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Cognitive and Non-Cognitive Predictors of Retention and Academic Performance of University Freshmen

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COGNITIVE AND NON-COGNITIVE PREDICTORS OF RETENTION AND ACADEMIC PERFORMANCE OF UNIVERSITY FRESHMEN

by

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This dissertation, submitted by Alice L. Hoffert in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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Signature Alice L Wolfert

Date April 20, 2004

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ABSTRACT

The purpose of this study was to determine the relationship between selected variables and the retention and academic performance of first-time, full-time freshmen after the first semester and first year of college. The variables included were students' gender, age, ethnicity, high school grade point average, ACT score, scholarships, Federal Pell Grant, student loans, location of high school attended, and major declared or not declared.

The population was limited to a cohort at the University of North Dakota enrolled during the 2002-2003 academic year and resulted in a sample of 1,480 students. Data were collected on each member of the cohort from the institution's student records by the institutional research office. The investigator utilized stepwise multiple regression analysis to determine the effect(s) each independent variable or combination of independent variables had on the dependent variables retention and institutional grade point average after the first semester and the first year.

The study found relationships between selected demographic, financial, and academic factors and academic performance and retention after the first semester and first year. For academic performance, the results indicated that there was a statistically significant relationship and the amount of variance accounted for was 31.9% for the first semester and 36.7% for the second semester. For retention, while there was a statistically

significant relationship, the amount of variance accounted for was only 2.2% for the first semester and 4.6% for the second semester.

The significant predictors for academic performance for both semesters in priority order were high school grade point average (positive), student loan (negative), attended other high school (positive), ACT score (positive), and Federal Pell Grant (negative). Students who did not receive loans, attended high schools other than in North Dakota and Minnesota, and did not receive Pell Grants tended to have higher grade point averages. For predicting retention after the first semester, the significant variables were high school grade point average (positive) and major declared (positive). For the second semester, these variables were high school grade point average (positive) and scholarships (positive). Students who had declared majors or received scholarships were more likely to be retained.

CHAPTER I

INTRODUCTION

Institutions of higher education across America are deeply interested in increasing student retention. Tinto (1993) described an explosion of research that has attempted to refine, supplement, and challenge the understanding of the complex forces shaping student retention. This effort has included attempts to determine the factors that result in attrition, define models to explain attrition, and assess the effectiveness of intervention and retention programs (Wright, 2001).

Spady (1970) stated that research prior to 1970 concentrated on the analysis of correlations between single variables and retention. With the advent of multivariate statistics, along with very fast computer technology, it has become possible to undertake research evaluating the relationships between many variables and retention and academic success.

Pascarella and Terenzini (1991) wrote that since the late 1960s and early 1970s there have been an impressive number of formal theories of student change which were advanced and distinguishable by their almost exclusively psychological character. They asserted that there are two general families of theories and models of student change. One is the developmental theories that address the nature, structure, processes of human growth. The second general class, college impact models, tends to focus less on the

individual development and more on the environmental or sociological origins of student change. The college impact models, according to Pascarella and Terenzini, tend to identify sets of variables (gender, academic aptitude and achievement, socioeconomic status, ethnicity, and so on) that are presumed to exert an influence on one or more aspects of student change. The college impact models are the basis for this particular study.

The Tinto (1987) student integration model of institutional departure and the Bean (1982) student attrition model have been the basis for most of the retention research in the last two decades. Pascarella and Terenzini (1991) write that the person-institution fit models of Tinto and Bean have been subjected to considerable testing, and the tests largely support the predictive validity of those models as far as the role of precollege variables is concerned.

Bennett and Okinaka (1990) describe the Bean model as one in which prematriculation characteristics of students (e.g., high school grades) are expected to influence the way in which students interact with the institution, which, in turn, leads to the students' attitudes toward the institution. "These attitudes are expected to affect the intent to leave, and intent is viewed as the immediate precursor of actual attrition" (Bennett & Okinaka, 1990, p. 34). Salter (1994) argued that the Bean model was based upon organizational behavior theory designed to promote employee satisfaction in business and that the phenomenon of student attrition was similar to employee turnover in business in that satisfied students, like satisfied employees, will remain enrolled or in the business example, employed, until they cease to be satisfied.

Salter (1994) described the Tinto model as the theory that defined attrition as a form of academic suicide and that improved the social and academic integration of the student, retention rates could be improved. The Tinto model provides a comprehensive approach to retention and serves as the primary theory base in the field for retention studies and was, therefore, selected by the investigator as the framework for this study.

Thirty years ago, as the influx of baby boomers impacted enrollments in colleges and universities, there was a plentiful supply of students. According to Massa (2001), admissions officers, particularly at the highly selective colleges, served more as gatekeepers and less as recruiters. During that time, there were numerous reports of a common warning for freshmen to "look to your left and look to your right, one of you will not be here next year."

Penn (1999) identified trends that resulted in enrollment shifts and changes in the composition of the student body. Penn described one shift as including an increase in the number of graduate students enrolled than in the previous decades as well as an increase in the nontraditional populations such as ethnic minorities, older students, and women. This transformation in higher education, according to Penn, resulted in four specific groups of students necessary to maintain institutional viability.

The first group, the traditional group who are the 18- to 24-year-olds, receive the majority of college recruitment efforts. Penn (1999) indicated that the second group, 25- to 34-year-olds, will continue to enroll in institutions of higher education although probably only part time. This is a result of the increasing cost of full-time enrollment which has forced many to seek education part time while working full time. The third

group, 35- to 54-year-old baby boomers, is constantly in school as a result of the retraining which is a requirement for many careers. The fourth group is the 55-and-over group that contains many individuals who have finished one career and may be looking for additional education or to continue education that was previously interrupted.

The future is certain to be one in which, due to the large number and variety of institutions and their missions, a competitive environment will be the norm in higher education. Morris (1987) asserted that education is becoming an industry in which for-profit institutions are offering college degrees and certificates that often cost less and are convenient and consumer-oriented. These institutions are an additional threat to traditional colleges and universities. Further, while technology provides opportunities, distance education can also threaten the traditional higher education environment. These factors reinforce the need for successful recruitment and retention of students as an essential component of a campus's survival (Penn, 1999).

Hossler and Hoezee (2001) contended that institutions of higher education have always organized themselves to optimize their ability to acquire and protect scarce resources. They also assert that the public policy shift of state funding from higher education to other state-determined priorities occurring in this country has resulted in continuing decreases in state funds provided for higher education. Penn (1999) stated that the financial allocations to higher education are under scrutiny as states realign budgets to fund other priorities. Not only are public colleges and universities in a fight for limited state appropriations, but, according to Penn, the increasing costs of higher education have caused increased competition between two-year and four-year schools. As a result, public

postsecondary schools have had to mimic the private sector in securing greater portions of their revenue from tuition paid by students.

Henderson (2001) contended that it has become increasingly apparent that there is a need to manage college enrollment from the point of initial contact with perspective students through recruitment efforts and enrollment culminating in graduation. Enrollment managers, according to Henderson, must have access to and understand substantial financial and demographic information in order to provide the appropriate number and type of students for their institutions with the goal of increased or stable enrollments.

Due to the lack of increased financial support, colleges and universities are faced with the prospect of reducing spending or making more efficient use of resources available to them. Many college and university administrators are focusing increased attention and financial resources toward a variety of programs intended to impact the retention of currently enrolled students (Hossler & Hoezee, 2001).

According to Tinto (1993), student attrition is another element of importance to all institutions of higher education. He made the case for two-year as well as four-year schools, regardless of whether they are public or private institutions. The voluntary departure of students is differentiated from involuntary departure in which the student is asked to leave the institution (most often due to academic failure or for serious disciplinary reasons). Tinto (1993) wrote that much of the literature is filled with stereotypical portraits of all students who leave being considered to be dropouts. Such a label implies that these individuals, including students who often transfer to complete their

degrees, are failures for not completing their course of study in that particular institution of higher education. This is supported by Astin (1997), who contended that " we should acknowledge that some dropouts from their first institution can and do transfer to one or more other institutions and eventually complete their bachelor's degrees" (p. 649).

Tinto (1993) not only disagreed with this view, but provided a description from the students' perspective. "But leavers often do not think of themselves as failures. Many see their actions as quite positive steps toward goal fulfillment" (p. 3). He described such attrition as an important part of the process of discovery that marks individual social and intellectual maturation.

Pantages and Creedon (1978) conducted a review of the literature and research focusing on the difficulty of defining attrition. They noted that some students leave an individual institution and others leave the entire system of higher education, and that not all student departures result in students who entirely leave higher education. Tinto (1987) asserted that many of the students leaving an institution immediately transfer to another institution of higher education and some students stop out, in that they leave for a period of time and eventually return to the institution from which they left. Due to the lack of information available to an institution and for the purposes of this study, a differentiation is not made between those students who have transferred and those who may eventually return to this university.

Much of the attrition in college enrollment, according to Mortenson (2001), occurs prior to the second year of college. As a result, the freshman first semester to second semester and freshman second semester to sophomore first semester retention (or

attrition) rates are used as an indicator of the success of admitted freshmen reaching the second semester and second year of college.

Astin (1993) wrote that institutions continue to rely heavily on traditional letter grades as a means of assessment of student achievement and academic success which is often measured by first-semester and first-year college grade point average. For students receiving grades that an institution has determined to be unsatisfactory for academic performance, probationary status and then dismissals occur. As a result, Astin contended that college grades continue to be an important means of indexing student accomplishment in college.

Need for the Study

In order for leaders of colleges and universities to attract and retain students, they are challenged to determine those students who have the greatest likelihood of persisting. "It is not surprising that the understanding of the factors that influence college persistence the most has become a critical issue for policymakers and researchers alike" (Nora, Cabrera, Hagedorn, & Pascarella, 1996, p. 428). The ability to identify and predict factors that contribute toward a student's decision to remain and those that contribute toward the decision to leave would assist institutions in recruitment and retention efforts (Morris, 1987). This information can be employed within recruitment and retention strategies and policies targeted to these students. The resulting increased retention rates would provide an institution with stabilized enrollments and improved financial predictability.

While retention of any student is a complex problem for institutions of higher learning, first-year attrition studies are particularly needed in response to Tinto's (1993)

research findings that the greatest percentage of students leaving colleges or universities do so in their first year. Based on this information, Tinto stated that examining various academic and demographic factors of entering students is of critical importance to an institution.

There is a great deal of literature addressing the relationships between retention and academic variables (Fox, 1985; Pascarella & Terenzini, 1983; Stage, 1989; Stage & Richardson, 1985; Stoecker, Pascarella, & Wolfle, 1988; Tinto, 1975, 1987), retention and demographic variables (Galicki & McEwen, 1989; Nora & Horvath, 1989; Sheridan, 1982), as well as retention and non-cognitive variables (Astin, 1993; Higbee & Dwinell, 1992; Stage & Richardson, 1985; Tracey & Sedlacek, 1984). Studies can also be found focusing on specific programs such as advising, orientation, first-year experiences, financial aid, and housing.

The university being studied, the University of North Dakota, has a set of comparable institutions that could potentially profit from the findings of this study. Administrators from these comparable institutions will need to make their own determination about whether the similarities merit serious consideration of the findings from this study. Administrators of the University of North Dakota will give serious consideration to these data and their meanings.

Purpose of the Study

The purpose of this study was to determine the relationship between selected academic, financial, and demographic variables and the retention of first-time, full-time freshmen after the first semester and first year of college. In addition, the investigator

attempted to determine if there was a relationship between these students' gender, age, ethnicity, final high school grade point average, ACT score, receipt or non-receipt of a scholarship, receipt or non-receipt of a Federal Pell Grant, receipt or non-receipt of student loans, location of high school attended, and any major declared or no major declared and retention as well as academic performance as measured by the institutional grade point average.

This study was conducted to determine if there was a correlation between these variables and retention after the first semester and first year. In addition, this study attempted to determine if there was a correlation between these factors and academic success as measured by the institutional grade point average after the first semester and first year.

Research Questions

The research questions for this study were as follows:

1. For those students enrolled as first-time, full-time freshmen at the University of North Dakota in Fall 2002, was there a relationship between selected demographic, financial, and academic factors and retention after the first semester?

2. Was there a relationship between selected demographic, financial, and academic factors and academic performance as measured by the cumulative grade point average after the first semester?

3. Was there a relationship between selected demographic, financial, and academic factors and retention after the second semester?

4. Was there a relationship between selected demographic, financial, and academic factors and academic performance as measured by the cumulative grade point average after the second semester?

These factors are listed and described in Chapter III. If any of the variables have multiple meanings and interpretations, they are included in the definitions later in this chapter.

Assumptions

The basic assumptions of this study were as follows:

1. The population of first-time, full-time freshmen in the selected year was representative of previous and future first-time, full-time freshmen.

2. The data used were accurate.

Definitions

For the purpose of this study, the following terms are defined to clarify their meaning in relation to the topic:

Attrition: a student's departure from an institution of higher education prior to completing a degree.

Attrition rates: of those students who enrolled as first-time, full-time freshmen, the percentage of students who leave the institution prior to the beginning of the first semester of their second year of enrollment at that institution.

Dropout: a student who leaves higher education before achieving his or her specific goals.

Persistence: the completion of a baccalaureate degree over a specified period of time.

Persister: a student who enrolled as a first-time, full-time freshman and remains at the institution through the beginning of the first semester of his or her second year.

Retention: an institutional concept of maintaining the enrollment of a student within a single institution.

Retention rates: of those students who enrolled as first-time, full-time freshmen, the percentage of students who stay at an institution or who have stopped out for a time but return and eventually graduate.

Delimitations

For the purpose of this study, the population was limited to a cohort of first-time, full-time freshmen at the University of North Dakota who were enrolled during the 2002-2003 academic year. This study was limited to a one-year period (freshman year) for academic performance and three semesters (the first three semesters enrolled) for retention. This group was selected as they were the most recent group of students for which the data were available at the beginning of the research. The cognitive and non-cognitive variables selected were suggested by Tinto's (1987) model, were available, and could be monitored by the institution. These variables were students' gender, age, ethnicity, final high school grade point average, ACT score, receipt or non-receipt of a scholarship, receipt or non-receipt of a Federal Pell Grant, receipt or non-receipt of student loans, location of high school attended, any major declared or no major declared, and institutional grade point average.

Organization of the Study

The following chapter presents a review of the literature related to the prediction of retention and academic performance of first-year students. This review includes a history of the research related to the college impact model as well as recent retention models. Chapter III provides a description of the sample as well as the methodology used. Chapter IV presents the results of the statistical analysis of the data. Chapter V summarizes the findings, provides the conclusions and discussion, and offers recommendations for practice in higher education.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

"Few fields in higher education have received as much attention as student persistence" (Tinto, 1998, p. 167). He asserted that over the past 20 years a wide-ranging database of studies had been assembled covering a variety of institutional settings and types of students. These studies developed and modified a theory of student persistence that had been shown, according to Tinto, to help explain the causal processes that lead students to leave their institutions prior to degree completion. "The study of student departure from higher education is not lacking for models which seek to explain why it is that students leave or 'drop out' from college" (Tinto, 1993, p. 84).

Most attempts to explain student departure, according to Tinto (1993), had relied heavily upon psychological models of educational persistence which had tended to emphasize the impact of individual abilities and dispositions upon student departure. He asserted that these views of departure share a common theme. This theme is that retention and departure are primarily the reflection of individual actions and, therefore, are largely due to the ability or willingness of the individual to successfully complete the tasks associated with college attendance. More importantly, he advocated, such models invariably see student departure as reflecting some shortcoming and/or weakness in the

individual resulting in leaving being assumed to be reflective of a personal failure of the individual to measure up to the demands of college life.

"We know that involvement matters" (Tinto, 1997, p. 599). The research supported the importance of involvement as a persistence factor in that the more academically and socially involved students are, the more likely they are to persist (Astin, 1984; Mallette & Cabrera, 1991; Nora, 1987; Pascarella & Terenzini, 1980; Terenzini & Pascarella, 1977).

Researchers (Astin, 1984, 1993; Friedlander, 1980; Ory & Braskamp, 1988; Pascarella & Terenzini, 1991) have demonstrated that involvement influences learning and that the greater the amount of students' involvement in the life of the institution, especially the academic life, the greater their acquisition of knowledge and development of skills. According to Tinto (1997), this is especially true of student contact with faculty. Endo and Harpel (1982) and Astin (1993) discussed this engagement, both inside and outside the classroom, as being especially important to student development. The research of Endo and Harpel concluded that among those students who persisted, they reported higher levels of contact with peers and faculty and also demonstrated higher levels of learning over the course of their time in college. Tinto reaffirmed that high levels of involvement have proven to be an independent predictor of learning gain in that the more students invest in learning activities and the higher their level of effort, the more students learn and the more likely they are to be retained.

Tinto (1998) asserted that academic and social integration influence persistence in separate ways for different students and the two interact in ways that also foster

persistence. This is supported by Stage (1989), who affirmed that individuals are more likely to persist when both forms of integration occur. In addition, the models of Bean (1980, 1982), Pascarella (1980), Spady (1971), and Tinto (1975) (Nora, Attinasi, & Matonak, 1990) emphasized that student retention is not the result of individual or institutional factors but rather the interaction between the two.

Nora et al. (1990) suggested that although these research theories incorporated the various characteristics of students and the institutions they attend, these interaction models focused on what happened to students once they arrived on campus and resulted in important insights about student integration into campus life. They go on to assert that dropouts were seen as less integrated into college life and less committed to obtaining a degree.

Retention research, according to Nora et al. (1990), has primarily focused on residential, senior institutions. They contend that only a few studies in recent years have examined the relationship among variables affecting retention in community colleges (Nora, 1987; Rendon, 1982; Seale, 1984). Evidence suggested that academic and social integration are more important to persistence in the four-year institutions than in the two-year institutions (Braxton, Sullivan, & Johnson, 1997). Tinto (1998) suggested that such differences were more likely the reflection of the varying academic and social attributes of institutions and the students they serve than of the underlying process of persistence. "This dynamic is most evident," according to Tinto, "when we compare the experiences of students in a small, residential four-year college with those of students attending an urban two-year institution" (p. 169). Among the many differences of these

two types of institutions, he asserted that student time on the two-year campus is much more limited to class time than it is for residential students.

> The college classroom lies at the center of the educational activity structure of institutions of higher education; the educational encounters that occur therein are a major feature of student educational experience. Indeed, for students who commute to college, especially those who have multiple obligations outside the college, the classroom may be the only place where students and faculty meet, where education in the formal sense is experienced. For those students in particular, the classroom is the crossroads where the social and the academic meet. If academic and social involvement or integration is to occur, it must occur in the classroom. (Tinto, 1997, p. 599)

For non-residential student campuses, the classrooms and laboratories of the college, declared Tinto (1998), are typically the only places where students meet their peers and interact with the faculty. As a result, Tinto asserted that experiences in academic settings and academic involvement should be relatively more important to persistence issues in non-residential campuses than they are in residential settings where social involvements also influence persistence. "Clearly, the academic and social systems of colleges overlay both classroom and colleges settings in such a way that experiences within and beyond the classroom both impact upon student persistence" (Tinto, 1998, p. 169).

> Attrition is, for most institutions, most frequent during the first year of college. Nearly half of all leavers depart before the start of the second year. It therefore follows that the impact of involvement upon persistence is greatest in that year, especially during the first ten weeks when the transition to college is not yet complete and personal affiliations are not yet cemented. (Tinto, 1998, p. 169)

Theory Base

Examination of student departure for various student populations, in different institutional settings, and at various stages in time is crucial in attempts to improve

retention rates (Tinto, 1988, 1993). Persistence during the first year, and the first semester in particular, looms important to scholars and practitioners as approximately three fourths of all dropouts leave at some time during the first year (Tinto, 1987). Cope and Hannah's (1975) findings also supported the incidence of student leaving as being highest in the first year of college. Students enter college with various characteristics—gender, race, academic aptitude, academic achievements, family socioeconomic background, and parent educational levels—and different levels of initial commitment to the institution (Tinto, 1975, 1987). Tinto describes the level of commitment as a critical component of a student's decision to stay at or leave an institution.

According to Braxton, Milem, and Sullivan (2000), scholars seek explanations and college and university administrators desire to manage their student enrollments by reducing rates of student departures. Although various economic, organizational, and societal theoretical perspectives have been advanced to account for the phenomena of college student departure, Tinto's theory of college student departure has more than 400 citations and 170 dissertations pertaining to this theory (Braxton et al., 1997).

Pascarella (1986) described Tinto's (1975) presentation of a major theoretical conceptualization of the student persistence or withdrawal process as having been the focus of substantial research and as being based on the concept of person-environment fit. Pennington (1987) attributed the Tinto model as having brought to the world of higher education the notion that the dropout process is complex in nature and that no one single definition of dropout will capture its complexity.

Erickson (1989) credited Tinto (1975) as having piloted a comprehensive assessment of the literature and developed a model for insight into enrollment patterns based on these studies. Tinto's model concluded that student adaptation to the college environment is a multi-dimensional process that includes intensive interaction among a multiple number of variables including family background, individual attributes, precollege experience, goal commitment, institutional commitment, academic motivation (grade performance and/or intellectual development), and social motivation (peer group and faculty integration).

Pascarella (1986) described Tinto's model as based on the concept of person-environment fit and that if students' backgrounds and characteristics are taken into account as well as their initial commitments, then the greater the individual student's level of integration in the social and academic systems of the institution, the greater the subsequent commitment to the institution and to the goals of college graduation. "In turn, these subsequent commitments are seen, along with levels of social and academic integration, as having a direct, positive influence on persistence" (p. 100). Pascarella credited the Tinto (1975, 1987) model as having made a major theoretical contribution to an understanding of the longitudinal process of student persistence or withdrawal behavior in higher education.

This model, according to Pascarella (1985), was an attempt by Tinto, building on Spady's work, to develop an explanatory, predictive model of the persistence and withdrawal process, to bring coherence to the research, as well as to provide a conceptual framework to guide inquiry. Spady (1970) proposed the first attrition/retention model

which viewed attrition as a longitudinal process with a starting point based on the assumption that the dropout process could best be explained as an interdisciplinary approach. This approach involved an interaction between the individual student and the college environment in which student attributes (disposition, interest, attitude, skills) were exposed to influences, expectations, and demands from a wide variety of sources.

Tinto's (1987) model of student departure, according to Cabrera, Amaury, and Castaneda (1993), explained the process that motivated individuals to leave colleges and universities before graduating. Tinto's model suggested that attrition was due to the lack of congruency between the student's motivation and academic ability and the institution's academic and social characteristics in helping to shape the two underlying commitments of an educational goal and to remain with the institution. The model further suggested that the higher the goal of college completion and/or the level of institutional commitment, the greater the probability of persisting in college. Tinto's theory is restated by Christie and Dinham (1991), that college students were more likely to withdraw if they were insufficiently integrated or if they maintained values sufficiently different from the values of the institution they were attending. Nora et al. (1990) summed Tinto's theory as hypothesizing that higher levels of students' social and academic integration resulted in higher levels of commitment both to the institution and to educational goals.

Cabrera, Stampen, and Hansen (1990) wrote that Tinto's theory posited that both academic and social integration were modified or intensified by a student's precollege commitment to attend a particular institution with the accompanying precollege commitment to invest effort, money, and time in seeking a college degree. They also

suggested that Tinto's theory postulated that the student's perceived quality of an institution rests in part on the likely occupational and income opportunities open to the institution's graduates.

Tinto's (1975, 1987) model, according to Salter (1994), is based upon Tinto's theory which defined attrition as a form of academic suicide. This view of attrition was developed from sociological research on physical suicide by E. Durkheim (Patty, 1989). Durkheim's original theory, according to Erickson (1989), suggested that for the people in society who were not adequately integrated into the mainstream of society, suicide was a greater potential and especially with respect to people who lacked shared values and interpersonal experiences.

Salter (1994) asserted that Tinto's theory posited that by improving the social and academic integration of the student, such as getting the student successfully involved in both formal and informal academic and social activities on campus, one could better prevent student departure. The college environment was described by Erickson (1989) as similar to the social system in society. Within this societal system concept, a dropout from within higher education was considered analogous to that of personal suicide in society.

Tinto (1993) wrote that he did not mean to imply that institutional departure necessarily leads to suicide or that it represented a form of suicidal behavior. "But there are enough intriguing analogies between the two situations to warrant our attention" (p. 99). Tinto asserted that both forms of behavior, institutional departure and suicide, can be understood in most circumstances to represent a form of voluntary withdrawal from a community that is as much a reflection of the community as it is of the individual

who withdraws. In addition, he argued that each can be seen to signal somewhat similar forms of rejection of conventional norms regarding the value of persisting in those communities. "Communities, educational or otherwise, which care for and reach out to their members and which are committed to their members' welfare are also those which keep and nourish their members" (p. 205).

The stages of institutional departure, as described by Tinto (1987), are based on social anthropology and the process of establishing membership in traditional societies as described by Van Gennep (1960), a Dutch anthropologist, in his study of the rites of membership in tribal societies. Van Gennep studied the passage of individuals from birth to death and from membership in one group or status to another. According to Tinto, Van Gennep gave detailed attention to the ceremonies and rituals, including those revolving around birth, marriage, death, and entrance into adulthood, that helped individuals and groups through those times of disturbance. In general, Van Gennep was concerned with the question of societal revitalization over time and with social stability in times of change.

Tinto (1988) cites the Van Gennep (1960) concern that most directly related to the process of student departure as the one that focused on the movement of individuals from membership in one group to membership in another, especially as this movement occurred as an individual processed from status as youths to adults in society. Van Gennep argued that the process was marked by three distinct phases or stages, each with its own specialized ceremonies and rituals. These rites of passage were referred to as stages of

separation, transition, and incorporation. Tinto (1988) elaborated on the description of these stages when he wrote,

> Each stage served to move individuals from youthful participation to full membership in adult society, providing, through the use of ceremony and ritual, for the orderly transmission of the beliefs and norms of the society to the next generation of adults and/or new members. (p. 440)

Van Gennep (1960) wrote that such rites provided stability to that society over time while enabling younger generations to assume responsibility from older generations. He also proposed that each stage in the rites of passage to adulthood consisted of a change in patterns of interaction between the individual and other members of society. He described the first stage as separation which involved the separation of an individual from past associations and is characterized by substantial decreases in interactions with members of the group from which the person had come. This may also have included ceremonies whose purpose was to mark as outmoded the views and norms which characterized that group.

The second stage, as described by Van Gennep (1960), was transition. During this period, the individual had begun to interact in new ways with members of the new group into which membership had been sought. Isolation, training, and sometimes ordeals were some of the mechanisms which, at times, were employed as mechanisms to ensure that separation of the individual from past associations and the adoption of behaviors and norms appropriate to membership in the new group. He described this transitions stage as a time when individuals came to learn the knowledge and skills required for the performance of their specific role in the new group.

Van Gennep (1960) described the third and last phase as incorporation. This phase involved the taking on of new patterns of interaction with members of the new group. During this stage, the establishing of competent membership in that group as a participant member occurred. This full membership or incorporation in the new group was marked by special ceremonies with the intent of announcing and certifying not only the rewards, but also the responsibilities of that membership. Tinto (1988) described this as a time when even though persons may have begun to interact once again with past associations, they now did so as members of the new group. "They have completed their movement from the past and are now fully integrated into the culture of the new group" (Tinto, 1988, p. 441).

Van Gennep (1960) advocated that the concept of rites of passage could be applied broadly to a number of situations, especially those involving movement of a person or group from one place to another. He described that movement as one in which an individual or group left an old territory or community (separation) and in some manner crossed a border, either physical or ceremonial, to a new setting (transition), and took up residence in the new location or community (incorporation). Tinto (1988) applied this on an individual level which involved moving from a position as a known member in one group to that of a stranger in the new setting, often resulting in feelings of weakness and isolation. He described this time of having given up the norms and beliefs of past associations, and not yet having adopted those appropriate to membership in the new community, as a state of at least temporary normlessness in that there was the absence of

guiding norms and belief. During this time, he asserted, there was a heightened likelihood of departure from the community prior to incorporation.

Tinto (1988) suggested that the work of Van Gennep provided a way of thinking about the longitudinal process of student persistence in college and the time-dependent process of student departure. He asserted that college students were moving from one community or set of communities (most commonly those of the high school and the family) to another and like other persons in the wider society must separate themselves, to some degree, from past associations in order to make the transition to eventual incorporation in the life of the college. He compared these attempts, to make such transitions, as times in which students were likely to encounter difficulties that were as much a reflection of the problems inherent in shifts of community membership as they were of the personality of individuals or the institution to which membership was sought.

> To the degree that the problem of becoming a new member of a community that concerned Van Gennep is conceptually similar to that of becoming a student in a college, it follows that we may also conceive of the process of institutional persistence as consisting of three major stages or passages—separation, transition, and incorporation—through which students typically must pass in order to complete their degree programs. (Tinto, 1988, p. 442)

Separation, as the first stage of the college career, according to Tinto (1988), required students to disassociate themselves in varying degrees from membership in the past communities. These past communities were most typically associated with their high school and place of residence and depended in part on the character of those communities, especially on their views regarding the worth of college attendance, and may have resulted in separation which may be quite difficult or merely an accepted part of the process of

movement that most persons are expected to make in the course of their lives. Tinto went on to suggest that all separations included some form of parting from past habits and patterns of affiliation and that the process leading to the adoption of the behaviors and norms appropriate to the college almost always required some degree of transformation and may have included rejections of the past communities. "However close, the life of families and high schools and the demands they impose upon their members are by necessity qualitatively different from those that characterizes most colleges" (Tinto, 1988, p. 443).

"The second stage of the college career, transition, is a period of passage between the old and the new, between associations of the past and hoped for associations with communities of the present" (Tinto, 1988, p. 444). As part of having begun the process of separating themselves from the past, according to Tinto, new students had not yet acquired the norms and patterns of behavior appropriate to integration into the new college community. He suggested that as a result of not having yet established the personal bonds which were the underpinnings of community membership, they were neither bound strongly to the past nor firmly tied to the future.

After the stages of separation and transition, individuals were faced with the task of becoming integrated, as described by Van Gennep (1960), as becoming incorporated into the community.

> Having moved away from the norms and behavioral patterns of past associations, the person now faces the problem of finding and adopting norms appropriate to the new college setting and establishing competent membership in the social and intellectual communities of college life. Because social interactions are the primary vehicle through which such integrative associations arise, individuals have to

> establish contact with other members of the institution, student and faculty alike. (Tinto, 1988, p. 446)

Tinto (1987) asserted that the process of becoming integrated into the academic and social systems of a college occurred when students successfully navigated the stages of separation, transition, and incorporation. Separation involved students' ability to disassociate themselves to some degree from the norms of past communities, including families, high school friends, and other local ties. Transition occurred after the successful negotiation of separation. In the transition stage, students found themselves in a situation where they had separated themselves from the norms and patterns of their past lives but had not yet adopted norms and behaviors from their new environment. Incorporation happened when students adapted to and adopted the prevailing norms and behavior patterns of their college or university community. Once incorporated, the students became integrated, although successful integration did not necessarily, according to Tinto, ensure persistence. Tinto further contended that initially students' background characteristics influenced commitment, but after matriculation the individual's experiences with the social and academic aspects of an institution began to shape these commitments.

Milem and Berger (1997) wrote that Tinto's (1975, 1993) model of student departure and Astin's (1984) theory of involvement both dealt with the issue of persistence in college and were the most widely cited approaches to the study of persistence in the higher education literature. According to Milem and Berger, "Tinto's model of individual student departure is among the most widely discussed and explored in the higher education literature" (p. 388). Astin's (1975) theory was based on a

longitudinal study of college student persistence from which he concluded that factors contributing to persistence were associated with students' involvement in college life and factors contributing to departure from college were associated with students' noninvolvement. Murtaugh, Burns, and Schuster (1999) summarized the results of the work of Tinto and Astin as follows: "Students are more likely to stay in school when they are actively involved in campus activities and feel a sense of community in the institution" (p. 356).

Academic Variables

According to Tinto (1993), not all students enter colleges with clearly held educational and/or occupational intentions and even among those who enter with at least moderately well defined goals, many will change their goals during the course of their college career. "At the same time that many undecided individuals come to solidify their future goals, many other previously decided persons will alter their goals" (p. 40).

In a review of the literature reported by Cope and Hannah (1975), they found that student persistence rates differed by college major. They supported the assumption that there are different goal and personality orientations among students who choose one major area or concentration over another or do not choose a major. Based on this finding, they concluded that educational expectations at the time of entering college was an important variable to consider when attempting to develop indicators of persistence.

Wessell, Engle, and Smidchens (1978) tested the hypothesis that students with declared curricular majors (decided) would persist at a higher rate than those persons without a declared curriculum (undecided). They found support for their hypothesis in

that there were statistical and substantive significances in the differences of the persistence rates of the undecided and decided populations. They summed their findings by stating that students who had made relatively early decisions to identify clear, purposeful educational goals tended to persist as compared with those who delayed academic planning.

Tinto (1993) contended that uncertainty is not necessarily a cause of departure. He wrote that when careers and identities were crystalized, when individuals were more certain as to their futures, they were more likely to finish college. "When plans remain unformulated over extended periods of time, that is, when uncertainty persists for several years, students are more likely to depart without completing their degree programs" (p. 41).

Tinto (1975) argued that high school grade point average was a good predictor of college performance, since it reflected both ability and motivation. This is supported by Cope (1978) who wrote, "The firmest measure of probable retention, however, is the high school or other previous grade point average" (p. 4). Stampen and Cabrera (1986) indicated that similar findings were also reported by Astin (1975), Jensen (1981), and Voorhees (1985). In a study conducted by Moores and Klas (1986), they reported that as the high school grade point average increased, so did the degree of persistence beyond the first year at the university in their study and their findings suggested a relationship between a tendency to persist beyond the first year and a higher high school grade point average.

According to Bean (1986), the high school grade point average had been routinely employed as an accurate, concise measure of academic performance in college and of

potential dropout behavior. Astin (1975), Pantages and Creedon (1978), and Herndon (1984) cited high school grade point average and high school class rank as the best predictors of both student attrition and persistence. Astin's (1975) data indicated that as a student's high school grade point average decreased, the chances for dropping out increased.

This is supported by Ting and Robinson (1998), who reported results of a study of academic performance of 2,600 Caucasian and African American college freshmen in a southeastern public research university. The prediction models used in that study explained a range of 8% to 28% of the variance for students' grade point average in the first year. They found that high school grade point average was the most significant predictor for college grade point average in the first year, particularly for Caucasian students. They cited other studies which reported similar findings (Houston, 1980; Stanley, 1971; Ting, 1997). Their findings indicated that using multivariate models to predict academic performance across gender and race were more effective than a general model for the whole sample.

"The development of standardized tests has historically been driven by the theory that such tests can identify students who have a high probability of success in college" (St. John, Shouping, Simmons, & Musoba, 2000, p. 137). Astin (1975) wrote that while SAT and ACT scores were excellent measures of predicting persistence, high school grades were an even better predictor. He advocated that standardized tests such as the ACT or SAT have been shown to correlate with freshman grades for White students. The

correlations were lower for non-White and nontraditional students (Sedlacek, 1988, 1989; Tracey & Sedlacek, 1984).

Astin (1993) summed academic achievement by writing that hundreds of studies using various measurements and methodologies have yielded strikingly similar results showing that college grade point average can be predicted with modest accuracy from admissions information. He supported this by pointing out that the two most potent predictors from admissions data were the student's high school grade point average and scores on college admission tests. "Grades almost always carry more weight than tests" (Astin, 1993, p. 187).

Financial Variables

> A substantial part of public investment in higher education since 1965 has been directed at removing economic barriers to college attendance, at preventing low-income students from dropping out because of the lack of financial resources, and at giving college students greater choice among institutions. (Cabrera et al., 1990, p. 308)

Financial aid policy, according to Murdock (1987), had stressed the overall objective of equal higher education opportunity with the three goals of access, choice, and persistence being the driving forces behind the major objective of equal educational opportunity. "Equal educational opportunity exists when economic barriers are removed and individuals have opportunity of access, choice, and persistence in higher education" (p. 77). St. John (2003) defined equal educational opportunity as an equal opportunity to enroll, given the correct academic qualifications, regardless of financial means. He suggested that financial aid is theoretically packaged to promote access and choice. Murdock (1987) suggested that, in the past, educators have emphasized the importance of

access and choice as necessary components for any policy with an objective of equality of educational opportunity. "Not only have student financial aid programs been means to that end, they probably have been a somewhat successful means" (p. 77). This is supported by Tinto (1987), who stated that the primary goal of financial aid was to remove finances as a cause of attrition. "This it seems to do, at least in large measure" (Tinto, 1987, p. 69).

St. John (2003) contended that while overall opportunity for access to higher education expanded during the 1990s, the opportunity for poor and working-class students to attend public four-year colleges declined. "The affordability of the nation's public system of four-year colleges for the majority of students declined for the first time in more than a century" (p. 136). St. John wrote that in the early 1990s there were modest gains in total access for a majority of students, but gains in opportunity for low-income students were largely limited to two-year colleges.

One author, Murdock (1990), wrote that typical descriptive reviews of the literature were limited in their analysis of the relationship between student financial aid and persistence as too often the reviewers relied on a small number of studies on which they drew their conclusions. As a result, Murdock (1987) completed a study to perform a meta-analysis, a statistical analysis of the summary findings of many existing empirical studies, to investigate the relationship between student persistence and financial aid.

> This study has three major objectives: (1) to identify and collect all studies that investigate the effect of financial aid on student persistence; (2) to determine how much effect financial aid has on student persistence in each study; and, (3) to compare the financial aid effect sizes in relation to various study characteristics. (Murdock, 1987, p. 75)

The author cited the need for a study as to be able to accumulate and review evidence of whether financial aid programs were actually helping students get to college and stay there as a means of increased retention, successful academic program completion, or student persistence.

Stampen (1984) believed that financial aid policy decisions resulted from political battles and negotiation rather than strategic action based on evaluation and empirical research. This author argued that if decision makers had consulted research for input, they would have found little help as the results of the few studies focused on impact are mixed. Murdock (1987) advocated that descriptive reviews of the literature were limited in their analysis of the relationship between financial aid and persistence. "Too often, the reviewers draw their conclusions from a small number of studies. Some of the studies are not representative. Furthermore, descriptive reviews seldom investigate study characteristics, which may account for the differences in study results" (Murdock, 1987, p. 76). Murdock described such past study results as appearing to be mixed, but the problem did not appear to be lack of research on the relationship between persistence and financial aid; but, rather, the problem was described as being a lack of systematic integration of the existing studies so that relationships could be discerned.

Criteria for evaluating the effect of financial aid on persistence were provided by Stampen and Cabrera (1986). They stated that if the distribution of financial aid was limited to economically disadvantaged students and if the only difference between aided and non-aided students is the availability of financial resources to pay costs for attending college and would fill the resource gap between aided and non-aided students, financial aid

would reduce financial reasons for dropping out of college. Their argument was that if the two assumptions were accurate, the attrition rate of aided students would be expected to be neither higher nor lower, but the same, as those of non-aided students.

Murdock (1987) suggested that, based on these assumptions, the financial aid objective of persistence as part of the formula for equal educational opportunity would be met if the retention rates for aided and non-aided students were approximately the same. Murdock cited that studies controlling for academic ability (grade point average and standardized test scores) showed virtually no difference between the persistence of recipients of financial aid and that of nonrecipients.

A study conducted by St. John, Musoba, and Simmons (2003) determined that receiving a student financial aid package had a substantial and direct influence on persistence for freshmen. Their results indicated that the receipt of financial aid was significantly and positively associated with persistence by freshmen. When the dollar amounts of aid were considered in their study, only loans were significant and were negatively associated with persistence by freshmen. They suggested that loans can be problematic for freshmen in that the amount of debt was negatively associated with persistence and having a high level of debt forces some freshmen to rethink educational goals and as a result indicates that loans do interact with educational choices.

"Scholarships tend to be seen as a token of honor for academic excellence and recognition for special skills and talents. Scholarships also represent relief from financial concerns for some students" (Woodward, 1988, p. 162). Blanchfield (1971), Astin (1975), and Pantages and Creedon (1978) reported a positive correlation between receipt

of scholarships and student persistence. Woodward speculated that a likely explanation was that a scholarship has been seen as an external recognition of the student's academic ability and a commitment from the institution to the education of that student. "Perhaps a scholarship provides a degree of financial security to a student, thus providing more incentive to remain in college" (Woodward, 1988, p. 164).

Kohen, Nestel, and Karmas (1978) suggested three reasons to expect that recipients of scholarships have been less likely than nonrecipients to leave college prematurely. First, such an award generally was based on an external evaluation that a student had superior capacity for academic accomplishment. Second, they suggested a scholarship was probably indicative of an above-average commitment to the pursuit of a college degree. Third, receipt implied a somewhat lower financial burden of persisting in college.

Murdock (1987) found that financial aid had a stronger effect on persistence during the latter years of college than on the freshman year, particularly in terms of graduation probability. The meta-analysis revealed a positive relationship between the length of persistence measured and the effect of financial aid. Studies, as described by Murdock, measuring persistence by graduation showed a slightly larger average effect size than studies using a shorter persistence specification, usually one and one-half years or less. "Persistence literature consistently reports that the highest rate of attrition occurs in the freshman year. Whether a student receives financial aid is only one of many variables operating on freshmen" (p. 94).

Leslie (1984) wrote that, for many students, the accumulated monetary investment and the increased cost of education make financial aid more important as a factor in the decision to remain in college. This is attributed, according to Leslie, to family money often being less available after the student's freshman year and students becoming more dependent on other sources to finance their education.

The meta-analysis of Murdock (1987) showed that studies including part-time students had a lower average effect size than studies that measured only full-time student persistence. The author implied that financial aid had a greater effect on full-time students than part-time students which resulted from the fact that part-time students were less likely to be eligible for aid and receive smaller aid awards. According to Wilson (1986), this difference was also attributable to the fact that part-time students often pay more for transportation, rent, and childcare which resulted in larger educational expenses per year than for full-time students and aid formulas were based on the average full-time student's needs. Murdock summed this by suggesting that the difference in effect size reflected the lesser amount of financial aid part-time students received in relation to their needs.

Murdock's (1990) meta-analysis also dealt with studies that investigate behavior differences among financial aid recipients in terms of gender and race. The results revealed that male and female recipients did not behave differently than their nonrecipient counterparts—women were more likely to drop out of college during their freshman year than men, but fewer men than women were likely to persist toward a degree. The findings also indicated a lower persistence for non-White recipients than for White recipients. The author stated, "Therefore, while past research indicates that financial aid promotes

persistence among minorities, it does not appear to compensate fully for other variables that operate against minority retention" (p. 217).

The results of Murdock's (1990) meta-analysis indicated that the dollar amount received had a significant positive effect on persistence. "The effect size is one of the largest found and designates amount of financial aid as a mediating effect" (p. 217). This is supported by Voorhees (1985), who found that all forms of federal support, either alone or in combination, were equally effective in preventing students from dropping out.

According to Murdock (1990), the analysis indicated that while loans may not have increased persistence, loans in combination with some form of grant had a higher average effect size than either category of single grants or single loans. "The grant and loan combinations seem to be slightly more effective than single forms of aid" (p. 217). Murdock suggested that combination forms of aid usually constituted a larger dollar amount, and the dollar amount received has a significant positive effect on persistence. "Therefore, whether the effect of the combination financial aid package reflects more the dollar amount than the form of aid is still a problem to be resolved" (p. 217).

There is research (Astin, 1975; Blanchfield, 1971; Jensen, 1981; Pantages & Creedon, 1978) to support the adverse effects of loans on student persistence and to suggest that this may be due to the result of worry over the rising debt resulting from student loans. Woodward (1988) cited research by Hochstein and Butler (1983) which reported that over 50% of the students who received only loan assistance did not complete the semester.

Cabrera et al. (1990) explored the effects of finances, by incorporating ability to pay, to the variables in Tinto's student integration theory which they cited as the most developed and frequently tested theory of student persistence. "Though unquestionably useful, Tinto's student integration model has only limited ability to explore the effect of finances on college persistence" (p. 305). They reasoned that the model indicated that ability to pay was important in shaping educational goals and selecting institutions, but the model was silent about the role of ability to pay once students enroll. This omission, according to Cabrera et al., is evidenced by Tinto's (1987) view that students who received financial aid showed no higher rates of persistence than those not receiving such aid. They cited the work of others (Jackson, 1988; Stampen & Cabrera, 1988) in disagreeing with Tinto and advocated that non-aided students came from families with higher incomes than need-based aided students, and student aid flowed primarily to students from low-income families. Research on the effects of student financial aid on the student (Leslie & Brinkman, 1988; Murdock, 1987; Stampen & Cabrera, 1986, 1988) also indicated that student aid effectively compensated for the disadvantage of low income by making low-income students as likely to persist as more affluent students.

According to Tinto (1987), "Generally, the growing consensus among researchers is that grants and work-study are more effective in promoting persistence than are loans and other forms of aid" (p. 68). He advocated that the impact of work-study as a form of financial assistance upon persistence was twofold. Not only did it provide much needed financial aid, it also led students to make wide-ranging contacts with other members of the campus community, in particular with faculty and staff. These contacts, according to

Tinto, further retention by aiding the individual's incorporation into the life of the college. "As a result, work-study alters both the cost and benefit side of the equation" (Tinto, 1987, p. 68).

The National Center for Education Statistics responded to the congressional mandated mission of the Department of Education to gather statistics and facts on the condition and process of education in the United States. One of the findings of the Department's analysis was regarding the Pell Grant Program and showed that Pell Grant recipients tended to start their postsecondary studies with more disadvantages than low- and middle-income nonrecipients. "However, among 1995-96 beginning postsecondary students, no difference was found in the overall persistence rates of Pell recipients and nonrecipients after 6 years—that is, in the percentages of students who attained any degree or certificate or were still enrolled" (U.S. Department of Education, 2003, p. vii).

Stampen and Cabrera (1986) wrote that financial aid was but one of a wider number of variables that shaped persistence. According to Tinto (1987), financial impact was generally conditioned by the nature of student experiences on campus and the weighing of the costs and benefits of attendance.

> Though financial aid does indeed alter the cost side of the equation, making college attendance as possible for low-income students as it does of more well-to-do students, it has, with the possible exception of work-study, little impact upon the benefit side of the equation. (Tinto, 1987, p. 69)

"For most students, persistence is more reflective of the character of their social and intellectual experiences on campus that it is of their financial resources" (Tinto, 1987,

p. 180). He asserted that this does not mean that some students, especially those from less advantaged backgrounds, may not require or need financial assistance. Rather, he suggested that individual response to financial stress was conditioned by other forces, namely those associated with the interactive character of student experiences on campus.

> Although finances are very commonly cited by researchers and withdrawing students alike as important reasons for leaving, the evidence regarding the impact of finances upon persistence leads one to conclude that the issue is much more complex than commonly assumed. (Tinto, 1993, p. 65)

Wilcox (1991) and Woodward (1988) cited survey results which showed that financial problems were listed as a major cause of failure to re-enroll by non-returning students. Astin's (1975) findings reported that men tended to give reasons of poor grades, boredom, and dissatisfaction with requirements or regulations more often than women. Pantages and Creedon (1978) suggested that women generally dropped out more for personal reasons and men cited curricular reasons, with financial reasons ranking high for both genders. Cope (1978) concluded that the "financial" category provides a socially acceptable excuse covering everything from fear of pending academic failure to an actual financial crisis at home. "The citation of financial stress as a reason for withdrawal is sometimes a polite way of describing one's displeasure with the character of one's social and/or intellectual life within the institution" (Tinto, 1987, p. 180).

Salter (1994) suggested that financial problems may be provided by students as a socially acceptable reason to withdraw, while not admitting to the primary reasons may have caused the impact of financial aid to be overstated in studies using survey data. Tinto (1993) summarized this view and advocated that the citing of financial problems as

reasons for departure was often merely an end product of decisions regarding departure. "It reflects the weighing of benefits as well as of costs and as such mirrors the nature of the student's academic and social experiences on campus" (p. 67).

Demographic Variables

The U.S. Department of Education (1996) reported that the timing of enrollment affected the benefits of postsecondary education to the extent that such education increased long-range earning potential and social status. As such, the sooner students attended, the sooner they realized these economic and social advantages. The Department contended that in addition to having postponed the benefits afforded by such education, it also increased the risk of dropping out:

> Studies have found that even among students with similar educational goals and those enrolled in the same type of institutions, those who delay their enrollment are substantially less likely to earn a bachelor's degree than students who enter immediately after high school. (p. 7)

Stampen and Cabrera (1986) cited the work of Pantages and Creedon (1978) as a study in which age was generally not reported as a factor affecting attrition. Stampen and Cabrera hypothesized that older students attributed similar attrition rates as compared to their younger counterparts. Kohen et al. (1978) provided competing reasons for this hypothesis. On the one hand, older students should be more mature, less adventuresome, and more committed to their educational and occupational goals. On the other hand, the older students had experienced some discontinuity in their education which may have resulted in a deterioration of learning skills. Tinto (1987) suggested that because of external obligations, adult students were more likely to be responsive to the employment

outcomes of college than were most other students. For these adult students, going to college, he asserted, was more frequently a matter of economic needs than it was a youthful rite of passage.

Moores and Klas (1986) showed in their analysis that the sex of the student was not significantly related to a decision to voluntarily drop out or persist. They stated that this finding tended to agree with other studies (Pascarella & Terenzini, 1980, 1983), which suggested that a decision to drop out is usually more of a longitudinal process involving a complex series of socio-psychological interactions between the student and the institutional environment. Moores and Klas attributed any effects of the sex of the first-year student to likely be mediated by the increasingly broad set of experiences and options provided during the first year for both men and women. This is supported by Papa (1996), who wrote, "As the persistence literature indicates, a clear understanding of the relationship between gender and retention does not exist" (p. 27).

Nora et al. (1996) conducted a study in which they concluded that minority status was found to have a positive effect on persisting for males. "Being a minority student and male increased the likelihood of staying in college. The same was not found for [W]hite male students or for [W]hite or minority females" (p. 445). They also cited the research of St. John (1990) in which he reported similar findings in his study on college persistence. Nora et al. suggested that the minority status for males was positively related to persisting in college because minorities have "bought into" the perception that social attainment and ethnic representation can be achieved through attainment of a college degree. They stated that they believe the relationship between minority status and persistence for males may

have been found because of the student characteristics in their sample, as all of the students in the sample population volunteered for the study and almost all were highly motivated students.

> More specifically, those minority students in the sample represented the more educationally prepared among their ethnic subgroups in that they were accepted by four-year institutions rather than having to attend two-year institutions, they tended to have high grade-point averages, and they came from families with higher socioeconomic levels than many minority students. (Nora et al., 1996, p. 445)

Astin (1975) found the retention rates for Black college students to be lower than the rate for White students. When academic aptitude and high school grades were controlled, he found that retention rates for Blacks were at least as high as for non-Blacks.

Tinto (1987) suggested that since under-represented students, as a group, are more likely to come from disadvantaged backgrounds and to have experienced inferior schooling prior to college, they are also more likely to enter college with serious academic deficiencies. He suggested that departure of minority students is primarily determined by the nature of their on-campus academic behaviors, especially those pertaining to the meeting of the formal demands of the academic system.

Other Variables

"Cognitive characteristics such as high school grades, class standing, and college entrance exam scores have received perhaps the greatest attention and they have shown promise in predicting academic success" (Pickering, Calliotte, & McAuliffe, 1992, p. 8). They also suggested that demographic variables such as age, sex, need for financial aid, socioeconomic status, race/ethnicity, and parents' level of education also played a prominent role in the search for predictors of college retention and success.

Other research studies have also included variables which are not part of this investigator's study. In Astin's (1973) research, he demonstrated that family income is not a direct factor in attrition. The work of Pantages and Creedon (1978) resulted in the determination that age, generally, had not been a predictor of attrition and warned that cognitive characteristics alone cannot be relied on to predict college performance. Pickering et al. (1992) summed these studies and stated, "These mixed findings suggest that while cognitive variables have a place in the prediction of college success and retention, they alone cannot provide practitioners with information that will help present academic difficulty and attrition" (pp. 8-9).

According to Berger and Braxton (1998), the rate of student departure in colleges and universities posed a puzzle to both scholars and practitioners. They suggested that based on the widespread availability of guides on the selection of colleges and universities, and the enormous amount of attention that parents, students, and college officials focused on the college selection process, it might be expected that students would select the "right" college or university for themselves and that this process would result in a greatly reduced rate of departure.

Greene and Greene (2003) wrote that every student who remained at a college or university and graduated in good standing resulted in the need to recruit fewer new students each year—a far less costly proposition than continual recruitment to replace lost students. They also contended that, in addition, satisfied students became the best spokespersons for future candidates of like interests and preferences.

Ting and Robinson (1998) suggested that college and university professionals needed to pay attention to the changes in student development between the first and the second semester of the first year of college. They encouraged such professionals to continue to study factors affecting students' performance as well as apply this new information to design programs to enhance students' development and learning.

Three important principles of institutional action that are the hallmark of effective retention programs are cited by Tinto (1990). He described the first of these principles as the principle of community. "One of the most common features of effective retention programs, indeed of institutions with high rates of student retention generally, is their emphasis upon the communal nature of institutional life" (p. 36). Effective programs, according to Tinto, commonly stressed the way in which an institution's actions serve to integrate individuals into the mainstream of the social and intellectual life of the institution and the communities of people within that make up that life. He described this as a community in which individuals consciously reached out and made contact with students in order to establish personal bonds among and between students, faculty, and staff members. He advocated that such effective retention programs not only provided assistance to students, but they also ensured the integration of all individuals as equal and competent members of the institution resulting in membership and belonging, rather than isolation, as one of the primary goals of such programs.

Tinto (1990) described the second principle of effective retention as the principle of commitment as evidenced by and enduring commitment to the students served by the institution. "Rather than reflect only institutional interests, they continually ask themselves

how their actions serve to further the welfare of students" (p. 36). He related effective retention programs to healthy and caring communities that generally directed their energies to helping students further their own needs and interests. Tinto stressed that this commitment needed to be reflected in the daily activities of all program members, not just a small number of program staff, most typically student affairs, in the choices they made about goals to pursue which, in turn, directed their energies.

Educational commitment was the third principle stated by Tinto (1990). "The secret of effective programs lies, however, in the observable fact that their commitment to students goes beyond the concern for retention per se to a concern for the education of students" (p. 38). He described institutions of higher education first and foremost as educational communities with a commitment to students which sprang from a broader commitment to the educational goals of higher education, that persons be educated, not merely retained until degree completion. "Institutions of higher education are not unlike other human communities, and the process of educational departure is not substantially different from the other processes of leaving which occur among human communities generally" (Tinto, 1993, p. 204).

Tinto (1993) suggested that there was no programmatic substitute for an institution's commitment to its members and no easy way to measure its occurrence. It was not easily ascertained in any one action or sets of actions, but was reflected in the policy choices made by institutional officials.

Tinto (1993) wrote that there was no single path to enhanced student retention, nor promises that all students can be retained. Rather, it sprang from the ongoing

commitment of an institution, of its faculty and staff, to the education of its students. "It requires that institutions rethink traditional ways of structuring collegiate learning environments and find new ways of actively involving students, as well as faculty, in their intellectual life" (p. 212).

The concern for the need to better understand and control attrition, according to Duea (1981), was shared by college presidents. In a study conducted by Duea, college presidents rated the maintaining of student enrollments second in importance on a list of 20 critical issues in higher education. Tinto (1993) suggested that an institution's capacity to retain students is directly related to its ability to reach out and make contact with students and integrate them into the social and intellectual fabric of institutional life. He argued that there was an intricate web of reciprocal relationships which bound students to the communal life of the institution and rather than single out any one action or set of actions as having been the primary cause of student departure, almost any institutional action would eventually affect student persistence and would do so in often unintended and quite unexpected ways.

Pascarella, Duby, Miller, and Rasher (1981) summed a comprehensive review of the research on student persistence/withdrawal behavior in the literature. They stated that what was clearly evident to them from the review was that student persistence/withdrawal decisions were the result of a longitudinal process. If this process was to be understood, they advocated, the characteristics, aptitudes, and aspirations the student brought to college, as well as the experience in college once enrolled, must be taken into account.

Greene and Greene (2003) contended that a student's decision to attend (or not attend) an institution may be life-altering for that student, depending on whether or not the decision was made as the best choice for the student's individual needs. They advocated that the pressure on institutions to generate the highest possible yield from the accepted pool of candidates could easily obscure the far more important long-term goal of a high rate of student retention.

"Student attrition continues to be a source of study and concern on the part of university student groups, professors and administrative personnel" (Moores & Klas, 1986, p. 16). They advocated that attrition represented a loss of time and money by students, a loss of energy and time by the institution and its employees, a loss of opportunity for those students who were not admitted because of lack of space and resources, and a loss of the leaving student's opportunity to develop his or her potential. They suggested that the most significant loss was of a student's self-esteem by not completing a significant life goal.

Chapter III provides the setting, sample, data collection, and analysis methodology for this study. It elaborates the procedures and design of the study.

CHAPTER III

METHODOLOGY

The material which follow in this chapter are organized under the headings of Setting, Sample, Data Collection, and Data Analysis. The reader should observe that this is a quantitative study using stepwise multiple linear regression to analyze relationships among 3 dependent and 11 independent variables.

Setting

This study was conducted at the University of North Dakota which is a medium size, coeducational, state-supported, liberal arts, multi-purpose university with a Carnegie Classification as Research Intensive which was founded in 1883 and is located in Grand Forks, North Dakota, which has a population of approximately 50,000. In the Fall of 2002, the University recorded an enrollment of 12,423 students of which 83% were enrolled in undergraduate programs. This institution's undergraduate and graduate programs are offered in 146 fields through 10 major units: College of Arts and Sciences, Odegard School of Aerospace Sciences, College of Business and Public Administration, School of Engineering and Mines, College of Nursing, College of Education and Human Development, School of Law, School of Medicine and Health Sciences, Division of Continuing Education, and Graduate School. The graduate program includes 46 master's

programs, 1 specialist's program, and 16 doctoral programs (*Academic Catalog 2001-2003*, 2001).

Sample

The sample for this study was a cohort of first-time, full-time freshmen at the University of North Dakota in Fall 2002 who were enrolled for Fall semester 2002 or both semesters of the 2002-2003 academic year. This resulted in a sample of 1,480 students who enrolled as first-time, full-time freshmen in 2002 Fall semester. Of this number, 75% (1,112 students) continued to the second year (Fall semester 2003). A sampling technique was not used in this study as the entire class of entering first-time, full-time freshmen was selected as the sample group. The cohort was determined following the fifteenth day of instruction for each semester as this institution's official reporting date.

Data Collection

Permission for use of data from University records was received from the institution's Office of Institutional Research. The Institutional Review Board reviewed the study to ensure the protection of human subjects and provided permission to conduct the study. Cohort students were identified by the Office of Institutional Research based upon information available from student records. Students' data were coded to prevent any violation of confidentiality in the treatment of the data gathered and analyzed.

Demographic and academic data were collected on each member of the cohort from the institution's student records by the Office of Institutional Research. These data were provided electronically to the data analyst in the Student Financial Aid Office who incorporated the financial data from the institution's financial aid records. These data

were provided electronically to the investigator, but without names or other information which would allow for the identification of individual students.

Quantitative methodology was used in this study to determine the relationship between selected academic, financial, and demographic variables and the retention and academic performance of first-time, full-time freshmen after the first semester and first year of college. Criteria used were the retention at the end of the first semester (end of the 2002 Fall semester) and retention at the end of the first year (end of the 2003 Spring semester) as determined by registration records. The students were coded as either enrolled or not enrolled for the Spring semester 2003 and enrolled or not enrolled for the Fall semester 2003.

Another criterion considered in this study was academic performance during the freshman year. For students retained for the first semester, this was measured by the cumulative grade point average achieved at the end of the first semester (end of the 2002 Fall semester). For students retained for the first year, this was measured by the cumulative grade point average achieved at the end of the first year (end of the 2003 Spring semester).

Data were collected on each student's gender, age, ethnicity, final high school grade point average, ACT score, receipt or non-receipt of a scholarship, receipt or non-receipt of a Federal Pell Grant, receipt or non-receipt of student loans, location of high school attended (in-state [North Dakota], near state [Minnesota], or other), and whether they have a declared major (major declared or no major declared). These factors

were the independent variables of this research and they were analyzed to determine if they were related to retention and academic performance.

The dependent variables for this research were retention after the first semester (enrolled or not enrolled for 2003 Spring semester), retention after the first year (enrolled or not enrolled for 2003 Fall semester), cumulative grade point average at the end of the first semester (end of the 2002 Fall semester), and cumulative grade point average at the end of the first year (end of the 2003 Spring semester).

Data Analysis

The investigator utilized stepwise multiple regression analysis with the Statistical Package for the Social Sciences (SPSS) for Windows (version 11) for the analysis. Data were analyzed to determine the effect(s) each independent variable or combination of independent variables had on the dependent variables, institutional grade point average and retention after the first semester and after the first year.

As there were several independent variables in the study, a correlation matrix was created for all the variables which provided the correlations between the dependent variable and the independent variables as well as the correlations between each independent variable. Pairwise missing values technique was used for those students for whom complete data records were not available. This technique permitted the calculation of a correlation coefficient between a pair of variables based on all of the students with complete information for the two variables. This procedure was undertaken to ensure that the maximum number of students was used in each calculation.

Chapter IV presents the statistical analysis of the data. The data are presented in tabular and narrative formats.

CHAPTER IV

RESULTS

This chapter contains the following sections: the purpose statement, a description of the sample, the answers to the four research questions, and a summary. For the purposes of this study, statistical significance was set at the .05 level.

Purpose of the Study

The purpose of this study was to determine the relationship between selected academic (high school grade point average, ACT score, major declared or no major declared), financial (receipt or non-receipt of a scholarship, Federal Pell Grant, student loans), and demographic (gender, age, ethnicity, location of high school attended) variables and the retention and academic achievement of first-time, full-time freshmen after the first semester and first year of college. Academic achievement was defined as institutional grade point average. Retention was defined as being enrolled the following semester.

Description of Sample

The sample for this study was a cohort of first-time, full-time freshmen at the University of North Dakota in the Fall 2002 who were enrolled for Spring semester 2003 or both semesters of the 2002-2003 academic year. The population of all freshmen students for the Fall 2002 was 1,987. The sample represents 1,480 students (74% of the new freshmen). Demographic information for this sample is presented in Table 1.

Table 1. Demographic Information on Age, Gender, Ethnicity for First-Time, Full-Time Freshmen (N=1,480).

Characteristics	N	%
Age		
18 and younger	1162	78.6
19	261	17.6
20 and older	56	3.8
Sex		
Male	836	56.5
Female	644	43.5
Ethnicity		
White, non-Hispanic	1370	92.6
Non-resident alien	41	2.8
Asian, Pacific Islands	15	1.0
Hispanic	12	.8
American Indian, Alaskan	11	.7
Black, non-Hispanic	9	.6
Not reported	22	1.5

The age of the first-time, full-time freshmen ranged from a low of 15 to a high of 43. The mean age of this sample was 18.4 with a standard deviation of 1.5. Female freshmen numbered 644 (43.5%) compared to 836 Males (56.5%). The majority (92.6%) of the sample were White, non-Hispanic, with the remainder of the sample non-resident alien (2.8%), Asian, Pacific Islands (1.0%), Hispanic (.8%), American Indian, Alaskan (.7%), Black, non-Hispanic (.6%), and not reported (1.5%). Due to the lack of variability within ethnicity, further analysis with this variable was not attempted.

Table 2 presents financial information for this sample. Included are scholarships, Federal Pell Grant, and loans.

Table 2. Financial Information for First-Time, Full-Time Freshmen (N=1,480).

Characteristics	N	%
Scholarships		
Recipient	322	21.8
Non-recipient	1158	78.2
Federal Pell Grant		
Recipient	315	21.3
Non-recipient	1165	78.7
Student Loan		
Recipient	943	63.7
Non-recipient	537	36.3
Non-receipt of Scholarship, Grant, or Loan	407	27.5
Receipt of Loan Only	520	35.1
Receipt of Grant Only	22	1.5
Receipt of Loan and Grant	209	14.1
Receipt of Scholarship Only	104	7.0
Receipt of Scholarship and Loan	134	9.1
Receipt of Scholarship and Grant	4	.3
Receipt of Scholarship, Grant, and Loan	80	5.4

The financial factors indicate that 322 (21.8%) of the sample received scholarships, 315 (21.3%) received a Federal Pell Grant, and 943 (63.7%) received student loans. For this sample, 407 students (27.5%) did not receive any of the types of financial aid included in this study and 80 students (5.4%) received all three types of financial aid (scholarships, Federal Pell Grant, and student loans).

The data in Table 3 show the number of students and the percentage of students admitted in terms of their high school grade point average. It shows the same data for

their ACT scores. It also shows whether they attended a North Dakota, Minnesota, or other location high school and whether or not they declared a major.

Table 3. Academic Information for First-Time, Full-Time Freshmen (N=1,480).

Characteristics	N	%
High School Grade Point Average		
1.86-2.50	83	5.6
2.51-3.00	298	20.1
3.01-3.50	498	33.6
3.51-4.00	520	35.1
Missing	81	5.6
ACT Score		
14-18	173	11.7
19-20	267	18.0
21-22	324	21.9
23-24	250	16.9
25-26	201	13.6
27-34	160	10.8
Missing	105	7.1
Location of High School Attended		
In-state (North Dakota)	683	46.2
Near state (Minnesota)	494	33.4
Other	264	17.8
Missing	39	2.6
Major		
Declared	1102	74.5
Not declared	378	25.5

An examination of the data in Table 3 shows that the range of high school grade point averages (on a 4.00 scale) is from a low of 1.86 to a high of 4.00 with 81 records (5.6%) missing this variable. The mean high school grade point average for the sample was 3.29 with a standard deviation of .5. The ACT scores range from a low of 14 to a

high of 34 with a mean of 22.4 and a standard deviation of 3.4. The ACT score was unavailable for 105 students (7.1%). The location of the high school attended by the majority of the sample was North Dakota for 683 (46.2%) with Minnesota high schools accounting for 494 (33.4%) of the freshmen. There were 264 (17.8%) freshmen who had attended out-of-state high schools with 39 (2.6%) students not having an indication of the high school attended. A major was declared by 1,102 (74.5%) students.

The retention and academic performance data are presented in Table 4. The number and percent retained after each semester are presented. Also, the number and percentage of grade point averages at selected levels are presented.

The retention rate for the sample after the first semester was 92.4% with 1,368 of the 1,480 students retained. For the second semester, the retention rate was 75.1% with 1,112 students enrolled in the first semester of the following academic year. The range of grade point averages (on a 4.00 scale) for the fall and spring semesters was from a low of .00 to a high of 4.00. The mean grade point average for the sample after the first semester was 2.71with a standard deviation of .9. For those students retained to the second semester, the mean grade point average for the sample was 2.78 with a standard deviation of .8.

Research Question 1

Research Question 1: For those students enrolled as first-time, full-time freshmen at the University of North Dakota in Fall 2002, was there a relationship between selected demographic, financial, and academic factors and retention after the first semester? Multiple regression analysis is a method for assessing the effects of more than one

Table 4. Retention and Academic Performance for First-Time, Full-Time Freshmen (N=1,480).

Characteristics	N	%
Retention After First Semester		
Retained	1368	92.4
Not retained	112	7.6
Retention After Second Semester		
Retained	1112	75.1
Not retained	368	24.9
Academic Grade Point Average After First Semester		
0.00-1.99	265	17.9
2.00-2.49	229	15.5
2.50-2.99	312	21.1
3.00-3.49	372	25.1
3.50-4.00	302	20.4
Academic Grade Point Average After Second Semester		
0.00-1.99	191	13.9
2.00-2.49	238	17.4
2.50-2.99	346	25.2
3.00-3.49	340	24.8
3.50-4.00	256	18.7

independent variable on a single dependent variable and was the method used in this study. The first analysis for the total sample entered all independent factors into the regression equation simultaneously to determine the amount of variance accounted for on retention after the first semester.

Table 5 presents the results of the regression full model analysis in terms of the *Beta* weights for each factor when loaded into the equation, the *t* values for the *Beta* weights, the significance of the *t* values, the correlation coefficients of the independent

variable with the dependent variable of retention following the first semester, and the significance of the correlation.

Table 5. *Beta* Weights, *t* Values, Significance of *t*, Correlation Coefficients, and Significance of the Independent Factors With Retention After the First Semester for the Total Sample.

Factor	*Beta*	*t*	Sig. of *t*	Corr.	Sig.
Gender	-.053	-1.797	.073	-.022	.398
Age	-.030	-1.085	.278	-.018	.482
High School Grade Point Average	.103	3.130	.002	.095	<.001
ACT Score	-.004	-.123	.902	.052	.055
Receipt/Non-Receipt of Scholarship	.021	.742	.458	.046	.079
Receipt/Non-Receipt of Federal Pell Grant	.036	1.258	.209	.018	.496
Receipt/Non-Receipt of Student Loan	.040	1.402	.161	039	.133
Attended North Dakota High School	-.148	-.933	.351	-.012	.649
Attended Minnesota High School	-.122	-.801	.423	-.014	.586
Attended Other High School	-.066	-.584	.559	.033	.201
Major Declared/Not Declared	.052	1.865	.062	.049	.059
Full Model R^2=.022					

The full model analysis determined there was a relationship between the demographic, financial, and academic factors and retention after the first semester. As reported in Table 5, the independent factors were significant predictors of retention after

the first semester as they accounted for 2.2% (R=.147, R^2=.022, F=2.643, df=11, 1323, p=.002) of the variance of retention after the first semester. The highest relationship with retention after the first semester was high school grade point average.

Tables 6 and 7 present the results of the stepwise forward regression for the independent variables on retention after the first semester. The independent factors high school grade point average and major declared/not declared were significantly related to retention after the first semester and accounted for 1.3% (R^2=.013) of the variance (F=8.749, df=2, 1332, p=<.001).

Table 6. R^2 Change Results Based on Stepwise Forward Regression for the Independent Factors on Retention After the First Semester for the Total Sample.

Factor	R	R^2	R^2 Chg.	Sig. Chg.
High School GPA	.098	.010	.010	<.001
Major Declared	.114	.013	.003	.032

Factors not in equation: Gender, Age, ACT Score, Scholarship, Pell Grant, Student Loan, North Dakota High School, Minnesota High School, Other High School

Table 7. Stepwise Forward Regression Results (*Beta* Weights, *t* Values, Significance of *t*, Correlation Coefficients, and Significance) for the Total Sample With Retention After the First Semester.

Factor	*Beta*	*t*	Sig. of *t*	Corr.	Sig.
High School GPA	.094	3.439	.001	.095	<.001
Major Declared	.058	2.143	.032	.049	.059

The first research question investigated whether there was a relationship between selected demographic, financial, and academic factors and retention after the first semester. There was a relationship and the significant variables to predict retention after the first semester were high school grade point average (positive) and major declared/not declared (positive). Students who declared majors were more likely to be retained. While there was a statistically significant relationship, the amount of variance accounted for was only 2.2% for the full model and 1.3% for the stepwise forward regression model.

Research Question 2

Research Question 2: Was there a relationship between selected demographic, financial, and academic factors and academic performance as measured by the cumulative grade point average after the first semester? Table 8 presents the results of the regression full model analysis in terms of the *Beta* weights for each factor when loaded into the equation, the *t* values for the *Beta* weights, the significance of the *t* values, the correlation coefficients of the independent variable with the dependent variable of academic performance following the first semester, and the significance of the correlation.

The full model analysis determined there was a relationship between the demographic, financial, and academic factors and academic performance after the first semester. As reported in Table 8, the independent factors were significant predictors of academic performance after the first semester as they accounted for 31.9% ($R=.565$, $R^2=.319$, $F=56.400$, $df=11, 1323$, $p=<.001$) of the variance of academic performance after the first semester. The highest relationship with academic performance after the first semester was high school grade point average.

Table 8. *Beta* Weights, *t* Values, Significance of *t*, Correlation Coefficients, and Significance of the Independent Factors With Academic Performance After the First Semester for the Total Sample.

Factor	*Beta*	*t*	Sig. of *t*	Corr.	Sig.
Gender	-.028	-1.148	.251	.036	.162
Age	.021	.923	.356	-.031	.235
High School Grade Point Average	.506	18.491	<.001	.529	<.001
ACT Score	.082	3.102	.002	.304	<.001
Receipt/Non-Receipt of Scholarship	.041	1.707	.088	.166	<.001
Receipt/Non-Receipt of Federal Pell Grant	-.058	-2.396	.017	-.091	<.001
Receipt/Non-Receipt of Student Loan	-.064	2.698	.007	-.110	<.001
Attended North Dakota High School	.120	.906	.365	.003	.907
Attended Minnesota High School	.154	1.214	.225	-.055	.033
Attended Other High School	.166	1.755	.079	.053	.041
Major Declared/Not Declared	-.006	-.266	.790	.034	.191
Full Model R^2=.319					

Tables 9 and 10 present further the results of the stepwise forward regression for the independent variables on academic performance after the first semester. The independent factors high school grade point average, receipt/non-receipt of student loan, attended other high school, ACT score, and major declared/not declared were significantly related to academic performance after the first semester and accounted for 31.5% (R^2=.315) of the variance (F=122.118, df=5, 1329, p<.001).

Table 9. R^2 Change Results Based on Stepwise Forward Regression for the Independent Factors on Academic Performance After the First Semester for the Total Sample.

Factor	R	R^2	R^2 Chg.	Sig. Chg.
High School GPA	.541	.293	.293	<.001
Student Loan	.548	.300	.007	<.001
Other High School	.554	.306	.006	.001
ACT Score	.558	.311	.005	.002
Pell Grant	.561	.315	.003	.011

Factors not in equation: Gender, Age, Scholarship, North Dakota High School, Minnesota High School, Major Declared

Table 10. Stepwise Forward Regression Results (*Beta* Weights, *t* Values, Significance of *t*, Correlation Coefficients, and Significance) for the Total Sample With Academic Performance After the First Semester.

Factor	*Beta*	*t*	Sig. of *t*	Corr.	Sig.
High School GPA	.505	19.701	<.001	.529	<.001
Student Loan	-.065	-2.737	.006	-.110	<.001
Other High School	.074	3.246	.001	.053	.041
ACT Score	.079	3.092	.002	.304	<.001
Pell Grant	-.061	-2.560	.011	-.091	<.001

The second research question investigated whether there was a relationship between selected demographic, financial, and academic factors and academic performance

after the first semester. There was a relationship and the significant variables to predict academic performance after the first semester were high school grade point average (positive), receipt/non-receipt of student loan (negative), attended other high school (positive), ACT score (positive), and receipt/non-receipt of Federal Pell Grant (negative). Students who received loans and Pell Grants were less likely to have higher grade point averages. Students who attended high schools other than in North Dakota and Minnesota tended to have higher grade point averages. In this case, there was a statistically significant relationship and the amount of variance accounted for was 31.9% for the full model and 31.5% for the stepwise forward regression model.

Research Question 3

Research Question 3: Was there a relationship between selected demographic, financial, and academic factors and retention after the second semester? Table 11 presents the results of the regression full model analysis in terms of the *Beta* weights for each factor when loaded into the equation, the *t* values for the *Beta* weights, the significance of the *t* values, the correlation coefficients of the independent variable with the dependent variable of retention following the second semester, and the significance of the correlation.

The full model analysis determined there was a relationship between the demographic, financial, and academic factors and retention after the second semester. As reported in Table 11, the independent factors were significant predictors of retention after the second semester as they accounted for 4.6% ($R=.214$, $R^2=.046$, $F=5.783$, $df=11$, 1323, $p=<.001$) of the variance of retention after the second semester. The highest relationship with retention after the second semester was high school grade point average.

Table 11. *Beta* Weights, *t* Values, Significance of *t*, Correlation Coefficients, and Significance of the Independent Factors With Retention After the Second Semester for the Total Sample.

Factor	*Beta*	*t*	Sig. of *t*	Corr.	Sig.
Gender	-.037	-1.276	.202	.019	.457
Age	-.031	-1.135	.257	-.041	.112
High School Grade Point Average	.159	4.900	<.001	.180	<.001
ACT Score	.020	.646	.518	.109	<.001
Receipt/Non-Receipt of Scholarship	.089	3.141	.002	.129	<.001
Receipt/Non-Receipt of Federal Pell Grant	-.007	-.254	.800	.022	.405
Receipt/Non-Receipt of Student Loan	-.004	-.135	.893	-.018	.490
Attended North Dakota High School	.086	.547	.584	.034	.192
Attended Minnesota High School	.079	.529	.597	-.024	.361
Attended Other High School	.085	.757	.449	-.006	.831
Major Declared/Not Declared	-.002	-.064	.949	.011	.678
Full Model R^2=.046					

Tables 12 and 13 present the results of the stepwise forward regression results for the independent variables on retention after the second semester. The independent factors high school grade point average and receipt/non-receipt of scholarship were significantly related to retention after the second semester and accounted for 4.2% (R^2=.042) of the variance (F=29.131, df=2, 1332, p<.001).

Table 12. R^2 Change Results Based on Stepwise Forward Regression for the Independent Factors on Retention After the Second Semester for the Total Sample.

Factor	R	R^2	R^2 Chg.	Sig. Chg.
High School GPA	.188	.036	.036	<.001
Scholarship	.205	.042	.006	.003

Factors not in equation: Gender, Age, ACT Score, Pell Grant, Student Loan, North Dakota High School, Minnesota High School, Other High School, Major Declared

Table 13. Stepwise Forward Regression Results (*Beta* Weights, *t* Values, Significance of *t*, Correlation Coefficients, and Significance) for the Total Sample With Retention After the Second Semester.

Factor	*Beta*	*t*	Sig. of *t*	Corr.	Sig.
High School GPA	.165	5.925	<.001	.180	<.001
Scholarship	.083	2.983	.003	.129	<.001

The third research question investigated whether there was a relationship between selected demographic, financial, and academic factors and retention after the second semester. There was a relationship and the significant variables to predict retention after the second semester were high school grade point average (positive) and receipt/non-receipt of scholarship (positive). Students who received scholarships were more likely to be retained. While there was a statistically significant relationship, the amount of variance accounted for was only 4.6% for the full model and 4.2% for the stepwise forward regression model.

Research Question 4

Research Question 4: Was there a relationship between selected demographic, financial, and academic factors and academic performance as measured by the cumulative grade point average after the second semester? Table 14 presents the results of the regression full model analysis in terms of the *Beta* weights for each factor when loaded into the equation, the *t* values for the *Beta* weights, the significance of the *t* values, the correlation coefficients of the independent variable with the dependent variable of academic performance following the second semester, and the significance of the correlation.

The full model analysis determined there was a relationship between the demographic, financial, and academic factors and academic performance after the second semester. As reported in Table 14, the independent factors were significant predictors of academic performance after the second semester as they accounted for 36.7% ($R=.606$, $R^2=.367$, $F=64.967$, $df=11, 1231$, $p=<.001$) of the variance of academic performance after the second semester. The highest relationship with academic performance after the second semester was high school grade point average.

Tables 15 and 16 present the results of the stepwise forward regression for the independent variables on academic performance after the second semester. The independent factors high school grade point average, receipt/non-receipt of student loan, attended other high school, ACT score, and Federal Pell Grant were significantly related to retention after the first semester and accounted for 36.6% ($R^2=.366$) of the variance ($F=142.629$, $df=5, 1237$, $p<.001$).

The fourth research question investigated whether there was a relationship between selected demographic, financial, and academic factors and academic performance after the second semester. The first analysis determined there was a relationship between

Table 14. *Beta* weights, *t* Values, Significance of *t*, Correlation Coefficients, and Significance of the Independent Factors With Academic Performance After the Second Semester for the Total Sample.

Factor	*Beta*	*t*	Sig. of *t*	Corr.	Sig.
Gender	.006	.233	.816	.090	.001
Age	.013	.542	.588	-.008	.759
High School Grade Point Average	.540	19.729	<.001	.572	<.001
ACT Score	.087	3.328	.001	.331	<.001
Receipt/Non-Receipt of Scholarship	.029	1.233	.218	.170	<.001
Receipt/Non-Receipt of Federal Pell Grant	-.057	-2.376	.018	-.087	.001
Receipt/Non-Receipt of Student Loan	-.079	-3.305	.001	-.147	<.001
Attended North Dakota High School	.014	.108	.914	.018	.500
Attended Minnesota High School	.032	.259	.795	-.087	.001
Attended Other High School	.097	1.049	.295	.051	.060
Major Declared/Not Declared	-.021	-.904	.366	.018	.503
Full Model R^2=.367					

the demographic, financial, and academic factors and academic performance after the second semester. There was a relationship and the significant variables to predict

Table 15. R^2 Change Results Based on Stepwise Forward Regression for the Independent Factors on Academic Performance After the Second Semester for the Total Sample.

Factor	R	R^2	R^2 Chg.	Sig. Chg.
High School GPA	.584	.341	.341	<.001
Student Loan	.592	.351	.010	<.001
Other High School	.598	.358	.007	<.001
ACT Score	.602	.363	.005	.002
Pell Grant	.605	.366	.003	.022

Factors not in equation: Gender, Age, Scholarship, North Dakota High School, Minnesota High School, Major Declared

Table 16. Stepwise Forward Regression Results (*Beta* Weights, *t* Values, Significance of *t*, Correlation Coefficients, and Significance) for the Total Sample With Academic Performance After the Second Semester.

Factor	Beta	*t*	Sig. of *t*	Corr.	Sig.
High School GPA	.547	21.491	<.001	.572	<.001
Student Loan	-.079	-3.328	.001	-.147	<.001
Other High School	.079	3.486	.001	.051	.060
ACT Score	.080	3.156	.002	.331	<.001
Pell Grant	-.054	-2.293	.022	-.087	.001

academic performance after the second semester were high school grade point average (positive), receipt/non-receipt of student loan (negative), attended other high school

(positive), ACT score (positive), and receipt/non-receipt of Federal Pell Grant (negative). Students who received loans and Pell Grants were less likely to have higher grade point averages. Students who attended high schools other than in North Dakota and Minnesota tended to have higher grade point averages. In this case, there was a significantly significant relationship and the amount of variance accounted for was 36.7% for the full model and 36.6% for the stepwise forward regression model.

Summary

This chapter has presented the results of using stepwise multiple linear regression to determine the relationship between selected academic, financial, and demographic variables and the retention and academic performance of first-time, full-time freshmen after the first semester and first year of college. The dependent variables were retention after the first semester, academic performance after the first semester, retention after the second semester, and academic performance after the second semester. The independent variables were gender, age, ethnicity, high school grade point average, ACT score, receipt or non-receipt of a scholarship, receipt or non-receipt of a Federal Pell Grant, receipt or non-receipt of student loans, location of high school attended, and any major declared or no major declared.

Chapter V presents a summary of the study, conclusions drawn from the results, and recommendations for further study and institutional action.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This final chapter presents a summary of the findings of this study, conclusions, and discussion resulting from the survey of the literature as well as the data provided. In addition, recommendations to practitioners in higher education and researchers are provided.

Summary

This study found a relationship between selected demographic, financial, and academic factors and academic performance after the first semester and first year. The results provided indicate that there was a statistically significant relationship and the amount of variance accounted for was 31.9% for the first semester and 36.7% for the second semester. In predicting retention, while there was a statistically significant relationship, the amount of variance accounted for only 2.2% for the first semester and 4.6% for the second semester.

Considering the sample size for this study (1,480 students), the investigator wanted to determine the size of the effect of the independent variables on academic performance and retention. In order to do so, the investigator divided the proportion of variance explained by the independent variables by the proportion of variance attributed to error. For academic performance, this resulted in large effect sizes (.47 and .58).

Therefore, there is not only a statistically significant relationship between the independent variables and academic performance but by examining the effect size, the practical significance is extensive. For retention, this calculation resulted in small effect sizes (.02 and .05). Therefore, while there is a statistically significant relationship between the independent variables and retention, by examining the effect size, the practical significance of the findings is limited.

These results suggest that the reasons for these retention results are other than academic. To test this hypothesis, the investigator examined the academic performance of those students who were not retained in an attempt to determine whether their decision to not remain enrolled was voluntary. The data in Table 17 show, for those students not retained, the number and percentage of students by grade point average.

Table 17. Academic Performance for First-Time, Full-Time Freshmen Not Retained.

Grade Point Average	N	%
Not Retained After First Semester (N=112)		
0.00-1.99	52	46.4
2.00-2.49	14	12.5
2.50-2.99	13	11.6
3.00-3.49	20	17.9
3.50-4.00	13	11.6
Not Retained After Second Semester (N=368)		
0.00-1.99	149	40.4
2.00-2.49	63	17.1
2.50-2.99	58	15.8
3.00-3.49	58	15.8
3.50-4.00	40	10.9

The *Academic Catalog 2001-2003* (2001) indicates that a student who has earned less than 90 total hours will be considered in Good Academic Standing if he or she maintains a UND grade point average of 2.00 or higher. A student who is not in Good Academic Standing at the end of the next term in which he or she enrolls will be dismissed. As a result, all of the 112 students not retained after the first semester voluntarily made the decision to not enroll. In addition, 60 (53.6%) of these students were in Good Academic Standing at the time of their departure. Of those students not retained after the second semester, 219 (60%) left the institution even though they were in Good Academic Standing. These data suggest that these students voluntarily departed from this university.

Conclusions and Discussion

Research Question 1: For those students enrolled as first-time, full time freshmen at the University of North Dakota in Fall 2002, was there a relationship between selected demographic, financial, and academic factors and retention after the first semester?

There was a relationship and the significant variables to predict retention after the first semester were high school grade point average and major declared/not declared. The amount of variance accounted for was only 2.2% for the full model and 1.3% for the stepwise forward regression model.

Research Question 2: Was there a relationship between selected demographic, financial, and academic factors and academic performance as measured by the cumulative grade point average after the first semester?

There was a relationship and the significant variables to predict academic performance after the first semester were high school grade point average, receipt/non-receipt of student loan, attended other high school, ACT score, and receipt/non-receipt of Federal Pell Grant. The amount of variance accounted for was 31.9% for the full model and 31.5% for the stepwise forward regression model.

Research Question 3: Was there a relationship between selected demographic, financial, and academic factors and retention after the second semester?

There was a relationship and the significant variables to predict retention after the second semester were high school grade point average and receipt/non-receipt of scholarship. The amount of variance accounted for was only 4.6% for the full model and 4.2% for the stepwise forward regression model.

Research Question 4: Was there a relationship between selected demographic, financial, and academic factors and academic performance as measured by the cumulative grade point average after the second semester?

There was a relationship and the significant variables to predict academic performance after the first semester were high school grade point average, receipt/non-receipt of student loan, attended other high school, ACT score, and receipt/non-receipt of Federal Pell Grant. The amount of variance accounted for was 36.7% for the full model and 36.6% for the stepwise forward regression model.

In this study, high school grade point average was the independent variable with the highest relationship to all four of the dependent variables (retention after the first semester, academic performance after the first semester, retention after the second

semester, and academic performance after the second semester). This would suggest that high school grades are strong predictors (R^2= 29.3% and 34.1%) for academic success and are also somewhat (R^2= 1% and 3.6%) related to retention of first-semester and first-year college students at the University of North Dakota. As a result, high school grade point average should be a primary factor considered as admission decisions are being made.

High school grade point average as a strong predictor of college grade point average has been supported as well by other researchers (Astin, 1975; Bean, 1986; Cope, 1978; Jensen, 1981; Moores & Klas, 1986; Tinto, 1987; Voorhees, 1985). As indicated by the results of this study, high school grade point average was a much stronger predictor of college grade point average than ACT score and this conclusion was also noted by Astin (1993) in his work.

The significant variables for predicting academic performance (high school grade point average, receipt/non-receipt of student loan, attended other high school, ACT score, and receipt/non-receipt of Federal Pell Grant) were the same for both the first semester and the first year. These variables accounted for 31.5% of the variance for predicting academic performance for the full model for the first semester. For the second semester, they accounted for 36.6% of the variance for predicting academic performance for the full model.

As part of the admission standards for the University of North Dakota at the time of this study, the minimum requirements for automatic admission of freshmen included a minimum ACT score of 17 and high school grade point average of 2.25. This restriction of range for ACT score and high school grade point average may have resulted in

attenuation of the validity coefficient. While procedures do exist for estimating validity coefficients for an entire group, these procedures require assumptions that may not be tenable (and are seldom testable) in practical solutions. The investigator suggests that it may be that the correlation between ACT score and high school grade point average would have been higher if the range would have been lower.

Following high school grade point average, student loans were the financial aid variable most statistically significant in predicting academic performance after the first and second semesters. The Federal Pell Grant was less significant in predicting academic performance. For the second semester only, receipt of a scholarship was a significant predictor for retention. These results appear to support the work of Stampen and Cabrera (1986) in which they wrote that financial aid was but one of a wider number of variables impacting persistence. This aligns with Tinto's (1987) assertion that financial impact was generally conditioned by the nature of the student experiences on campus weighed with the perceived costs and benefits of attendance.

Murdock (1987) suggests that financial aid had a stronger effect on persistence during the latter years of college than on the freshman year and particularly in terms of graduation probability. While this study did not investigate the consequences of financial aid beyond the freshman year, student loans and Federal Pell Grants were negatively related to academic performance after both the first and second semesters. In addition, receiving a scholarship was positively related to retention after the second semester. This is supported by Astin (1993): "Institutionally based scholarships have direct positive effects on college GPA and graduating with honors" (p. 368). He suggests that knowing

that a student is receiving merit-based aid from their institution may serve as a motivating force for higher academic achievement. Further research should be conducted at the University of North Dakota to determine the relationship of these financial aid components to academic performance and retention after the first two semesters and through graduation.

The demographic, financial, and academic factors selected had a limited relationship to retention after the first semester and the first year. These results suggest that successful first-year retention in this type of institutional setting is especially dependent on variables other than those identified in this study. This may be somewhat summarized by Pace's (1984) view that what is most important for student development and education is not who goes where to college but what students do once they get to college.

Enhancing student retention continues to be of much concern to institutions. It clearly is a great concern at the University of North Dakota and is prompted by the major change in the demographics of the recruiting area as the number of high school graduates is on a sharp decline. Some colleges and universities begin or continue to invest in a range of programs designed to retain students. Tinto (2002) contended that too often these programs are add-ons that lay at the margins of institutional functioning and too infrequently address the deeper roots of student retention and the conditions that promote student persistence.

Tinto (1993) suggested that a student's academic integration into the institution is necessary in order to encourage better prepared students to continue to do well and feel

academically challenged. In addition, Astin (1993) demonstrated that students' involvement in their educational pursuits is directly related to higher college grade point averages and increased chances of persisting. Kuh et al. (1991) write that institutions must make the strange familiar for newcomers and help students become acclimated to the expectations and demands of their new environment. Institutions such as the University of North Dakota need to intentionally develop strategies to make students feel welcome when they arrive on campus, communicate the institution's values, and emphasize the importance of in- and out-of-classroom involvement.

Limitations

Attrition studies incorporating student financial aid have been limited to exploring the effects of individual programs (Stampen & Cabrera, 1986). As in this study, that approach overlooks the facts that individual types of aid are combined in financial aid packages and the study results are not a reflection of a total aid package, but reflect individual types of aid such as scholarships, Federal Pell Grant, and student loans.

This study investigated the relationship between selected variables and academic performance and retention following the first semester and first year of college. A limitation of the results is that they may not single out relationships that are recurring from those that occur only during the first academic year. The selected variables were also a limitation as additional variables would possibly expand the variability accounted for in academic performance and retention.

A further limitation of this study is the sample selected. This study was conducted at only one public, four-year, residential institution. Therefore, the findings may not be

able to be generalized beyond this institution and in order to determine whether these findings apply beyond the context of this institution, this study should be replicated with data from students at other similar types of institutions.

Recommendations

Recommendations for Practitioners

The results of this study regarding the significant relationship of high school grade point average to academic performance and retention have implications for practitioners at the University of North Dakota (UND) and other institutions. The University President and his cabinet and other campus professionals who are influencing or making admission decisions should pay particular attention and give substantial weight to the high school grade point average required in determining admission standards. Such standards should be extensively communicated to high school principals and counselors with special informational efforts to those schools at which the heaviest recruiting occurs.

Standardized tests, such as the ACT, are often used for college and university admission decisions. The results of this study indicate that the ACT score was not a variable that was a statistically significant predictor of retention. In addition, while it was one of the variables with a statistically significant relationship to academic performance after both the first and second semesters, in the stepwise forward regression results it was only significant following high school grade point average, student loan, and other high school attended. A recommendation to the UND President and his cabinet and other campus professionals is to reconsider the level of importance currently given to the high school grade point average and ACT score in making admission decisions.

The following are several recommendations that emerge from the literature review. They seem to be particularly applicable to the University of North Dakota so the investigator has chosen to include them. While the literature review was not subjected to statistical analysis, these data were carefully analyzed for their applicability and importance to UND. These recommendations may apply to other institutions and the reader would need to determine whether there is enough similarity between the institutions for the recommendations to be applicable.

As a prominent researcher in the field of retention, Tinto's (1998) research on student persistence supports the concept that colleges and universities, especially four-year institutions, should reorganize the first year of college to better promote activities known to promote persistence during that period. This is also supported by the data in this study which indicate the number of students who have left the institution while in Good Academic Standing. A pertinent recommendation to the University of North Dakota and its President emerged from a review of the literature. This recommendation is that college presidents (at this institution and others) reorganize the first year of college as a unit with its own administrative and organizational structure with the sole task of providing and assessing a first-year experience program for students. Such an experience should be a community model that promotes shared learning among students and faculty (such as Integrated Studies). "Learning communities would be a hallmark of the curriculum and collaborative and/or cooperative teaching would characterize new student learning experiences" (p. 174). Such learning communities should share not only the curriculum but also the experience of learning the curriculum.

An additional recommendation for practitioners relates to the staffing of and responsibility for institutional retention programs. Tinto (2002) reports that too often retention programs are staffed by student affairs professionals who have multiple responsibilities and are funded by sources other than the institutional operating budgets. His research supports that though some faculty may be involved, it is still the case that retention programs are only occasionally the responsibility of academic affairs, only intermittently the work of faculty, and infrequently seen as central to the educational mission of the institution.

In order for student retention efforts to be seen as integral parts of this institution's educational mission and functions, the University of North Dakota President and Provost should take the lead in informing the campus community, especially the academic component, of the importance the institution places on retention. This would be demonstrated by the expectation that each department (academic or otherwise) include retention efforts as strategies in their department's strategic plan as well as accountability measures for determining the success of these efforts. In addition, the reward structure for the members (faculty and staff) of the institution needs to include components for the development, implementation, and maintaining of successful retention efforts.

Recommendations for Researchers

To determine if the findings of this study apply to another institution, this study should be replicated at other institutions. Such a replication should include the variables included in this study as a starting point in investigating their relationship to student academic performance and retention at other campuses.

This study examined the relationship between selected variables and academic performance and retention at specified periods of time (end of first semester and end of first year). Future research should be conducted utilizing a longitudinal design measuring student performance and persistence at various points during students' entire college career. Such points might be after the third year, after the fourth year, at the time of graduation, or the time of departure from the institution.

This study demonstrated that the selected demographic, financial, and academic factors considered had very limited ability to predict retention of first-semester and first-year students. Non-cognitive variables involving both social and interpersonal variables such as students' involvement in campus organizations and activities, campus employment, or a predisposition toward a positive college experience were not included in this study. Future research at this institution should extend the research already done at other institutions in order to measure the impact of these variables and their effects on retention and academic performance of students after the first semester and first year.

Astin's (1984) research demonstrated the need for student involvement and connection to the life of the institution as factors increasing the likelihood of persisting. As a result, the orientation program and other institutional first-year experiences at the University of North Dakota should be assessed by persons with responsibility for those programs for their particular sensitivity to the separation and transitional difficulties new students face in the adjustment from high school to college. The importance of these assessment efforts is also supported by Tinto's (1987) theory and research on student departure.

Afterword

It is tempting to think that the impact from this analysis of the data was minimal since only one variable, high school grade point average, was found to be significant in practical terms. Even though tempting, such a conclusion is unwarranted. Knowing that of the 11 variables considered and analyzed, and learning that they do not make a practical difference, is at least equally valuable.

Institutional professionals responsible for the recruitment, enrollment, retention, and completion of students can be relieved of looking for data regarding these variables to make a substantial difference regarding retention and academic performance. Instead, the focus can and should be on researching, developing, and assessing programs that promote in- and out-of-classroom involvement as a means of improving the academic performance of students as well as their retention.

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