good. The students who persisted not only ranked extra-curricular activities higher, but they were more active in extra-curricular activities than the students who decided to withdraw.

Tinto (1975, p. 105) suggested that college drop-outs perceived themselves as having less social involvement on the campus than did the college persisters. Astin (1975, p. 148) indicated that more ways need to be found to involve students in the activities at an institution. His conclusion is that through involvement, persistence will be increased.

The largest percentage of dissatisfied students at Miami University left the University due to dissatisfaction with the student life at the campus (Keller, 1979, p. 8). Spady (1971, p. 31) explained such an exodus when he reported satisfaction of an individual depends directly upon social integration, grade performance, and intellectual development.

In contradiction to previous findings, Stordahl (1970, p. 170) found transfers and discontinuing students at Northern Michigan University, had significantly greater

participation in extra-curricular activities than the general student body. Regarding the first registration period, Iffert (1958, p. 79) stated:

It is clear from the distributions and the medians by persistence groups that neither the type of activity nor the amount of time devoted to extracurricular activities during the first registration period is related to length of attendance in college.

Also, at Syracuse University, the extent of involvement in extra-curricular activities was not a significant factor that distinguished between persisters and voluntary withdrawals at the end of the freshman year (Pascarella and Terenzini, 1980, p. 68).

Attitudes toward athletics and athletic competition were reported as significant factors in the retention of students. Since athletics involved participants more deeply in the activities of an institution, there was a reduction in the chance that a student would desire to leave the college (Astin, 1975, p. 44). For those individuals who participated in varsity athletics, there was a reduction in chance of dropping out for White males of 1 percent and for White females of 5 percent. The 5 percent decrease was the same for Blacks attending predominantly White colleges (Astin, 1975, p. 107). Males who withdrew from Berkeley did not feel the importance of athletics as deeply as did the persisters (Rossmann and Kirk, 1970, p. 59).

Intramural as well as intercollegiate athletics appeared as a benefit in the literature. Iffert (1958, p. 79) stated, "The total length of attendance of intercollegiate athletes is slightly, but not significantly, shorter than that of participants in intramural sports."

In examining participation in student government, the literature indicated holding a student office appeared as a significant factor in distinguishing between persisters and withdrawals (Panos and Astin, 1967, p. 9). Females who withdrew from Berkeley ranked student government lower on a scale of importance than did persisters (Rossmann and Kirk, 1970, p. 59). Those students who participated in student government in the first year of attendance had a better record of persistence than did athletes (Iffert, 1958, p. 79).

A major facet of extra-curricular activities continues to be fraternities and sororities. The research indicated that there was a major positive effect on persistence and overall satisfaction with the college if the student was a member of a fraternity or sorority (Astin, 1978, p. 222; Iffert, 1958, p. 77). Students who were members of sororities and fraternities were less likely to withdraw due to personal or social dissatisfaction (Feldman and Newcomb, 1970, p. 211). Institutions having no fraternities and sororities exhibited significantly lower

persistence rates than did institutions possessing sororities and fraternities (Iffert, 1965, p. 104).

There were reported differences in persistence rates as to whether the social organization was a local organization or not. Members of local fraternities and sororities tended to have a higher withdrawal rate than students who were not members of any organization (Iffert, 1958, p. 78).

The impact of extra-curricular activities on persistence was mixed. Variables mediating the effect of extra-curricular activities on each campus must be examined before conclusions can be reached.

Campus integration. The literature indicated that students actively involved in the academic and social programs of an institution possessed a greater chance of persisting to graduation than did students less involved (Astin, 1978, p. 241). Terenzini and Pascarella (1978), in comparing the academic and social integration of students, discovered that the academic integration explained approximately twice as much variance as the social integration of the students at the end of the freshman year. They cautioned, however, that the social integration of the individual contributed a significant amount to the retention process (Terenzini and Pascarella, 1978, p. 12). Summer-skill (1962, p. 634) stated:

In general, then, the attrition problems that predominate in the colleges involved the student's

failure to meet the psychological, or economic demands rather than the strictly academic demands of the college environment.

Simpson, Baker, and Mellinger (1980, p. 207) stated, "One factor common to all withdrawals, as opposed to persisters, is the lack of early social integration." The interpersonal relationships of students at the University of Chicago accounted for approximately 20 percent of the variance in social integration for women and 12 percent for men (Spady, 1971, p. 50). Since commuters were less involved in the campus life, by virtue of time on campus, and reported more problems with interpersonal relationships, it was no surprise there was a greater chance of commuters dropping out (Chickering, 1975, p. 45).

The dropout was characterized as an individual who enjoyed new experiences and adapted easily to new situations, but needed reassurance from others (Maudal, Butcher, and Mauger, 1974, p. 564). The search for social integration and interpersonal relationships appeared to be a major motivation in academically dismissed males who attempted to re-enter an institution (Morgan, 1974, p. 287).

The research indicated that social integration and academic integration of an individual into a campus environment should be considered problematic instead of given (Baldwin and Kinsel, 1975, p. 9; Spady, 1971, p. 38). Nicholi (1970, p. 47) confirmed this conclusion in his examination of Harvard withdrawals; emotional illness,

constituting approximately 43 percent of the withdrawals, was by far the most frequent reason given for dropping out. Nationally, between 10 percent and 15 percent of the students who dropped out stated that they were leaving due to personal adjustment problems (Summerskill, 1962, p. 644).

The personal adjustment factor was also reflected by Black students who attended White colleges; they tended to huddle into groups and keep together (Smith, 1979, p. 8). Interaction was thereby limited (Smith, 1979, p. 8). Smith (1979, p. 3) stated of Black students at predominately White universities that it was apparently a lack of feeling a "real part" of the institutional environment that precipitated dropping out.

One explanation of adjustment problems was that the average freshman experienced far greater competition in academics and in student relationships once entering college than was experienced in high school (Little, 1959, p. 237). It should be pointed out, however, that the competitive environment at an institution was shared by all students leading some to leave and some to stay (Hackman and Dysinger, 1970, p. 312).

The adjustment problems of the students were not insurmountable. Gekoski and Schwartz (1961, p. 194) reported that 48 percent of the students who withdrew at Temple University indicated the institution could have

done something to keep them enrolled. There are steps, therefore, that colleges and universities could take to aid in student retention.

The literature indicates academic and social integration is a significant factor in attrition and retention. Basically, the research indicates the more integrated into the campus environment a student is, the greater the chances of persistence.

Student and institutional fit. Research indicated mismatches between students and institutions tended to encourage dropouts (Astin, 1975, p. 144; Cope and Hannah, 1975, p. 3; Feldman and Newcomb, 1970, p. 293; Pervin, 1966, p. 128; Pervin and Rubin, 1967, p. 289; Rootman, 1972, p. 267). Withdrawals that occurred for reasons of "fit" between institutional characteristics and student characteristics generally resulted for personal reasons as opposed to academic reasons (Pervin and Rubin, 1967, p. 289).

Within this concept of "fit" there were two areas of consideration: the institution must have met the needs of the student, and the student must have met the demands of the institution (Starr, Betz, and Menne, 1972, p. 318). Summerskill (1962, p. 640) concluded it was no longer adequate to ask whether a student had sufficient "motivation" for a college degree. The question should be whether the student has the motivation for a specific college with specific characteristics.

Colleges had greater "holding power" when the student's selection process was based upon examination of the college (Cope and Hannah, 1975, p. 102). The self-selection of an institution produced a higher persistence rate due to the perceived match with the institutional environment (Cope and Hannah, 1975, p. 3). Spady (1971, p. 42) reported that students in harmony with the environment at the college selected should feel "more tightly integrated into the fabric of campus life" and thereby, should have a higher rate of persistence.

When the size of the town or city the individual was from and the size of the institution attended were congruent, persistence was facilitated (Astin, 1975, p. 152). A corollary to that finding was that students who selected a major field would have a better chance of persisting if they attended an institution at which there were a large number of students who majored in that specific field (Astin, 1965, p. 33). As student and institutional environment became more alike, there was a greater chance of retention.

Cope and Hannah (1975, p. 76) referring to religious institutions stated:

At the conservative, church-related colleges, most students who stayed subscribed to the community spirit and conformed to the model student explicitly set forth by the college.

Students stood a better chance of persisting if the students professed the same religious beliefs as the institution (Astin, 1975, p. 175). In agreement, Hackman (1970, p. 321) reported the factors that contributed to dropping out could be classified into three categories: commitment to the goal, academic ability, and the congruence between the student and the college environment.

At each institution, there were environmental factors that interacted with the personality of the student and led to a dropout decision (Smith, 1976, p. 22). Rose (1966, p. 245) indicated that students who persisted with a C or better average differed in personality from students who persisted with less than a C average. In relation to the high ability student and reasons for persistence, there tended to be a passivity and task-oriented behavior that produced conformity with the environment and thereby decreased the chances of dropout (Heilburn, 1965, p. 4). The individual's personal characteristics as well as the environment of the total institution should be examined in attrition and retention research (Panos and Astin, 1967, p. 13).

There are more students who withdraw from institutions for nonacademic reasons than there are for academic reasons (Kolstead, 1977, p. 5). Therefore, it is apparent that the nonacademic environment at an institution can be

a major contributor to the dropout problem (Fetters, 1977, p. 20; Iffert, 1958, p. 94; Rootman, 1972, p. 260; Summer-skill, 1962, p. 636).

Commitment of the student. The commitment of a student can be analyzed through two dimensions: commitment to a college education and commitment to a specific institution. Each of these dimensions affected attrition and retention rates.

If the individual were committed to obtaining a college degree, lower commitment to the institution could produce a dropout (Tinto, 1975, p. 97). It was the satisfaction with the institutional environment, or lack thereof, that separated the nonacademic dropout from the persister at Iowa State University (Starr, Betz, and Menne, 1972, p. 321). Pascarella and Terenzini (1980, p. 62) reported that as institutional commitment and goal commitment increased there was an increase in the likelihood of persistence on the part of a student.

In three midwestern colleges, the commitment of a student to a college education was a unique factor in the prediction of persistence. This commitment, prior to being admitted to a college, was not bound by academic ability or the personal adjustment of the individual (Hackman and Dysinger, 1970, p. 315). In support of this finding, Simpson, Baker, and Mellinger (1980, p. 206) reported that

among Berkeley students, commitment to a college education was a factor which separated persisters and voluntary withdrawals. As expected, the voluntary withdrawals indicated a lower degree of commitment to college.

However, not all the research was in agreement. In refuting the previous findings, Endo and Harpel (1979, p. 10) indicated that commitment to a college education was not a strong factor in distinguishing between persisters and nonpersisters at the University of Colorado.

One of the intervening variables that affected withdrawal of females in liberal arts colleges was the importance of graduating from a specific institution (Bean and Creswell, 1980, p. 322). Reinforcing this finding, Spady (1971, p. 60) identified the concept of institutional loyalty as a major factor within the dropout process. He stated:

. . . greater commitment can be generated, if at all, by providing them with experiences that affect the intrinsically meaningful spheres of their lives as human beings, rather than by attempting to modify the academic reward structure itself.

Spady (1971, p. 60) concluded from his study that the academic performance of a student did not have a significant affect upon the commitment or loyalty of the student to a particular institution.

The academic system of the institution affected the goal commitment of the student. The relationship of the social environment to the student affected the institutional commitment (Tinto, 1975, p. 110).

From these data, it appeared that commitment to an institution and/or commitment to a degree was a major motivation in persistence. Thereby, both of these dimensions should be examined in attrition research.

Financial Aid and Employment

Financial aid. Outside sources of revenue for individuals attending higher educational institutions appeared in the literature as on the increase. Garni (1979, p. 243) reported that the 1974 entering freshman class of Suffolk University, to a larger degree than the 1970 entering class, was less dependent on parental support for college costs and more dependent on employment combined with some scholarship assistance.

Receiving aid from a variety of sources was viewed as a questionable practice in relationship to persistence. Astin (1975, p. 71) stated, "In general, any form of aid appears to be most effective if it is not combined with other forms."

Results of research on the effects of financial aid in general are mixed. Selby (1973, p. 39) showed a higher rate of persistence among students receiving financial aid than among students not receiving financial aid. Pedrini and Pedrini (1977, p. 146) reported financial aid had no effect on or relationship to persistence. Astin (1975, p. 59) found those students receiving no financial aid had

expected dropout rates about the same as those students receiving major support through scholarships or grants.

The research on financial aid focused largely on two topics, the source of financial aid and the amount of financial aid. The results of a national study favored work-study programs on campus or grants over financial aid through loans (Astin, 1975, p. 155). Specifically, Astin (1973, p. 304) reported a 15 percent increase in chances of persistence if the student was receiving a scholarship or grant. Receiving financial aid through a scholarship or grant was consistently rated as a positive effect on persistence (Blanchfield, 1971, p. 3; Kohen, Nestel, and Karmas, 1976, p. 33).

The impact of receiving financial aid from home was mixed. Novak, Naughton, and Rogers (1978, p. 9) stated that 52.8 percent of the dropouts financed their education through receiving aid from home. Astin (1975, p. 52) reported, "Relying on parental support has a small, but statistically significant positive effect on the student's ability to persist in college." In a previous study, however, Astin (1973, p. 304) reported a 10 percent decrease in chance of degree completion if the student received a significant portion of financial aid from home.

Loans appeared in the literature as having a negative impact on persistence (Astin, 1975, p. 155). Blanchfield (1971, p. 3) refuted this finding when he reported

that the percentage of a college education paid by a loan was not a factor in dropping out.

The differing effects of financial aid may rest in the amount of aid received. One accounting for the variance in persistence regarding major and minor financial aid support was that students with a major need for revenue to attend an institution were more dropout prone at the beginning of a college education (Astin, 1975, p. 59).

A second reason for variance in persistence regarding major and minor financial aid involved the race of the student and the type of institution attended. For Black students attending predominantly White colleges, minor grant support provided an 8 percent decrease in chances of dropping out. Major support was associated with a 1 percent increase in dropout possibility (Astin, 1975, p. 60).

A third reason for variance in persistence regarding major and minor forms of financial aid was that scholarships were generally awarded on merit. Therefore, those students with higher averages, reflecting greater propensity to persist, received aid (Astin, 1975, p. 59). Blanchfield (1971, p. 3) indicated however, that the grants given at Utica College were not specifically given to the most successful students.

The most extensive research reviewed was by Alexander Astin. His conclusion on financial aid was that more research needed to be conducted in order to learn the impact

of financial aid packages (Astin, 1975, p. 71). The impact of financial aid should be examined on each campus before specific conclusions can be reached.

Employment. Employment and simultaneous college attendance produced conflicting results in attrition and retention research. Astin (1975, p. 87) reported that student employment was a positive factor in persistence. Pedrini and Pedrini (1977, p. 146) found that employment had no effect on persistence. Peng and Fетters (1978, p. 371) indicated that employment may have a negative impact on persistence. An explanation of such mixed results was found in the subdivisions of the work category.

The effects of full-time employment on campus appeared to be different for men and women. For a female working full-time on campus, there was a slight negative effect on persistence. For a male working full-time on campus, the negative effect was nonexistent (Astin, 1975, p. 78). Yet, full-time employment off-campus had a negative effect on both men and women (Astin, 1975, p. 78).

Recent research indicated that part-time employment, as opposed to full-time employment, produced positive results toward retention (Astin, 1975, p. 156; Kohen, Nestel, and Karmas, 1976, p. 32). In a recent national study, the withdrawal rate was twice as high for the student employed full-time as it was for the student employed part-time or

not at all (Kolstead, 1977, p. 6). In an earlier national study, Iffert (1958, p. 65) indicated that there was no relationship between men earning their college tuition and persistence.

The time period spent working during the college career was important in retention research. Kohen, Nestel, and Karmas (1976, p. 243) reported that students who worked during the freshman and sophomore years were less successful than students not working at all; this negative impact was not found among juniors and seniors. In partial disagreement with this study, Astin (1975, p. 76) stated that working during the freshman year on or off campus produced a decrease in the dropout rate. The slight decrease appeared to be limited, however, in that Astin stated that if the job held longest was off-campus, the impact on persistence was negative (Astin, 1975, p. 76).

The type of work program in which the student participated affected persistence rates. If the work was part of a work-study program on campus, the benefits were positive (Astin, 1975, p. 157). This work-study program appeared to have the greatest impact on women, Blacks, and students from middle-income families (Astin, 1975, p. 70).

The marital status of the student interacted with the type of employment and persistence. If the student were married, off-campus employment had a negative effect during the freshman year; on-campus federal work-study

programs yielded positive results (Astin, 1975, p. 157). Generally speaking, the married student who found employment necessary at the time of entrance had less chance of persisting than did the student who entered single, married, and found employment (Astin, 1975, p. 87).

The many subdivisions and characteristics of employment allowed few generalizations regarding attrition and retention. One allowable generalization, however, was that working on-campus had a positive impact on retention while working off-campus had a negative impact on retention.

Personal Factors

Sex and attrition. Research regarding the relationship of sex to attrition was contradictory. Various research indicated that sex and attrition were not related (Chase, Dalton, Johnson, and Anastasiow, 1976, p. 7; Cope and Hannah, 1975, p. 101; Fetters, 1977, p. 37; Howell, Perkins and Young, 1979, p. 26; Pedrini and Pedrini, 1977, p. 146; Peng and Fetters, 1978, p. 367).

Other studies indicated that females withdrew at higher rates than males (Astin, 1964, p. 221; Astin, 1978, p. 215; Brigman and Stager, 1979, p. 6; Gracie, 1978, p. 2; Nelson, 1966, p. 1049; Newby and Kline, 1974, p. 38; Panos and Astin, 1967, p. 9; Selby, 1973, p. 40; Stordhal, 1970, p. 164, Tinto, 1975, p. 101; Trent and Ruyle, 1965, p. 66; Wallace and Harris, 1978, p. 252).

The variance was partially explained in the reasons for withdrawal presented by males and females. Males withdrew more often for motivational reasons while females withdrew more often for personal reasons (Cope and Hannah, 1975, p. 101; Keller, 1979, p. 6). Generally, there were more males than females who constituted the academic drops at an institution (Chase, Dalton, Johnson, and Anastasiow, 1976, p. 13). The females appeared to be voluntary withdrawals as opposed to academic dismissals (Tinto, 1975, p. 101).

Pantages and Creedon (1978, p. 58) concluded that sex itself was not a major factor in the attrition process. Sex became a major factor when other data such as background and institutional factors were considered.

Race and attrition. The research indicated that the variable race had no effect on the attrition process (Howell, Perkins, and Young, 1979, p. 26; Kohen, Nestel, and Karmas, 1976, p. 243; Pedrini and Pedrini, 1977, p. 146). Other research supported this conclusion once background factors were controlled (Astin, 1975, p. 303).

Once socioeconomic status, achievement, and degree aspirations were controlled, the White students actually demonstrated a higher attrition rate than did Black students (Kolstead, 1977, p. 6; Peng and Fетters, 1978, p. 367). This finding was modified by Astin. He found that Black women persisted at higher rates than White women of

similar backgrounds and ability, even though the overall drop rate for Blacks was higher than for Whites (Astin, 1978, p. 218).

Entrance age and attrition. Older students may have had more problems in reaching graduation, but age itself did not have a significant effect upon attrition (Summer-skill, 1962, p. 631). A national survey indicated that the age of a student at the time of college entrance had no real effect upon attrition (Kohen, Nestel, and Karmas, 1976, p. 243). In line with the national trend, Old Dominion University found that age was not a major factor that distinguished persisters and nonpersisters (Howell, Perkins, and Young, 1979, p. 26).

Other findings indicated that the older student produced a negative effect on persistence. Astin (1975, p. 44) concluded, "Older students, particularly older women, are more likely to drop out than students of traditional entry age (17-19)." In a study of students at the University of Mississippi, less than 10 percent of the students who persisted were 20 years of age or over at the time of admission to the University (Wallace and Harris, 1978, p. 252). Stoner (1979, p. 108) reported in a study of students at The University of Tennessee, Knoxville, that 98.1 percent of the students who graduated within 20 consecutive quarters after entering college were 21 years of age or under at the time they were admitted to the institution.

Other studies indicated that the younger student increased the attrition rate. Cumberland College found that dropouts were younger than in previous years and still predominately freshmen (Baker and Baker, 1977, p. 17). Halladay and Andrew (1958, p. 212) reported of Arkansas Colleges that 63 percent of the withdrawals were 19 years of age or under.

In partial explanation of these findings, Chase (1970, p. 68) found that dropouts at the end of the first term seemed to be younger than 20 years of age, but as time passed the high percentage of dropouts shifted from the younger students to the older students. Older students made a good start, but had problems in persisting to graduation.

Marital status. The research did not indicate a consensus regarding the effects of marriage on the persistence of students. Portions of the literature indicated that the marital status had no net effect on the persistence of the student enrolled in an undergraduate program (Howell, Perkins, and Young, 1979, p. 26; Kohen, Nestel, and Karmas, 1978, p. 248). Yet, Panos and Astin (1967, p. 8) reported that in general the dropout was more likely to be married when starting college than was the persister.

The sex of the student may have been a factor that contributed to such variance. Astin (1975, p. 45) found

that being married when entering college produced a decrease in chance of dropping out of 8 percent for males and an increase of 11 percent for females. The married male student who was a first time entering freshman was a strong candidate for academic probation or suspension (Neely, 1977, p. 969). Yet, Cohen, Mann, and Shepherd (1979, p. 5) reported that no significant differences in marital status were found between male persisters and nonpersisters.

The marital status alone does not appear to be a determining factor. From the literature, there appear to be supplemental factors interacting with marital status that provide varying effects.

Miscellaneous Factors

Full-time versus part-time enrollment. The findings were in agreement that full-time enrollment increased the chance of persistence over part-time enrollment. Howell, Perkins, and Young (1979, p. 26) reported that persisters at Old Dominion University tended to be full-time students who attended mainly in the day, while the nonpersisting students were part-time students who attended mainly in the evening. The University of Southern Mississippi reported that over 88 percent of the freshmen enrolled as part-time students dropped out (Wallace and Harris, 1978, p. 256). Over 10 percent of these dropouts changed their status

from full-time to part-time during the last quarter of enrollment (Wallace and Harris, 1978, p. 256).

Religion and attrition. The research supported the conclusion that if the religion of the student and the religious affiliation of the institution were the same, the impact was an increase in persistence (Astin, 1975, p. 175; Bean and Creswell, 1980, p. 325; Cope and Hewitt, 1971, p. 50). Not only did the religious fit with the institution affect a student, the general degree of religious conviction on the part of the student had a direct relationship to dropout behavior (Astin, 1975, p. 45; Cohen, Mann, and Shepherd, 1979, p. 5). Astin (1975, p. 33) reported that the lack of religious belief was a major factor in attrition among students who expressed no religious belief themselves, and who had Protestant parents.

The institutions affiliated with a specific religious organization appeared to have greater holding power with students than did institutions not associated with religious organizations. Astin (1975, p. 116) stated, "Apparently, the slight negative effect on persistence with the four year institutions is accounted for entirely by the non-denominational colleges."

Public or private institutions. The persistence rates at private institutions were greater than those at

public institutions (Cope and Hannah, 1975, p. 3; Feters, 1977, p. 25; Iffert, 1958, p. 100; Kolstead, 1977, p. 5). Tinto (1975, p. 116), however, accurately stated, "How these differences come about or for which types of persons the differences are greater, smaller, or even reversed is, thus far, beyond our reach."

Veteran status. White men and Black men who received major support from G. I. Bill benefits while attending predominantly White institutions showed a greater chance of dropping out than did students not receiving G. I. Bill benefits (Astin, 1975, p. 65). The increase in dropout probability was 7 percent for White men and 8 percent for Black men at predominantly White institutions (Astin, 1975, p. 65).

The veterans did not appear to drop out for academic reasons. Neely (1977, p. 970) reported, "none of the men who had been on active military duty encountered academic probation or suspension."

Resident of state versus non-resident. Residents of a state attending a state institution were more likely to be academic dropouts at the institution than were non-residents of the state attending a state institution (Chase, Dalton, Johnson, and Anastasiow, 1976, p. 13). The non-resident, however, was more likely to voluntarily drop out than was the resident.

Proximity to home appeared to affect the persistence rate (Stordhal, 1970). The non-residents who traveled 150 miles or more to the institution had a greater tendency to transfer than did students that attended as residents of the state (Strodhal, 1970, p. 164).

Quarter or semester system. Iffert (1958, p. 106), in his national survey, reported that the number of students who remained at an institution and the length of time that students attended a particular institution all favored the semester system over the quarter system. He speculated that the more stopping places a student has, the more likely the student is to stop.

Income level of parents. There are few studies that have examined the income level of the parents as an independent variable. Iffert (1958, p. 62) stated that the income level of the persister's family was significantly higher than the family income level of the student who dropped out at the end of the first registration period. Astin (1973, p. 304) stated, however, that there was no relationship between the parent's level of income and the retention or attrition of the student.

Concluding statement. This review of literature is not exhaustive, but does incorporate the major research findings on attrition and retention factors to date. The

multitude of studies is not consistent in research findings and requires that further research be conducted.

This future research must incorporate the personal factors brought to a specific institution by a student, the environmental factors at the institution that interact with each student, and some measure of the student's major experiences at the institution. Through a combination of these factors, significant prediction capability may be formulated.

CHAPTER III

DATA AND METHODOLOGY

This study examined 45 variables applied to 2313 students from four private, church-related, liberal-arts institutions. The institutions examined were Abilene Christian University, Abilene, Texas; David Lipscomb College, Nashville, Tennessee; Freed-Hardeman College, Henderson, Tennessee; and Harding University, Searcy, Arkansas. These institutions were selected due to the commonality of goals, programs, student environment, and religious orientation.

The subjects for the study were drawn from the entering freshman class of the Fall 1975 term. The criteria for selection were: (1) the student must not have had previous academic work on a college level, including the preceding summer session; and (2) the student must have responded to each of the variables examined in the Discriminant Analysis. The number of students who met the criteria was 1872 for the examination of persistence rates and 1596 for the total Discriminant Analysis. The measurement on persistence rates required that the individual meet only the first criterion. The Discriminant Analysis required that both criterion be met.

The variables were selected to indicate the areas presented in the review of literature: Academic Factors (type of dropout, length of matriculation, high school rank, high school performance, academic aptitude, institutional academic performance, time of withdrawal, degree aspirations, major field of interest); Sociological Factors (place of residence, extra-curricular involvement of the student, campus integration, student and institutional fit, commitment of the student); Financial Aid Requested; Personal Factors (sex, race, entrance age, marital status); Miscellaneous Factors (full-time or part-time, religion, veteran status, resident of the state or non-resident of the state, income level of parents); Quarter or Semester system.

The analysis used computed variables of age, extra-curricular activities, fit of the student with the location of the institution, fit of the student with the environment of the institution, and determination of whether the individual was a resident of the state in which the institution was located.

The two statistical procedures applied to the data were a two-way Crosstabulation and a Stepwise Discriminant Analysis. The two-way Crosstabulation was appropriate for indicating the percentage of students in each of the categories at each institution and the total sample. The Stepwise Discriminant Analysis was appropriate for

determining the factors that contributed to each of the functions that discriminated among the students. Through examination of the variables that contributed to each of the functions, the shared variables at each institution were determined.

The variables were manipulated using a Stepwise Discriminant Analysis from SPSS version H, release 9. The program ran on a Digital Equipment Corporation DEC 1099 at Vanderbilt University. Indicator variables were used when necessary in order to enter data into the analysis.

The Stepwise Discriminant Analysis enters the variables into a function so as to maximize the discriminating ability between the previously entered variables collectively, and the variable to be entered on the next step. Therefore, Stepwise Discriminant Analysis is the appropriate statistical tool in determining the best set of variables to be used in discriminating among three or more groups of subjects.

The American College Testing Program Class Profile Enrolled data were obtained through permission of each institution involved in the study. Each of the institutions examined required that the ACT test be taken prior to admittance to the institution. From the magnetic tape, a list of names of freshman students enrolled at each institution was generated and mailed to each of the institutions. A transcript indicating the five year

academic performance of each student was furnished.

In order to determine the classification of each of the individuals examined, the student record was examined for the five-year academic period beginning the Fall term of 1975. The classification categories and their operational definitions are presented in Table 1.

Following the two-way Crosstabulation procedure based on the five group classification, it was apparent that the small number of students in two of the categories, Persisters and Stopouts, would prohibit proper statistical analysis. Therefore, the Graduates, Persisters, and Stopouts were combined into a category labeled Persisters. This new category indicated individuals enrolling during the Fall term of 1975 and graduating or continuing to enroll at the end of the five academic years examined.

Based upon the Stepwise Discriminant Analysis, three variables were deleted from the study: level of parental income (PINCOME); marital status (MSTAT), and veteran status (VET). With these variables included in the analysis, no discriminant functions could be computed; the eigenvalues failed to converge.

Upon receipt of all the transcripts for the institutions, it was obvious that David Lipscomb College was the only institution that enrolled students on a quarter system rather than a semester system. Therefore, this variable, QTRSEM, was deleted from the study.

TABLE 1
STUDENT CLASSIFICATION DEFINITIONS FOR
ATTRITION AND RETENTION STUDY AT
FOUR PRIVATE INSTITUTIONS
IN 1980

GRADUATE	An individual beginning enrollment in the Fall of 1975 and graduating within the five academic years examined
PERSISTER	An individual beginning enrollment in the Fall of 1975, not graduated, and still enrolling at the end of the five academic years examined
STOPOUT	An individual beginning enrollment in the Fall term of 1975, dropping out for a one-year period of time or longer, re-enrolling and continuing to enroll at the end of the five academic years examined
VOLUNTARY DROPOUT	An individual beginning enrollment in the Fall term of 1975, dropping out of the institution with a grade-point average of 2.00 or higher at the time of withdrawal and not returning by the end of the five academic years examined
ACADEMIC DROPOUT	An individual beginning enrollment in the Fall term of 1975, dropping out of the institution with a grade-point average of less than 2.00, and not returning by the end of the five academic years examined

Examination of the computation used in determining the cumulative grade-point average by each institution revealed that no uniform policy existed regarding failing grades. All of the student transcripts had to be standardized (re-averaged) to indicate the same type of grading computation. Although this action is not ideal in determining the effect of the cumulative grade-point average of the student, it does indicate the impact of grades at a particular institution more accurately than previously indicated on the student's transcript.

CHAPTER IV

RESULTS OF THE STUDY

The questions examined in this study were as follows:

(1) Of the entering freshmen in the Fall of 1975, what percentage of students graduated or persisted in enrollment through five academic years at each institution? (2) Which of the variables examined in this study contributed to the Stepwise Discriminant Analysis function at each institution?; and (3) What factors did the institutions have in common in contributing to the discriminant functions?

The two-way Crosstabulation was applied to the first question in order to determine the percentages of students in each of the categories. The Stepwise Discriminant Analysis was applied to questions two and three to determine discriminating variables and similarities among institutions.

Although a Persister category was initially established, the categories of Graduate, Persister, and Stopout were combined to create a new category called Persister. This new combination was necessitated due to the Persister and Stopout categories containing so few subjects. It was the combined category of Graduate, Persister, and Stopout that was used for the final analysis in this chapter.

Findings

Research question 1. Of the entering freshmen in the Fall of 1975, what percentage of students graduated or persisted in enrollment through five academic years at each institution?

David Lipscomb College exhibited the largest percentage of Graduates with 47.8 percent of the students who entered having graduated within the five academic years that followed enrollment. See Table 2. The other institutions in order of highest percentage of graduates to lowest percentage of graduates were Harding University, 41.7 percent; Abilene Christian University, 40.3 percent; and Freed-Hardeman College, 32.3 percent.

Examination of the Academic Dropout rate indicated that the institution with the largest percentage of Academic Withdrawals was Freed-Hardeman College; 25.4 percent of their entering students withdrew with less than a 2.00 grade-point average on a 4.00 system. Following in order of highest rate of Academic Withdrawal to lowest rate were Abilene Christian University, 24.5 percent; Harding University, 22.3 percent; and David Lipscomb College, 13.5 percent.

According to Table 2, Harding University was the only institution that had no individuals drop out for a year and then return (Stopout). The other institutions

TABLE 2

STUDENT CLASSIFICATION PERCENTAGES AT EACH INSTITUTION IN 1975

Classification	Abilene Christian University	David Lipscomb College	Freed- Hardeman College	Harding University
Graduate	40.3	47.8	32.3	41.7
Persisters	2.5	1.6	1.6	2.0
Stopouts	1.4	1.6	.9	0.0
Voluntary Withdrawals	31.2	35.4	39.8	34.1
Academic Withdrawals	24.5	13.5	25.4	22.3

individually exhibited less than 2 percent Stopouts.

Both Persisters and Stopouts were so small in number that statistical analysis was hindered. For that reason, the Graduates, Persisters, and Stopouts were combined to create a new category for analysis entitled Persisters. This new category included individuals who began their study during the Fall term of 1975 and either graduated or were still enrolling at the end of the five academic year period examined.

The categories for this study then became Persisters, Voluntary Withdrawals, and Academic Withdrawals. The institution with the largest percentage of persisting students was David Lipscomb College with 51.1 percent. See Table 3. The institutions in descending order of Persisters were Abilene Christian University with 44.3 percent, Harding University with 43.6 percent, and Freed-Hardeman College with 34.8 percent.

Table 3 shows that David Lipscomb College had the least number of Academic Withdrawals of the institutions examined over the five academic years. The institutions in ascending order of Academic Withdrawals were David Lipscomb College with 13.5 percent, Harding University with 22.3 percent, Abilene Christian University with 24.5 percent and Freed-Hardeman College with 25.4 percent. See Table 3.

TABLE 3

THREE GROUP STUDENT CLASSIFICATION PERCENTAGES
AT EACH INSTITUTION IN 1975

Classification	Abilene Christian University	David Lipscomb College	Freed- Hardman College	Harding University
Persisters	44.3	51.1	34.8	43.6
Voluntary Withdrawals	31.2	35.4	39.8	34.1
Academic Withdrawals	24.5	13.5	25.4	22.3

The institution with the largest number of Voluntary Withdrawals was Freed-Hardeman College with 39.8 percent. The institutions in ascending order of percentage of Voluntary Withdrawals were Abilene Christian University with 31.2 percent, Harding University with 34.1 percent, David Lipscomb College with 35.4 percent, and Freed-Hardeman College with 39.8 percent.

Research question 2. Which of the variables examined in this study contributed to the Stepwise Discriminant Analysis function at each institution?

Abilene Christian University. At Abilene Christian University, the Stepwise Discriminant Analysis allowed 10 variables out of 15 possible variables to enter the functions. The variables and their univariate F-ratios are listed in Table 4. It should be noted that the univariate F-ratio is the ability of the variable to discriminate among the subsets (Persisters, Voluntary Withdrawals, and Academic Withdrawals) if that variable were the only variable being examined across the three groups. However, the Discriminant Analysis enters the factors on their ability to discriminate collectively. Thereby, even though one of the factors possess a highly significant F-ratio, it may not enter the function in as early a step as a factor with a less significant univariate F-ratio. For example, Table 4 indicates that the variable SEX has a significance

TABLE 4
DISCRIMINATING VARIABLES AND THEIR UNIVARIATE
F-RATIOS AT ABILENE CHRISTIAN UNIVERSITY
IN 1975

	F-ratio	Significance
GPAFIRST	215.000	.0000
RSTATE	4.876	.0080
RDORM	2.802	.0616
DEGASPR	4.580	.0107
AGE	4.133	.0166
DETMJAJ	1.785	.1688
FIT	5.287	.0053
SEX	.125	.8824
HSGPA	50.350	.0000
ACTCOMP	51.910	.0000

2 and 517 degrees of freedom.

level of .8824 and yet it enters the function before HSGPA (high school grade-point average) with a significance level of .0000. The discrimination of HSGPA was accounted for in other variables already entered into the functions.

These 10 variables produced two discriminant functions that were statistically significant based on a Chi Square statistic applied to Wilk's Lambda. See Table 5. The first function accounted for 94.83 percent of the variance in the variables selected for inclusion. The second function accounted for 5.17 percent of the variance within the variables. These two functions accounted for 100 percent of the variance in the variables.

The differences between the pairs of groups are indicated in Table 6. All of the categories showed a statistically significant difference at the .05 level or beyond. The greatest difficulty appeared to be in distinguishing between the Voluntary Withdrawals and the Persisters. Though highly significant, these two groups did not show as strong a difference as the other groups.

Table 7 identifies the actual group membership and the predicted group membership of the subjects using the 10 variables entered into the two functions. The total percentage of students properly classified was 63.06 percent.

These two functions correctly classified 65.7 percent of the Persisters. Of the 248 Persisters, 58 in

TABLE 5

CANONICAL DISCRIMINANT FUNCTIONS FOR ABILENE
CHRISTIAN UNIVERSITY IN 1975

Function	Eigenvalue	Cumulative Percent	After Function	Wilks Lambda	Chi Square	df	Significance
1	.90704	94.83	0	.4996	355.61	20	.0000
2	.04950	100.00	1	.9528	24.760	9	.0032

TABLE 6
SIGNIFICANT DIFFERENCES BETWEEN PAIRS OF GROUPS
AT ABILENE CHRISTIAN UNIVERSITY IN 1975
FOLLOWING STEPWISE DISCRIMINANT
ANALYSIS STEP 10

	Persisters	Voluntary Withdrawals
Voluntary Withdrawals	3.8291 .0001	
Academic Withdrawals	44.5130 .0000	27.8860 .0000

F-statistic with 10 and 508 degrees of freedom.

TABLE 7

CLASSIFICATION TABLE FOR ABILENE CHRISTIAN UNIVERSITY IN 1975

Actual Group	Number of Cases	Persisters	Predicted Group	Voluntary Withdrawals	Academic Withdrawals
Persisters	248	163 65.7%		58 23.4%	27 10.9%
Voluntary Withdrawals	170	80 47.1%		70 41.2%	20 11.8%
Academic Withdrawals	118	3 2.5%		10 8.5%	105 89.0%
536 Cases 63.06% Classified Correctly					

Used individual group variance matrices for classification.

count or 23.4 percent were incorrectly classified as Voluntary Withdrawals; 27 in count or 10.9 percent were incorrectly classified as Academic Withdrawals.

Of the 170 Voluntary Withdrawals, 70 in count or 41.2 percent were correctly classified; 80 in count or 47.1 percent were incorrectly classified as Persisters; 20 in count or 11.8 percent were incorrectly classified as Academic Withdrawals.

Of the 118 Academic Withdrawals, 105 in count or 89 percent were correctly classified as Academic Withdrawals; 3 in count or 2.5 percent were incorrectly classified as Persisters; 10 in count or 8.5 percent were incorrectly classified as Voluntary Withdrawals.

David Lipscomb College. The Stepwise Discriminant Analysis at David Lipscomb College allowed eight variables to enter the analysis. See Table 8.

Based upon these eight variables, two discriminant functions were developed. Each of the functions showed a statistical significance beyond the .05 level based upon a Chi Square statistic applied to Wilk's Lambda. See Table 9. The first function accounted for 89.33 percent of the variance. The second function accounted for 10.67 percent of the variance in the variables. Together the functions accounted for 100 percent of the variance in the variables that entered into the Discriminant Analysis.

TABLE 8
DISCRIMINATING VARIABLES AND THEIR
UNIVARIATE F-RATIOS AT DAVID
LIPSCOMB COLLEGE IN 1975

	F-ratio	Significance
GPAFIRST	80.840	.0000
EXTRACUR	4.384	.0133
FIT	7.316	.0008
SEX	3.884	.0217
AGE	4.029	.0188
ACTCOMP	24.650	.0000
RDORM	1.132	.3293
RFINAID	4.367	.0135

2 and 288 degrees of freedom.

TABLE 9

CANONICAL DISCRIMINANT FUNCTIONS FOR
DAVID LIPSCOMB COLLEGE IN 1975

Function	Eigenvalue	Cumulative Percent	After Function	Wilks Lambda	Chi Square	df	Significance
1	.66094	89.33	0	.5580	165.96	16	.0000
2	.07891	100.00	1	.9269	21.609	7	.0030

Based upon the variables entered into the Stepwise Discriminant Analysis, all of the pairs of groups showed a statistically significant difference at beyond the .05 level of significance. See Table 10.

These two functions correctly classified 60.47 percent of the students examined. See Table 11. Of the 157 students who were actually Persisters, 103 in count or 65.6 percent were classified as Persisters; 41 in count or 26.1 percent were incorrectly classified as Voluntary Withdrawals; and 13 in count or 8.3 percent were incorrectly classified as Academic Withdrawals.

Of the 103 Voluntary Withdrawals, 42 in count or 40.8 percent were correctly classified; 45 in count or 43.7 percent were incorrectly classified as Persisters; 16 in count or 15.5 percent were incorrectly classified as Academic Withdrawals.

Of the 41 students who were actually Academic Withdrawals, 37 in count or 90.2 percent were correctly classified as Academic Withdrawals; only 1 in count or 2.4 percent of the total number of Academic Withdrawals was incorrectly classified as a Persister; 3 in count or 7.3 percent of the Academic Withdrawals were incorrectly classified as Voluntary Withdrawals.

Freed-Hardeman College. The Stepwise Discriminant Analysis selected six variables to enter into the two

TABLE 10
SIGNIFICANT DIFFERENCES BETWEEN PAIRS OF GROUPS
AT DAVID LIPSCOMB COLLEGE IN 1975 FOLLOWING
STEPWISE DISCRIMINANT ANALYSIS STEP 8

	Persisters	Voluntary Withdrawals
Voluntary Withdrawals	4.6570 .0000	
Academic Withdrawals	23.2060 .0000	14.0100 .0000

F-statistic with 8 and 281 degrees of freedom.

TABLE 11

CLASSIFICATION TABLE FOR DAVID LIPSCOMB COLLEGE IN 1975

Actual Group	Number of Cases	Persisters	Predicted Group	Voluntary Withdrawals	Academic Withdrawals
Persisters	157	103 65.6%		41 26.1%	13 8.3%
Voluntary Withdrawals	103	45 43.7%		42 40.8%	16 15.5%
Academic Withdrawals	41	1 2.4%		3 7.3%	37 90.2%
		301 Cases			
		60.47% Classified Correctly			

Used pooled within-groups covariance matrix for classification.

discriminant functions. See Table 12. The univariate F-ratio indicates the significance of each variable if considered on an individual basis.

These six variables produced two discriminant functions to be used in classification of the total sample at Freed-Hardeman. See Table 13. The first function accounted for 90.19 percent of the variance among the variables with the second function accounting for 9.81 percent of the variance among the variables. Both of the functions, according to the Chi Square statistics applied to Wilk's Lambda, were statistically significant at beyond the .05 level.

Based upon the six variables entered into the discriminant functions, each of the pairs of groups showed a statistically significant difference at beyond the .05 level. Although still highly significant, the groups indicating the least amount of difference were the Voluntary Withdrawals and the Persisters. See Table 14.

Through the use of these functions, 66.89 percent of the students at Freed-Hardeman College were capable of being classified correctly. See Table 15. In examining each of the specific groups, the highest percentage of correctly classified students was in the category of Academic Withdrawal. Of 77 students, 65 in count or 84.4 percent of the students were correctly classified as Academic Withdrawals; 6 in count or 7.8 percent were

TABLE 12
DISCRIMINATING VARIABLES AND THEIR UNIVARIATE
F-RATIOS AT FREED-HARDEMAN
COLLEGE IN 1975

	F-ratio	Significance
GPAFIRST	124.500	.0000
SEX	9.653	.0001
ACTCOMP	37.880	.0000
HSRANK	30.410	.0000
HSGPA	44.760	.0000
FULLPART	1.222	.2963

2 and 261 degrees of freedom.

TABLE 13

CANONICAL DISCRIMINANT FUNCTIONS FOR
FREED-HARDEMAN COLLEGE IN 1975

Function	Eigenvalue	Cumulative Percent	After Function	Wilks Lambda	Chi Square	df	Significance
1	1.05534	90.19	0	.4364	214.33	12	.0000
2	.11484	100.00	1	.8970	28.10	5	.0000

TABLE 14
SIGNIFICANT DIFFERENCES BETWEEN PAIRS OF GROUPS
AT FREED-HARDEMAN COLLEGE IN 1975 FOLLOWING
STEPWISE DISCRIMINANT ANALYSIS STEP 6

	Persisters	Voluntary Withdrawals
Voluntary Withdrawals	4.9018 .0003	
Academic Withdrawals	36.0520 .0000	37.7100 .0000

F-statistic with 6 and 256 degrees of freedom.

TABLE 15

CLASSIFICATION TABLE FOR FREED-HARDEMAN COLLEGE IN 1975

Actual Group	Number of Cases	Predicted Group		Academic Withdrawals
		Persisters	Voluntary Withdrawals	
Persisters	106	61 57.5%	30 28.3%	15 14.2%
Voluntary Withdrawals	113	35 31.0%	72 63.7%	6 5.3%
Academic Withdrawals	77	6 7.8%	6 7.8%	65 84.4%
296 Cases 66.89% Classified Correctly				

Used individual group covariance matrices for classification.

incorrectly classified as Voluntary Withdrawals; and 6 in count or 7.8 percent were incorrectly classified as Persisters.

Of the 106 students actually found to be Persisters, 61 in count or 57.5 percent were correctly classified as Persisters; 30 in count or 28.3 percent were incorrectly classified as Voluntary Withdrawals; and 15 in count or 14.2 percent were incorrectly classified as Academic Withdrawals.

Of the 113 Voluntary Withdrawals, 72 in count or 63.7 percent were correctly classified as Voluntary Withdrawals; 35 in count or 31.0 percent were incorrectly classified as Persisters; and 6 in count or 5.3 percent were incorrectly classified as Academic Withdrawals.

Harding University. There were nine variables that entered the Stepwise Discriminant Analysis at Harding University. See Table 16. The univariate F-ratio indicates the importance of the variable if it were considered on an individual basis.

These nine variables produced two discriminant functions to be used in the classification of students. See Table 17. These two functions possessed a statistical significance beyond the .05 level as indicated by a Chi Square statistic applied to Wilk's Lambda. The first function accounted for 96.47 percent of the variance among the

TABLE 16
DISCRIMINATING VARIABLES AND THEIR UNIVARIATE
F-RATIOS AT HARDING UNIVERSITY IN 1975

	F-ratio	Significance
GPAFIRST	207.900	.0000
FULLPART	2.755	.0647
ACTCOMP	62.160	.0000
RSTATE	.411	.6632
FIT	2.477	.0852
SEX	.889	.4119
HSGPA	67.380	.0000
RFINAID	2.401	.0918
RELIGION	4.182	.0159

2 and 431 degrees of freedom.

TABLE 17
CANONICAL DISCRIMINANT FUNCTIONS FOR
HARDING UNIVERSITY IN 1975

Function	Eigenvalue	Cumulative Percent	After Function	Wilks Lambda	Chi Square	df	Significance
1	1.00568	96.47	0	.4809	312.60	18	.0000
2	.03677	100.00	1	.9645	15.421	8	.0515

variables while the second function accounted for 3.53 percent of the variance among the variables.

Based upon the nine variables used in the Stepwise Discriminant Analysis, each of the pairs of groups showed a statistically significant difference beyond the .05 level. Again, it should be noted that the Voluntary Withdrawals and the Persisters showed a smaller statistically significant difference than did the other pairs of groups. See Table 18.

These two discriminant functions correctly classified 64.01 percent of the students examined at Harding University. See Table 19. Of those 214 students who were actually Persisters, 144 in count or 67.3 percent were classified correctly. However, 42 in count or 19.6 percent were incorrectly classified as Voluntary Withdrawals; 28 in count or 13.1 percent were incorrectly classified as Academic Withdrawals.

Of the 100 actual Academic Withdrawals, 94 in count or 94.0 percent of the students were correctly classified as Academic Withdrawals. Only one of the students was incorrectly classified as a Persister; 5 in count or 5 percent were incorrectly classified as Voluntary Withdrawals.

In examining the 150 Voluntary Withdrawals, 59 in count or 39.3 percent of these individuals were classified correctly. However, 74 in count or 49.3 percent were

TABLE 18
SIGNIFICANT DIFFERENCES BETWEEN PAIRS OF GROUPS
AT HARDING UNIVERSITY IN 1975 FOLLOWING
STEPWISE DISCRIMINANT ANALYSIS
STEP 9

	Persisters	Voluntary Withdrawals
Voluntary Withdrawals	1.9398 .0450	
Academic Withdrawals	43.2200 .0000	33.1780 .0000

F-statistic with 9 and 423 degree of freedom.

TABLE 19
CLASSIFICATION TABLE FOR HARDING UNIVERSITY IN 1975

	Number of Cases	Persisters	Predicted Group	Voluntary Withdrawals	Academic Withdrawals
Actual Group					
Persisters	214	144 67.3%	42 19.6%	28 13.1%	
Voluntary Withdrawals	150	74 49.3%	59 39.3%	17 11.3%	
Academic Withdrawals	100	1 1.0%	5 5.0%	94 94.0%	
464 Cases 64.01% Classified Correctly					

Used individual group covariance matrices for classification.

incorrectly classified as Persisters; 17 in count or 11.3 percent were incorrectly classified as Academic Withdrawals.

Total student sample. In order to determine if there were predictive functions for the entire student sample examined, the total sample of students was subjected to the same analysis as each individual institution.

The Stepwise Discriminant Analysis allowed nine out of 15 variables to enter the discriminant functions. See Table 20. The univariate F-ratio indicates the significance of each variable if it were considered on an individual basis.

These nine variables created two discriminant functions that were statistically significant beyond the .05 level of significance based upon the Chi Square statistic applied to Wilk's Lambda. The first function accounted for 97.07 percent of the variance while the second function accounted for 2.93 percent of the variance. See Table 21.

In examining the differences between the pairs of groups following step 9 of the analysis, all of the groups showed a statistically significant difference beyond the .05 level. See Table 22.

These discriminant functions, when applied to the 1596 students examined in this analysis, correctly classified 60.21 percent of the students. See Table 23.

Of the 727 actual Persisters examined, 405 in count

TABLE 20
DISCRIMINATING VARIABLES AND THEIR UNIVARIATE
F-RATIOS FOR FOUR PRIVATE INSTITUTIONS
IN 1975

	F-ratio	Significance
GPAFIRST	640.000	.0000
FIT	8.981	.0000
SEX	7.717	.0005
HSGPA	189.600	.0000
AGE	7.793	.0004
RDORM	3.711	.0247
ACTCOMP	173.500	.0000
DETMJ	5.064	.0064
RSTATE	2.196	.1116

2 and 1506 degrees of freedom.

TABLE 21

CANONICAL DISCRIMINANT FUNCTIONS FOR FOUR
PRIVATE INSTITUTIONS IN 1975

Function	Eigenvalue	Cumulative Percent	After Function	Wilks Lambda	Chi Square	df	Significance
1	.87462	97.07	0	.5197	982.98	18	.0000
2	.02633	100.00	1	.9743	39.121	8	.0000

TABLE 22
SIGNIFICANT DIFFERENCES BETWEEN PAIRS OF GROUPS
FOR FOUR PRIVATE INSTITUTIONS IN 1975
FOLLOWING STEPWISE DISCRIMINANT
ANALYSIS STEP 9

	Persisters	Voluntary Withdrawals
Voluntary Withdrawals	6.5244 .0000	
Academic Withdrawals	137.0200 .0000	97.9280 .0000

F-statistic with 9 and 1498 degrees of freedom.

TABLE 23

CLASSIFICATION TABLE FOR FOUR PRIVATE INSTITUTIONS IN 1975

Actual Group	Number of Cases	Predicted Group	
		Persisters	Voluntary Withdrawals
Persisters	727	405 55.7%	227 31.2%
Voluntary Withdrawals	535	212 39.6%	261 48.8%
Academic Withdrawals	334	10 3.0%	29 8.7%
		1596 Cases	
		60.21% Classified Correctly	
		95 13.1%	
		62 11.6%	
		295 88.3%	

Used individual group covariance matrices for classification.

or 55.7 percent were correctly classified; 227 or 31.2 percent were incorrectly classified as Voluntary Withdrawals; 95 in count or 13.1 percent of the Persisters were incorrectly classified as Academic Withdrawals.

There were 334 actual Academic Withdrawals. Of this number, 295 in count or 88.3 percent were classified correctly; 29 in count or 8.7 percent were correctly classified as Voluntary Withdrawals; 10 in count or 3.0 percent were incorrectly classified as Persisters.

There were 535 individuals classified as Voluntary Withdrawals. Of this number, 261 or 48.8 percent were correctly classified as Voluntary Withdrawals; 212 in count or 39.6 percent were incorrectly classified as Persisters; and 62 or 11.6 percent were incorrectly classified as Academic Withdrawals.

Research question 3. What factors did the institutions have in common in contributing to the discriminant functions?

A tabulation of the results indicated that there were three significant variables at all four institutions: ACTCOMP (ACT Composite Score); GPAFIRST (first quarter grade-point average); and SEX. See Table 24.

Variables entering the discriminant functions at three institutions were: FIT (fit of the student with the institution), and HSGPA (high school grade-point average). See Table 24.

TABLE 24
DISCRIMINANT VARIABLES AND STEP ENTERED IN DISCRIMINANT ANALYSIS
AT EACH INSTITUTION IN 1975

	ACTCOMP	AGE	DEGASPR	DETMAL	EXTRACUR	FIT	FULLPART	GPAFIRST	HSGPA	HSRANK	RDORM	RELIGION	RFINAID	RSTATE	SEX
Abilene Christian University	10	5	4	6		7		1	9		3			2	8
David Lipscomb College	6	5			2	3		1			7		8		4
Freed-Hardeman College	3						6	1	5	4					2
Harding University	3					5	2	1	7			9	8	4	6
Total Sample	7	5		8		2		1	4		6			9	3

Variables entering the discriminant functions at two institutions only were: AGE, FULLPART (enrolling on a full-time or a part-time basis); RDORM (whether or not the student planned to live in the dormitory), RFINAID (planning to request financial aid or not), RSTATE (resident in the state in which the institution was located). See Table 24.

Variables entering the discriminant functions at only one institution were: DEGASPR (degree aspirations), DETMAJ (determined a major), EXTRACUR (number of planned extra-curricular activities), HSRANK (rank in high school class), and RELIGION (whether indicated as Protestant or not). See Table 24.

Concluding Statement

The findings of this study indicated that the persistence rate at each of the institutions was similar. With the exception of Freed-Hardeman College, all of the institutions were close to the expected range of 40 percent to 50 percent.

The findings also indicated that the variables examined did provide a significant amount of discrimination among the student categories at each institution. Additional variables may need to be included and other variables excluded in order to gain greater insight into the retention and attrition factors at each of the institutions.

The presentation made in this chapter was one of merely reporting the findings from the data following manipulation by the computer. Discussion of the data and implications for future research are presented in Chapter V.

CHAPTER V

DISCUSSION AND IMPLICATION FOR FUTURE RESEARCH

In discussing the findings of this study, it is important to remember the types of statistical procedures used and their implications. The two-way Crosstabulation used in this study indicated the percentage of students in each of the student classification categories at each institution.

The Stepwise Discriminant Analysis statistic used in this study indicated factors that correlated with the retention or attrition of students; the analysis did not indicate cause and effect relationships. It is possible or even probable, in certain cases, that a cause and effect relationship existed. Further analysis would be needed, however, before such an assumption could be supported.

The Stepwise Discriminant Analysis indicated the maximum amount of separation that could be achieved among the groups given the variables examined. This procedure examined the variables collectively, not individually. It then allowed the variables to enter the analysis. Therefore, if two or more variables were highly correlated with each other, the more potent discriminator entered the

analysis first. The other variable, due to the high correlation, was omitted from the analysis or did not enter the analysis until a later step.

The F-value of 1.00 applied to the Stepwise Discriminant Analysis, to limit the discrimination, allowed the maximum amount of discrimination among the variables. Only separation that represented random sampling or mere chance was excluded ($p > .50$). The variables at the first of the Stepwise Discriminant Analysis were more potent discriminators than those at the end of the analysis, or the latter variables were highly correlated with a variable already entered into the analysis. The univariate F-ratio aided in making that determination.

Once the analysis indicated variables that discriminated among the groups at each institution, a classification coefficient for each discriminating variable was derived. These coefficients were then used to assign each student at a particular institution to a predicted category of Persister, Voluntary Withdrawal, or Academic Withdrawal.

Retention and Attrition Percentages

The literature indicated that the average national retention rate was around 40 percent to 50 percent annually. The literature indicated that the institution affiliated with a religious organization would produce a higher

retention rate than the national average. That conclusion was not supported by this study.

Of the four institutions examined, Freed-Hardeman College had the lowest persistence rate with 34.8 percent, and David Lipscomb College had the highest persistence rate with 51.1 percent. Both Harding University and Abilene Christian University fell within the expected national range.

Freed-Hardeman College had the lowest persistence rate, the highest Voluntary Withdrawal rate, and the highest Academic Withdrawal rate. Further study is needed to determine the factors which produced such an effect.

Academic Factors

First term grade-point average. The variable that provided the greatest amount of discrimination at each of the institutions and for the Total Sample was the first term grade-point average (GPAFIRST). At each of the four institutions examined, the first term seemed to be vitally important to the persistence or withdrawal of the student.

The literature reflected that a "good" start for a student was a corollary to persistence. In this study, that conclusion was reinforced: the higher the first term grade-point average of the student, the more likely the student was to persist.

ACT Composite score. The ACT Composite score (ACTCOMP) was a discriminating variable at all four of the institutions examined as well as in the Total Sample. All of these institutions reinforced the findings in the review of literature: the higher the ACT Composite score, the more likely the individual was to persist. The greatest amount of difference observed at each of the institutions, and in the Total Sample, was between the Academic Withdrawals and the Persisters. The Voluntary Withdrawals ranked between the Academic Withdrawals and the Persisters.

High school grade-point average. The high school grade-point average (HSGPA) was a contributor to discrimination at Abilene Christian University, Freed-Hademan College, and Harding University as well as in the Total Sample. It was not a discriminating variable at David Lipscomb College.

For these three institutions, the results were in the expected direction: the higher the high school grade-point average (HSGPA) the more likely the individual was to persist.

By the analysis not including the high school grade-point average (HSGPA) of the students at David Lipscomb College, the assumption is that there was a high degree of correlation between the first term grade-point

average and the high school grade-point average. Additional study is needed to support such a conclusion.

High school rank. The high school ranking of the student (HSRANK) was significant at Freed-Hardeman College. Why this factor would be included only at Freed-Hardeman College is not clear from this study. The previous assumption of a high degree of correlation with other academic variables may be true; however, additional study is warranted to understand the inclusion of this variable at only one institution.

Determined a major. The literature indicated that the student who had determined a major upon enrollment at an institution was more likely to be a Persister than the individual who had not determined a major. The findings of this study were not in agreement with the review of the literature.

At Abilene Christian University and for the Total Sample, the more determined a major the individual indicated, the more likely the individual was to be an Academic Withdrawal. The Persister category exhibited the lowest group mean for the degree of determined major, followed by the Voluntary Withdrawals and the Academic Withdrawals. This variable did not enter the analysis at David Lipscomb College, Freed-Hardeman College, or Harding University.

The univariate F-ratio indicated that this variable was not significant if used independently to discriminate among the groups at Abilene. However, when the Total Sample was considered, a significant amount of discrimination was observed. Additional variables in the review of literature, namely the sex of the individual, need to be examined for interaction effects.

Degree aspirations. The variable, Degree Aspiration (DEGASPR), was a significant discriminator at Abilene Christian University. The discriminant analysis did not include this variable as a discriminator at any of the other institutions. The literature gave no firm consensus as to the directional influence of a student's degree aspirations on retention.

The Persister at Abilene Christian University indicated a lower degree of aspiration than the Voluntary Withdrawal, but a higher degree of aspiration than the Academic Withdrawal. The Voluntary Withdrawal had the highest degree aspirations followed by the Persister and the Academic Withdrawal.

Due to the lack of facilities to track Voluntary Withdrawals, a determination of their persistence rates at other institutions was beyond the scope of this study. Whether the individual with the highest degree aspiration was likely to withdraw or continue at another institution

is unknown. Future research should track the Voluntary Withdrawals to determine the influence of the variable, Degree Aspiration, on persistence rates.

All of the variables classified as Academic Factors entered the analysis when the four institutions were examined. Of the six academic variables examined, only two, the ACT Composite score (ACTCOMP) and the first term grade-point average (GPAFIRST) entered the analysis at each institution and for the Total Sample.

Sociological Factors

Fit of student with the institution. The fit (FIT) between the institution and the student was a major discriminator at Abilene Christian University, David Lipscomb College, Harding University, and for the Total Sample. It was not a discriminator at Freed-Hardeman College.

The variable FIT included the responses to questions of: (1) the type of institution the student desired to attend; (2) the importance of the type of institution that the student wanted to attend; (3) the institutional student body size in which the student wanted to enroll; and (4) whether or not the institution was in the state in which the student wanted to be.

The literature indicated that the better the fit of the student with the particular institution, the more

likely the student was to persist. This study indicated the same conclusion. At Abilene Christian University, David Lipscomb College, Harding University, and for the Total Sample, the better the fit of the student with the institution, the more likely the student was to persist.

At Freed-Hardeman College, the better the fit of the student with the institution, the more likely the student was to be an Academic Withdrawal. It is important to remember that this variable was the preference of the student prior to enrollment. It is possible that the preference of the student changed after an initial experience with the environment. Additional analysis is needed to determine the causes of such a finding at Freed-Hardeman College.

Planned extra-curricular involvement. The planned extra-curricular activities of a student were important as a discriminator at only one institution, David Lipscomb College. The literature offered no consistent direction of the effect of extra-curricular activities on student retention. At David Lipscomb College, however, the more involved the student planned to be, the more likely the student was to persist.

In that David Lipscomb College was the only institution of those examined that was located in a metropolitan area, it is conceivable that students drawn to that

institution were drawn because of the location of the institution and the social atmosphere that accompanies a metropolitan area. Further analysis is needed to determine the reasons this variable was a discriminator at David Lipscomb College only.

Place of residence. The variable RDORM, indicating whether or not the individual planned to reside in the dormitory, entered the analysis at Abilene Christian University, David Lipscomb College, and the Total Sample.

The literature led to the expectation that living in a dormitory would enhance retention. That finding was not consistently observed at the institutions examined. Even when the variable entered the analysis, the univariate F-ratio indicated it was significant as a discriminator only for the Total Sample.

This variable did not conform to the expectations of the literature. The Persisters produced a greater tendency to live in the dormitory; it was not, however, a statistically significant difference. The next group with the largest percentage of dormitory residents was the Academic Withdrawals followed by the Voluntary Withdrawals.

Why this variable did not enter the analysis at Freed-Hardeman College or Harding University is not clear. A possible explanation for the result is that there was a host of social factors not examined that produced a

greater social impact than living in the dormitory.

Requesting of Financial Aid

In examining Financial Aid, the variable (RFINAID) served as a discriminator at David Lipscomb College and Harding University. RFINAID was not a discriminator at Abilene Christian University, Freed-Hardeman College, nor for the Total Sample.

At David Lipscomb College, the category with the lowest percentage of requests for financial aid was the Academic Withdrawals. Both the Persister category and the Voluntary Withdrawal Category were approximately equal in requests. At Harding University, the greatest percentage of requests for financial aid came from the Voluntary Withdrawals, followed by the Persisters and the Academic Withdrawals. Further analysis is needed to determine the reasons for financial aid requests impacting on students at these institutions only.

The univariate F-ratio indicated that requesting financial aid was statistically significant as an independent variable at David Lipscomb College only. More detailed information and analysis is warranted to determine why financial aid is influencing retention at David Lipscomb College.

The literature indicated that there is no consensus relating to financial aid and retention or attrition.

There appeared to be mediating factors such as source of aid, amount of aid, and type of aid, that must be considered. Those factors were not included in this study.

Personal Factors

Sex of the individual. The sex of the individual (SEX) entered the analysis at all four institutions and the Total Sample. Yet, the literature is contradictory on the findings regarding the influence of the sex of the individual on retention.

There is a large amount of literature indicating that sex has no relationship to attrition or retention. There is another large volume of literature indicating that females withdraw at higher rates than males. In agreement with the latter literature, this study found that the category with the highest percentage of females was the Voluntary Withdrawal group at each institution. At all four institutions, however, the Persister category contained a higher percentage of females than males.

The univariate F-ratios indicated that SEX as a variable was statistically significant when used independently at David Lipscomb College, Freed-Hardeman College, and for the Total Sample. It entered the analysis at each of the institutions, but was not statistically significant at Abilene Christian University or Harding University.

More analysis is needed to determine if SEX is a consistent discriminator at each of the institutions when several entering classes are examined.

Age upon entrance. The AGE of the individual as a variable entered the Discriminant Analysis at Abilene Christian University, David Lipscomb College, and the Total Sample. For each of these groups, the univariate F-ratio indicated a statistically significant difference beyond the .05 level.

The age of a student at the time of enrollment produced contradictory evidence in the review of the literature. At David Lipscomb College and Abilene Christian University, however, the younger the student was at the time of enrollment the more likely the student was to persist.

In the Total Sample, the category with the lowest mean age at time of enrollment was the Voluntary Withdrawal. The Academic Withdrawal category had a higher mean age than the Persister category.

The mean age for each category of students at each institution could be rounded to 18 years of age. A variation of the mean in months beyond the age of 18 years appeared to produce the discrimination. Further analysis is needed to determine why this variation in months made a significant contribution and why the variable was not a

discriminator at Harding University or Freed-Hardeman College.

Miscellaneous Factors

Full-time or part-time enrollment. The literature indicated that full-time enrollment facilitated student retention. This variable, FULLPART, entered the analysis as a discriminator at only two institutions, Freed-Hardeman College and Harding University.

At Freed-Hardeman College, the group with the largest percentage of full-time enrollment was the Voluntary Withdrawals, followed by the Academic Withdrawals, and the Persisters. This finding was contrary to the conclusions found in the review of the literature.

At Harding University, the findings agreed with the review of the literature; the group with the largest percentage of full-time students was the Persister category, followed by the Voluntary Withdrawal category, and the Academic Withdrawal category.

At neither Freed-Hardeman College nor Harding University was the FULLPART variable statistically significant as an independent variable. It only added discrimination when an F-level of 1.00 was used and in conjunction with other variables.

Religious preference. The variable RELIGION was a significant discriminator at Harding University. The literature indicated that the religious fit of the student with the institution would aid in retention. The responses regarding religious preference at Harding University indicated that the Voluntary Withdrawal category had the highest score regarding Protestant as a preference, followed by the Persister category and the Academic Withdrawal category.

The question regarding religious preference was computer coded in such a manner that the student must have checked Protestant as religious choice for it to be counted. Why this variable would show up as significant is not clear.

Resident of the state. The literature indicated that the resident of a state (RSTATE) was more likely to be an academic dropout than the nonresident. This variable entered the analysis for the Total Sample and for two institutions, Abilene Christian University and Harding University.

Although the RSTATE variable was a discriminator at Abilene Christian University, Harding University, and for the Total Sample, the category of student with the highest group mean varied with each sample. At Abilene Christian University, the group with the highest mean

score was the Academic Withdrawal category. At Harding University, the highest mean score was in the Voluntary Withdrawal category. For the Total Sample, the highest group mean was in the Persister group.

The univariate F-ratio was significant at Abilene Christian University; it was neither significant at Harding University nor for the Total Sample. Thereby, only at Abilene Christian University would the variable RSTATE be a major discriminator if it were examined independently.

This finding at Abilene Christian University was consistent with the literature regarding state universities. The category with the largest number of state residents was the Academic Withdrawals. Why this finding appeared was not clear from the data examined.

Concluding Statement

The findings of this study indicated that the students attending the four institutions examined were a relatively homogenous group. The factors examined were capable of correctly classifying between 60.21 percent and 66.89 percent of the students at each institution.

The percentage of correct classifications at each institution represented a conservative estimate of the potential for correct classification. These percentages could be improved by limiting the number of variables

examined at each institution, and thereby limiting the degrees of freedom allowed in the statistical analysis. This limitation could be accomplished by using a level of significance less than a probability of .50 for including variables in the discriminant analysis, or by selecting variables with a statistically significant univariate F-ratio as determined by this study.

An additional aid in making correct classifications would be to make prior assumptions regarding the size of each group category at each institution. By making adjustments in the expected group size, a more accurate classification procedure is possible.

This study was not designed to explain reasons why certain variables entered the analysis. It was designed to examine the percentage of students in each category at each institution, the variables presently discriminating among the groups, and the similarities among institutions.

As new freshman classes enroll, the characteristics of the students and the environment at the institution begin to change. As these changes occur, variables serving as discriminators may also change. It is hoped that this study will serve as a foundation for future studies which will provide answers to many of the unanswered questions in this study.

CHAPTER VI

SUMMARY

This study sought to determine the answers to three research questions: (1) Of the entering freshmen in the Fall of 1975, what percentage of students graduated or persisted in enrollment through five academic years at each institution?; (2) Which of the variables examined in this study contributed to the Stepwise Discriminant Analysis function at each institution?; and (3) What factors did the institutions have in common in contributing to the Stepwise Discriminant Analysis?

Methodology

The four participating institutions were Abilene Christian University, Abilene, Texas; David Lipscomb College, Nashville, Tennessee; Freed-Hardeman College, Henderson, Tennessee; and Harding University, Searcy, Arkansas. Each of the institutions gave permission for the American College Testing Program to release all of the data submitted by the student at the time of taking the ACT test. The American College Testing Program provided a magnetic tape from which all of the pertinent data was extracted. Based upon the Class Profile Enrolled data, a list of names was generated for transcripts to be supplied by each institution. All of the institutions supplied the needed transcripts.

Upon receipt of the transcripts from each of the institutions, it became apparent that no uniform treatment of transfer work or failing grades existed. Each of the transcripts was standardized to indicate a grade-point average reflecting only work at the individual institution examined. All failing grades at the respective institutions were included in the grade-point average, and all transfer work was excluded from the grade-point average.

The data were analyzed using a two-way Crosstabulation and a Stepwise Discriminant Analysis. The two-way Crosstabulation indicated the percentage of students in each classification category at each institution and for the Total Sample. The Stepwise Discriminant Analysis determined the variables that served as discriminators at each of the institutions.

Based upon the enrollment pattern of the student during the five academic years, the student was assigned to one of the five classification groups: Graduate, Persister, Stopout, Voluntary Withdrawal, or Academic Withdrawal. Upon analysis of the Crosstabulation, it became obvious that two of the categories had so few subjects that statistical analysis would be hindered. Therefore, the Graduates, Persisters, and Stopouts were combined to create a new category called Persisters. This new group included the individuals that enrolled at each

institution in the Fall of 1975, and had graduated or were still enrolled at the end of the five academic years examined.

Based upon the Stepwise Discriminant Analysis, three variables were deleted from the study: level of parental income (PINCOME); marital status (MSTAT), and veteran status (VET). With these variables included in the analysis, no discriminant functions could be computed; the eigenvalues failed to converge.

Upon receipt of all the transcripts for the institutions, it became apparent that David Lipscomb College was the only institution that enrolled students on a quarter system rather than a semester system. Therefore, this variable, QTRSEM, was deleted from the study.

Findings

Research question 1. The persistence rates at the four institutions were as follows: Abilene Christian University, 44.3 percent; David Lipscomb College, 51.1 percent; Freed-Hardeman College, 34.8 percent; and Harding University, 43.6 percent. The predicted national average was between 40 percent and 50 percent. Only Freed-Hardeman College showed a strong departure from that expectation.

In examining each of the other categories at each institution, the rates for Voluntary Withdrawals were:

Abilene Christian University, 31.2 percent; David Lipscomb College, 35.4 percent; Freed-Hardeman College, 39.8 percent; and Harding University, 34.1 percent.

In examining Academic Withdrawals at each institution, the data indicated: Abilene Christian University had 24.5 percent; David Lipscomb College had 13.5 percent; Freed-Hardeman College had 25.4 percent; and Harding University had 22.3 percent.

Freed-Hardeman College had the lowest rate of persistence, the highest rate of voluntary withdrawals, and the highest academic withdrawal rate. Future research should examine the causes of such a result at Freed-Hardeman College.

Research question 2. Although the institutions appeared similar in the number of variables that served as discriminators at each institution, the rank in importance of the variables and the variables entered into the analysis were not always the same. The institutions used all of the 15 variables available for discrimination.

At Abilene Christian University, the following variables, in order of their power as discriminators, entered the analysis: (1) first term grade-point average (GPAFIRST), (2) whether or not the individual was a resident of the state (RSTATE), (3) planning to reside in the dormitory (RDORM), (4) the degree aspiration of the

student (DEGASPR), (5) the age of the student upon entrance at the institution (AGE), (6) the degree of determined major of the student (DETMAJ), (7) the fit of the student with the institution (FIT), (8) the sex of the student (SEX), (9) the high school grade-point average of the student (HSGPA), and (10) the ACT Composite score of the student (ACTCOMP). Based upon these 10 variables, 63.06 percent of the sample were correctly classified.

At David Lipscomb College, the following variables, in order of their power as discriminators, entered the analysis: (1) first term grade-point average (GPAFIRST), (2) the number of planned extra-curricular activities (EXTRACUR), (3) the fit of the student with the institution (FIT), (4) the sex of the student (SEX), (5) the age of the student upon entrance at the institution (AGE), (6) the ACT Composite score of the student (ACTCOMP), (7) planning to reside in the dormitory (RDORM), and (8) whether or not the student intended to request financial aid (RFINAID). Based upon these eight variables, 60.47 percent of the sample were classified correctly.

At Freed-Hardeman College, the following variables, in order of their power as discriminators, entered the analysis: (1) first term grade-point average (GPAFIRST), (2) the sex of the student (SEX), (3) ACT Composite score (ACTCOMP), (4) high school rank (HSRANK), (5) high school grade-point average (HSGPA), and (6) whether or not the

student enrolled full-time or part-time (FULLPART). Based upon these six variables, 66.89 percent of the sample were correctly classified.

At Harding University, the following variables, in order of their power as discriminators, entered the analysis: (1) first term grade-point average (GPAFIRST), (2) whether or not the student enrolled full-time or part-time (FULLPART), (3) ACT Composite score (ACTCOMP), (4) whether or not the student was a resident of the state (RSTATE), (5) the fit of the student with the institution (FIT), (6) the sex of the student (SEX), (7) high school grade-point average (HSGPA), (8) whether or not the student intended to request financial aid (RFINAID), and (9) whether or not the student indicated a Protestant preference for religion (RELIGION). Based upon these nine variables, 64.01 percent of the sample were correctly classified.

When all four of the institutional samples were placed into an aggregate sample, the following nine variables, in order of their power as discriminators, entered the analysis: (1) first term grade-point average (GPAFIRST), (2) the fit of the student with the institution (FIT), (3) sex of the student (SEX), (4) high school grade-point average (HSGPA), (5) age of the student upon entrance at the institution (AGE), (6) whether or not the student lived in the dormitory (RDORM), (7) ACT Composite

score for the student (ACTCOMP), (8) the degree of determined major of the student (DETMAY), and (9) whether or not the student was a resident of the state in which the institution was located (RSTATE). Based upon these nine variables, 60.21 percent of the aggregate sample were correctly classified.

Research question 3. The same variables were not consistently selected for inclusion in the analysis at each institution by the Stepwise Discriminant Analysis. Only three of the variables entered the analysis at all four institutions: ACT Composite score (ACTCOMP); first term grade-point average (GPAFIRST); and the sex of the student (SEX). Two of the variables entered the analysis at three institutions: fit of the student with the institution (FIT), and the high school grade-point average (HSGPA). Five of the variables entered the analysis at two of the institutions: age of the student upon enrollment (AGE); enrolling on a full-time or a part-time basis (FULLPART); planning to reside in the dormitory (RDORM); planning to request financial aid or not (RFINAID); and whether or not the student was a resident of the state in which the institution was located (RSTATE). Five of the variables entered the analysis at only one institution: degree aspirations (DEGASPR); the degree of determined major (DETMAY); the number of planned extra-curricular

activities (EXTRACUR); rank in the high school class (HSRANK); and the choice of Protestant religion (RELIGION).

Implications for Future Research

The implications for future research are difficult to identify in this study. This study was designed to provide a starting point for future analysis. Predictions about what might be found were not made. Further research, however, may initially revolve around methodology. By increasing the F-level used in the Stepwise Discriminant Analysis, a smaller number of variables could be identified that still provided statistically significant discriminators. By using a smaller number of variables, the degrees of freedom used in the analysis are fewer. This procedure may manifest a higher percentage of correct classifications. Also, now that the approximate group size of each student classification category is known, by making assumptions regarding group size prior to additional analysis, more accurate classification is possible.

A correlation analysis could also aid in determining which of the variables could be excluded from the initial Stepwise Discriminant Analysis. The redundancy of discrimination could easily be eliminated through this type of examination.

Other major questions raised by this research revolved around the high percentage of Voluntary Withdrawals. Why are they leaving the original institution? Are they graduating at a different institution? Could they have been retained by the original institution?

This group classification of Voluntary Withdrawals accounted for 535 students of the 1596 used in the Stepwise Discriminant Analysis for the Total Sample. Such a large percentage of students deserves further attention and analysis.

Another major area for future research revolved around the Academic Withdrawals. Of the 1596 students used in the Total Sample, 334 of the students were Academic Withdrawals. In that the first term grade-point average was the most potent discriminator at each of the institutions and for the Total Sample, future study may desire to eliminate the first term grade-point average from the Stepwise Discriminant Analysis and observe the variables that are then indicated as major discriminators. It is possible that the potential Academic Withdrawal can be identified prior to the conclusion of the first term. If that supposition is true, then throughout the first term at each of the institutions, supplemental tutoring or additional self-help programs could be instituted to aid the potential academic withdrawal.

Future research should also examine why the particular variables discriminated at each of the institutions. It is important to remember that this study was not designed to determine cause and effect, but to examine relationships between persistence or withdrawal and other variables.

Future research should also examine additional entering freshman classes at each institution and determine the major variables that serve as discriminators. In order to be able to generalize to a population of students at any given institution over a long period of time, additional research should be conducted to ascertain the stability of variables used in the discriminant functions at each institution.

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VITA

Jimmy Lee Thomas was born in Sheffield, Alabama on March 25, 1946. He attended elementary schools in Tuscumbia, Alabama and was graduated from Deshler High School in June 1965. In 1969 he received a Bachelor of Arts degree from David Lipscomb College in Nashville, Tennessee.

After a tour of duty in the United States Army, he accepted a teaching assistantship at Auburn University and began study toward a Master's degree. He was awarded a Master of Arts degree in 1974.

After teaching five years at David Lipscomb College, he entered the Graduate School of The University of Tennessee, Knoxville in June of 1979. He received the Doctor of Education degree with a major in Educational Administration and Supervision in June of 1982.

The author is a member of Phi Kappa Phi and the American Association of Collegiate Registrars and Admissions Officers. Mr. Thomas is employed at David Lipscomb College in Nashville, Tennessee.

He is married to the former Patra Felty of Columbia, South Carolina. They have one daughter, Kathryn Lee Thomas.