DISSERTATION

PREDICTION OF PERSISTENCE AT A COMMUTER INSTITUTION OF HIGHER EDUCATION: A MULTIVARIATE ANALYSIS OF A THEORETICAL MODEL

Submitted by

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In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Fall 2006

COLORADO STATE UNIVERSITY

May 9, 2005

WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY LYNN MARIE BURKS ENTITLED PREDICTION OF PERSISTENCE AT A COMMUTER INSTITUTION OF HIGHER EDUCATION: A MULTIVARIATE ANALYSIS OF A THEORETICAL MODEL BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

PREDICTION OF PERSISTENCE AT A COMMUTER INSTITUTION OF HIGHER EDUCATION: A MULTIVARIATE ANALYSIS OF A THEORETICAL MODEL

Changing demographics suggest that much of the growth in higher education will come from diverse students consuming higher education in nontraditional formats. The majority of investigations in persistence research have focused on traditional students attending traditional, residential institutions. Additionally, Horn and Berger (2004) indicated that although student enrollments have increased over the past two decades, persistence rates have remained unchanged. The purpose of this research was to develop and test a longitudinal model synthesized from the literature to (a) investigate the associations on persistence for nontraditional students attending nontraditional institutions, (b) assist staff, faculty, and administrators implement high quality intervention strategies, and (c) refocus institutional resources toward enhancing student persistence.

Data were collected in a three-step process over a 5-year period; 1999 (Year 1); 2000 (Year 2), and 2004 (Year 5). The Year 1 student cohort initially consisted of 4,571; 697 of them also were assessed in 2000, their second year. Results yielded significant differences between students who persisted to their second year or not, those who graduated or not within 5 years, age groups, and ethnicities. Further analyses indicated

that satisfaction significantly decreased on every construct in the theoretical model as students moved from their first to second year.

Path analysis was employed to test the theoretical model. Two models, one using data from the students' first year of college and one representing the students' second year of college, were assessed. The R^2 for intent to re-enroll was .59 for Year 1 and .66 for Year 2.

Prior research studying commuter institutions showed background characteristics of the student as the most important associations on short-term outcomes and persistence decisions. Results of this study indicated the opposite; institutional and interactional variables were associated with persistence decisions for commuter students. Furthermore, both academic and social variables showed direct associations on satisfaction and indirect associations on intent to re-enroll. Logistic regressions supported other findings of this study: strong academic performance, high levels of satisfaction, and full-time status each enhanced persistence rates.

The findings of this dissertation suggested a revised theoretical model to promote additional quantitative research for this line of inquiry.

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ACKNOWLEDGMENTS

A dissertation is rarely the creation of one person, this one being no exception. I have had the opportunity to be surrounded with a tremendous community of colleagues, friends, and family who have so graciously offered their time and support. It is this that I am most grateful for.

First and foremost I want to give gratitude to my grandparents—Roman and Anna Wajler. Their courage and love to build a family in a new and foreign land as well as their many accomplishments continue to motivate me. Your efforts and sacrifices were all worthwhile.

To my parents, Fred and Christine Malinowski, who provided their unconditional support and love throughout the years. You instilled a strong work ethic in all of your children, showing all of us that anything can be accomplished with commitment and hard work and that respect and accomplishment must be earned. Finally, thanks Mom and Dad for an abundance of energy, persistence, spirit, and a willingness to never stop learning.

To my siblings Beth Kane and Frederick Malinowski, who also provided much needed support and love throughout the years. Thank you for the hours of babysitting and support during this process. I could not imagine life without the two of you.

To my co-advisors, Dr. Gene Gloeckner and Dr. George Morgan—your patience, support, and superior teaching throughout this journey made the experience challenging yet exciting. George, your thoughtful and supportive approach as well as your true passion and dedication for your work and students will never be forgotten. Gene, I may be slightly biased; however, I can seriously say that I have been blessed to have worked with one of the best. You are everything a doctoral student would want an advisor to be.

Your knowledge, guidance, and commitment to your students will forever be carried in the minds of many that have had the opportunity to work with you, this one in particular. I want to also recognize my other committee members and members of Colorado State University School of Education: Dr. Linda Kuk, Dr. David McPhee, and Dr. Jean Lehmann. Linda, thank you for taking the time out of your busy schedule to mentor my work. Your enthusiasm and devotion to student persistence is refreshing and very much respected. It was an honor to have you on my committee. David, thank you for your insightfulness and kind support. Jean, your spirit, energy, and leadership within the School of Education will leave an everlasting impression on me. You are an outstanding group of professionals, and it has been an absolute pleasure working with each and every one of you. I hope that this is only the beginning of a long and prosperous professional partnership.

Many, many thank-yous to all of my former educators at St. Francis Borgia, Elk Grove High School, Eastern Illinois University, and Colorado State University for all of your efforts. I am especially indebted to Dr. Lou Hencken, who provided me with a graduate assistantship and introduced me to higher education, which changed the purpose of my life.

I regard as great fortune to have been surrounded by my Colorado State University cohort members—Dr. Janet Abri, Betsy Bajek, Dr. Ahmed Kahn, Dr. Stan Lan, Dr. Telly Courialis, Dr. Donna Rechau, Dr. Shawn Schumacher, and Bob Trombetta. Your support was and continues to be immeasurable. Each and every one of you has made a tremendous impact on my life, both professionally and personally. I am grateful to Colorado State for bringing us together. The camaraderie will never be

forgotten—our "Fab Seven" projects, the intense Saturday morning meetings preparing for the comprehensive exams, and the never-ending study sessions across the entire Chicago metropolitan area. However, a very special thank-you goes to both Dr. Donna Rechau and Dr. Janet Abri. Donna, there are no words that appropriately define the amount and level of support you have provided. We can say goodbye to grueling days and evenings spent working at the Naperville Center, consuming far too much caffeine, popcorn, and chocolate. Janet, thank you for your kind and motivating words of support. Your ability to listen and counsel as well as your dedication to quality, pushed me to a higher level of achievement.

Additionally there are several other debts that I owe. To Joan Chu and Dr. Keith Theide at the University of Illinois at Chicago for their generous assistance with the methodology and EQS system, to Dr. Sherrill Hoel for her support and access to the data used in the current study. To my editors, David Child and Cathy Dees, who waved their magic wands. Cathy always made time for my work, and David, your spirit and sound counsel made this dissertation stronger, thank you. To my "man in brown" who made sure my dissertation made it to Fort Collins in time for my defense. To my colleagues at DeVry University, particularly Dr. John Morello, Kristin Tuten, Linda Hjorth, and Dr. Susan Lerner-Friedberg, your advice, wisdom, and financial support were instrumental in my completing my degree.

More thank-yous and appreciation are owed to my friends and family for all of the hours of babysitting and random acts of kindness. It was amazing how only 15 minutes of babysitting allowed me to complete a task or yet another table. There were times when giving up appeared to be inevitable. Your words of encouragement provided additional

energy to carry on. Thank you Lynn Bauer, Amy Burks, Judie Burks, Vanessa Cowhey, Christine Duncan, Amy and Doug Grant, Sylvia Kurtz, Susan Reagan, Tara Schumacher, Tammy Smock, and Susan Techau—I am truly blessed to be surrounded by such an exceptional group of friends. I also owe much gratitude to Ashley Techau for her flexibility and assistance with Ethan and Alexander while their mother was trapped in her office.

For my current and former students, and all students in higher education who may actually gain from progress in this area. There are numerous researchers and practitioners who are deeply committed to enhancing your college experience. The future will be challenging, but promising, and I look forward to continuing to be part of the higher education community.

To Michael—my confidant and my dearest love. Thank you for being at that party one warm summer evening in 1985. Thank you for always being there when I needed you most and for stepping back when I needed you to step back. Most importantly thank you for putting our life on hold for this journey.

Lastly, to my boys, my babies—Ethan and Alexander. I want you both to realize that you can achieve far more than you think and no goal should ever be too far to reach. Let this dissertation be an example of one of life's greatest lessons.

To my boys—Michael, Ethan, and Alexander

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CHAPTER 1

INTRODUCTION

Student persistence has challenged the academy for some 70 years and counting (Tinto, 1982). Braxton (2000) indicated that because of the near-paradigmatic stature of Tinto's interactionalist theory, student persistence inquiry had by and large been at a standstill since the mid-1990s. This left several theoretical constructs unexplained or, in this case, inadequately representing particular institutions and subpopulations of students. This dissertation is a study of persistence for an institution of higher education whose student body is mostly commuter and nontraditional. Furthermore, Horn and Berger (2004) indicated that between 1994 and 2000, institutions of higher education allocated tremendous resources toward increasing enrollments and thus left student success and persistence overlooked. A theoretical model derived from a culmination of various frameworks advanced in the literature will be presented. The proposed theoretical model (see Figure 1.1) served as a foundation to enhance the understanding of the persistence process and to attempt to refocus institutional resources toward assisting students to persist and succeed.

Background of the Problem

Understanding and explaining why students depart from college has intrigued scholars since the beginning of the 20th century. Early departure studies can be traced all the way back to 1913 (Summerskill, 1962). Unfortunately, what was true then continues

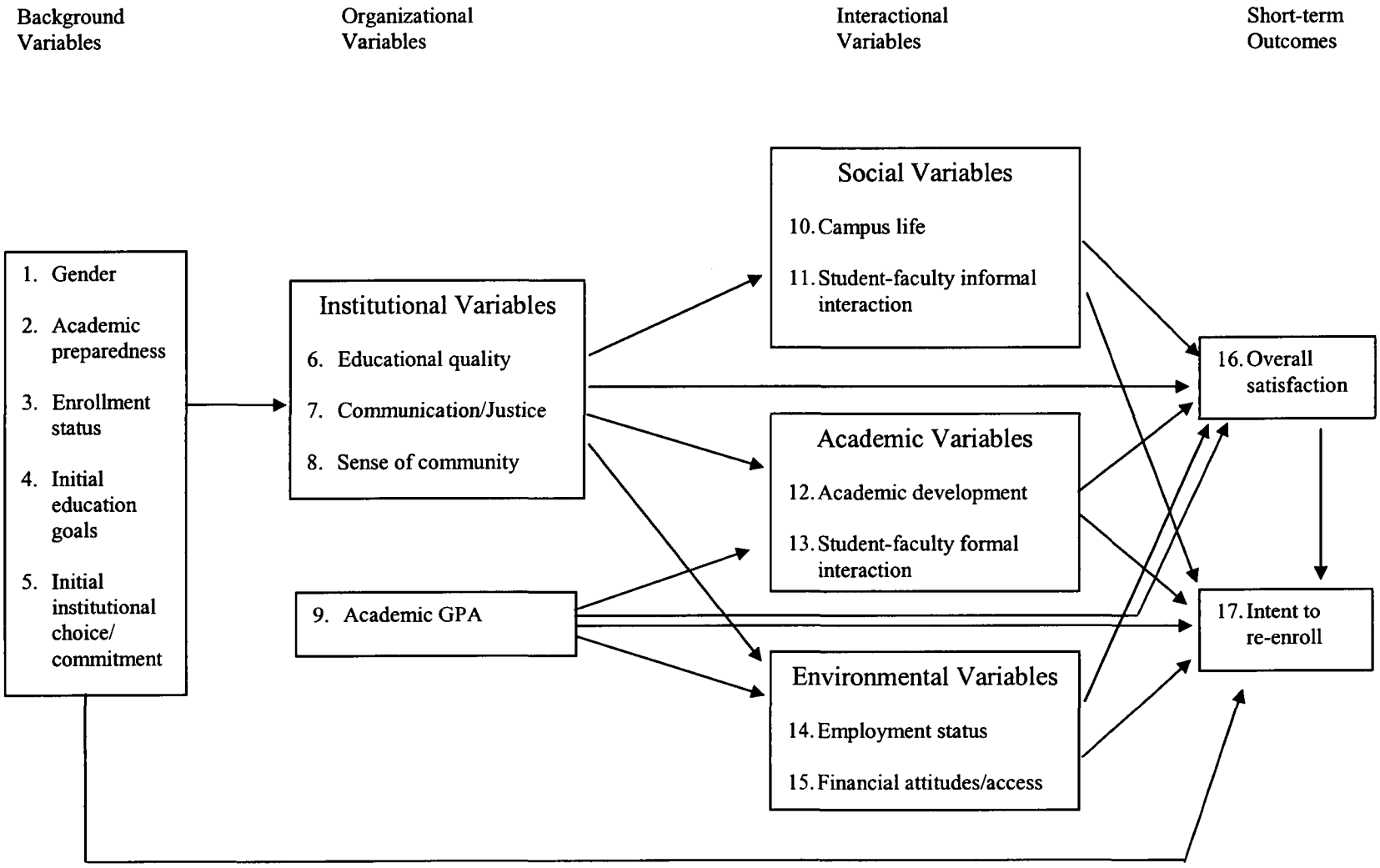

Figure 1.1. The theoretical model.

to be a reality today: the majority of college students continue to depart rather than graduate from their initial institutions (ACT, Inc., 2003). Although sophisticated theoretical models of departure have been constructed over this time period, there is still much to learn about the complex causes of student persistence.

As student populations become more diverse and society continues to put substantial value on obtaining a college degree, it is critical to continue to investigate this phenomenon from various perspectives, types of institutions, and students.

Statement of Problem

The problem is to explain the longitudinal process of student persistence for a for-profit, commuter institution in higher education. Horn and Berger (2004) reported that college enrollments experienced steady increases for the past two decades. However, persistence rates continued to remain unchanged since the mid-1970s. On average, more students have been enrolling and gaining access into higher education, but persistence rates have remained unchanged. It appears that institutions allocated a disproportionate amount of resources toward enrollment efforts and treated persistence issues as secondary to these efforts.

Purpose of Study

The primary purpose for this study was to investigate the influences on persistence decisions in a nontraditional setting using the theoretical model displayed in Figure 1.1. The study focused on variables that are related to persistence in higher education. The model was based on several postulates portrayed in the literature. Background characteristics, initial goals, and commitments of the students were collected to establish a profile of a student. Their interaction with the institutional, academic,

social, and external environments was evaluated. These interactions were tested to see the effects on short-term outcomes (student satisfaction, intent to re-enroll) and persistence decisions. A secondary purpose of this analysis was to guide administrators, staff, and faculty to establish effective intervention strategies and refocus institutional resources toward enhancing student persistence.

Research Questions

1. Is there a difference between those students who persisted to Year 2 of the study versus those students who dropped out before Year 2 in their responses to the constructs represented in the theoretical model?
2. For the students who persisted to Year 2, is there a difference between those students who graduated versus those students who did not graduate in 5 years in their responses to the constructs represented in the theoretical model?
3. Are there differences among ethnicity/races on the responses to the constructs represented in the theoretical model?
4. Are there differences among the students who are younger than 25 and those 25 and over on the responses to the constructs represented in the theoretical model?
5. Are there differences between the students' responses in their first year (freshman) and the same students in their second year in regards to the constructs represented in the theoretical model?
6. Is the path model consistent with the observed correlations among the variables? The model describes four sets of explanatory variables and how they relate to the outcome. The four sets of constructs are (a) background attributes (student gender, academic preparedness, enrollment status, initial institutional

choice/commitment); (b) institutional variables (educational quality, communication/justice, sense of community), (c) interactional variables (social variables, academic variables, financial attitudes), and (d) short-term outcomes (satisfaction, intent to re-enroll).

7. If the model is consistent, what are the estimated direct, indirect, and total effects among the variables?

8. Is there a combination of (a) background attributes (student gender, academic preparedness, enrollment status, initial institutional choice/commitment, employment status), (b) institutional variables (educational quality, communication/justice, sense of community), (c) interactional variables (social variables, academic variables, financial attitudes), and (d) short-term outcomes (satisfaction, intent to re-enroll) that predicts whether students graduate or not?

Significance of Study

The study presents numerous contributions to this line of inquiry and research audiences. The distinctiveness of this study is that a multitheoretical model is revealed and tested using a large data set. The model focused on variables that are known to influence persistence decisions in a nontraditional setting while advancing several frameworks from the literature, otherwise defined as theory integration (Berger, 2001-2002; Braxton, 2000, 2001-2002). The longitudinal design of the model allowed the researcher to evaluate a student cohort over time and to address environmental experiences as the students' progressed to degree completion, whereas many studies have taken place during a very short time period and failed to take into account the longitudinal nature of departure decisions.

This evaluation used system-specific data. Tinto (1987) advocated that institutional rates of departure are "necessarily a reflection of the particular attributes and circumstances of an institution and that institution alone" (p. 26). Tinto noted that although commonalities amongst types of institutions provide insight, institution-specific studies of departure, coupled with an examination of different types of students and student experiences within those specific institutions, will shed light on true associations with student departure. Similarly, Braxton (2000) supported this calling and pointed to the extensive literature review he and his colleagues performed on student departure. They concluded that there was a profound need for additional research into the "linkages between organizational characteristics and student persistence" (p. 242). These linkages can be established only by conducting institution-specific retention studies to properly access the unique composition of both the institution and its students (Tinto).

Lastly, Pascarella and Terenzini (1991) stated that most of the research that evaluated different types of students, social and academic integration/experiences, and associations with persistence and degree attainment was conducted with traditional-age students attending traditional residential 4-year institutions. The specific evaluation in this dissertation included a diverse population that was mostly nontraditional and nonresidential. When commuter institutions have been studied, most have taken place at either urban institutions or in a community college setting. Far fewer investigations have taken place at 4-year commuter institutions, and none have focused on the expanding 4-year, accredited, for-profit institutions of higher education. Prior studies of proprietary institutions tended to group such institutions into a single category titled "for-profit." That category included anything from a professional certificate to a 4-year degree in

Electrical Engineering Technology. There is a great deal of variability amongst these types of institutions, which is a factor that has not been considered in persistence literature.

The 1990s brought on substantial growth for proprietary institutions nationwide. Some of the growth came from changing demographics and demands of college students. Fewer than one out of six undergraduates today fit the stereotype of the 18- to 22-year-old living on campus attending college full-time. Levine and Cureton (1998) attributed this change to what they call the "fast-food culture." Students are demanding a no-frills approach to higher education. "They want their colleges to be nearby and to operate at the hours that are most useful to them—preferably around the clock" (Cantor, 2000, p. 29). There has also been a calling from the research community to study student persistence decisions in these "alternative" institutions such as University of Phoenix and DeVry University (Peltier, Laden, & Matranga, 1999).

Finally, Berger and Braxton (1998) wrote that any theory can be better understood when tested at the "extreme ends of the behavior spectrum" (p. 106). In sum, these factors provide an appealing and exciting opportunity to investigate student persistence.

Research Audiences

For the research community this dissertation will contribute significantly to knowledge of student persistence regarding nontraditional students and settings. It will assist these types of institutions in regards to their development and implementation of effective persistence policy.

The results from this investigation will also allow the target institution to improve the quality of services and programs it offers to its diverse study body. Examples include improving academic resources, social programming, and financial aid services.

For society-at-large, being able to offer higher quality services and programs in higher education has been linked to student persistence. The college degree continues to be the gateway to occupational and economic status in this country (ACT, Inc., 2004b). Tinto (2004) noted that college graduates earn higher wages and are less likely to be unemployed compared to college dropouts. A far deeper and more meaningful purpose of higher education is human development. The benefits of producing more college graduates in our society or even of helping students take more classes before dropping out, should lead to better career options and a higher quality of life for our students.

Delimitations

Several delimitations of this study should be noted. This evaluation was delimited to an undergraduate student population from a for-profit, 4-year, accredited institution. However, the researcher focused on the entire system, which during the data collection period aggregately consisted of approximately 48,000 students at 16 campuses nationwide. By focusing on the entire system, the researcher was able to make generalizations about the system studied as well as institutions that possess similar attributes.

Data were collected three times over a 5-year period: 1999 (Year 1); 2000 (Year 2), and 2004 (Year 5). The population was delimited to students who participated in the Student Satisfaction Inventory (SSI) during those years. The accessible population was reduced further to new students who participated in the SSI during Year 1 of the

study and who provided the appropriate identifying information. Only 50% of the population that participated in the inventory provided the appropriate identifying information, so the study population was further reduced to those students. For Year 2, the population was decreased once again to only those students who participated and provided the appropriate identifying information so that satisfaction inventory data could be linked to information from the university data base.

Limitations and Assumptions

The purpose of the study was to explain persistence in a specific institution. The study determined persistence only within the institution. It was not determined whether nonpersisters withdrew completely from higher education or enrolled elsewhere. The questions and questionnaire were not designed specifically for the study. Although an extensive literature review was performed to define and measure the independent variables, some inferences were made. Lastly, it should be noted that the findings might have a slight positive bias. Inasmuch as the inventories were administered in the classroom, it is believed that some of the students might be compelled to temper their negative opinions because such a setting may not have promoted a sense of anonymity. Although potential threats to validity existed, it was assumed the data were appropriate to answer the research questions posed in this study.

Definition of Terms

For the purpose of this investigation, the following terms were specified:

Commuter Student: A commuter student was defined as a student who does not live in institutional-owned housing (Jacoby & Garland, 2004-2005). Jacoby and Garland indicated that this student population includes "full-time students of traditional age who

live with their parents, students who live by campus, adults with careers, and student parents whose lives intersect with one or more of the previous characteristics" (p. 62). In the present study 92% of the accessible population lived somewhere other than campus-sponsored housing.

Longitudinal Design: A longitudinal design measures participants two or more times to determine maturation or effect of a treatment over time (Gliner & Morgan, 2000). A longitudinal design allows the researcher to observe the time-variable character of a particular process. This study follows a student cohort over a 5-year period (1999-2004) to observe how persistence decisions may change over time.

Persister: A persister was defined as any student who at the completion of the study had completed his or her bachelor's degree with the target institution. Traditionally, the target institution recognized completion of the fifth year as a valid measure of student persistence. It is believed that if students complete the fifth term, they will more than likely graduate. However, current literature suggests there is also value in analyzing later terms. Porter (1990) found equally high rates of departure in both early and later terms. An overall analysis of persistence will be completed to explore the validity of Porter's claims.

Nonpersister: A nonpersister was defined as any student who at the completion of the study either (a) was not currently enrolled or (b) did not complete his or her bachelor's degree with the target institution. Transfers were considered nonpersisters because they were no longer enrolled at the target institution.

Academic Preparedness: Although traditionally the literature calls this variable *student quality* the current study will name the variable academic preparedness. The

admissions office of the target institution assigned all accepted applicants a student quality rating. The rating was based on student scores on the required entrance exam, the ACCUPLACER. The ACCUPLACER is a computerized adaptive testing technique developed by the College Entrance Examination Board and the Educational Testing Service (College Entrance Examination Board, 1990). The tests were developed with the assistance of committees of college professors to provide information about a student's level of skill/accomplishment in reading, English, and mathematics. It is a nationally normed test, customized and delivered by more than 2,900 community colleges, 4-year colleges, and technical schools around the world. After admission, students were categorized into three categories: developmental, standard, and quality. The rating that was assigned to each student was based on scores achieved in the areas of reading, writing, algebra, and arithmetic. Quality students were defined as those students who scored above average in all categories, whereas a standard student scored average in all categories. Students who did not pass any portion of the exam were placed into noncredit developmental classes and had to pass those courses to continue with the institution. For example, a student could be developmental in math, English, or both. The institution also accepted, but did not require, ACT and SAT scores. Both ACT and SAT scores were evaluated and students placed in the three categories (developmental, standard, quality) accordingly.

Exogenous Variable: A variable whose variance is explained by other variables outside the model and not explained by the model (Mertler & Vannata, 2001). In the present study, background variables (see Figure 1.1) were exogenous.

Endogenous Variable: A variable whose variance is explained by variables within the model (Mertler & Vannata, 2001). A complete list of definitions and measures presented in the theoretical model appears in Tables 3.3-3.8. The terms *persistence* and *retention* were used interchangeably, as were *attrition, dropout,* and *departure.*

The Theoretical Model: Figure 1.1 represents the theoretical model being presented for the current study.

The Path Analytic Models: Path analysis was employed to test the theoretical model. The path analytic models are found in chapter 3 (see Figure 3.1).

The Revised Theoretical Model: The revised theoretical model (Figure 5.1 in Chapter 5) is a combination of the literature and the findings of the current study.

Background of the Institution

The target institution being studied for this dissertation was DeVry University. DeVry Inc. is the second largest 4-year proprietary higher educational system in the nation. Proprietary is defined as a private institution operated by its own board as a profit making enterprise (College Board, 2001). DeVry offers career-oriented bachelor's and master's degrees at more than 200 locations nationwide.

> The mission of DeVry University is to foster student learning through high-quality, career orientated undergraduate and graduate programs in technology, business and management. The university delivers its programs at campuses, centers and online to meet the needs of a diverse and geographically dispersed student population. (DeVry Inc., 2004)

DeVry's history can be traced back to 1931, when Dr. Herman DeVry established the DeForest Training School in Chicago. The school focused on technical training in the fields of electronics, motion pictures, radio, and television. In 1953, the name was changed to DeVry Technical Institute. Over the years, the Keller Graduate School of

Management was founded, and by 1987 DeVry and Keller merged to form DeVry Inc. In June 1991, the company offered its stock publicly on the New York Stock Exchange. In February 2002, DeVry Institute and Keller Graduate School of Management merged to become DeVry University.

Over the years, the undergraduate curriculum has expanded greatly, offering associate's and bachelor's degrees in areas of electronics, engineering, business, telecommunications, and computer technology. As this was written, the university continued its expansion, moving into the fields of biomedical engineering, informatics, and health care information technology. Much of DeVry's success has been attributed to its ability to meet the needs of today's students by offering hands-on, career-oriented undergraduate programs year round, 7 days a week in traditional, accelerated, and online formats.

DeVry University has transformed considerably since 1931; however, the successes have not come without challenges. As the technological sector started its contraction in early 2000, DeVry also experienced decreases in student enrollment. Persistence has always been a critical issue for DeVry University.

Although persistence is a problem for all institutions of higher education, it takes on an especially critical role in for-profit institutions, where student enrollments are directly related to revenue levels. With undergraduate enrollments below expected levels for the past 4 years, a greater emphasis has been placed on the institution's ability to retain students. Additionally, past institutional research on this problem has been inadequate with the following shortcomings: It (a) has lacked a theoretical model to guide the research, (b) has been generally descriptive, and (c) has failed to take into account the

longitudinal nature of persistence decisions. Because of these shortcomings, the institution has negligible data to address the true influences of departure.

Specific Attributes of the Target Institution: According to ACT, Inc. (2004a), the selectivity level of DeVry University would be defined as "open." An "open" institution is generally open to all with a high school diploma or equivalent, or requiring an ACT score between 17-20 or an SAT between 830-950. Additional demographic characteristics of the study participants can be found in Table 3.1 in Chapter 3.

Researcher's Perspective

Studying student retention is a complex process (ACT, Inc., 2004b; Bean, 1990; Pascarella, 1982). During the journey of discovery we may be able to identify causes; however, there seems to be no universal remedy for every institution. The passion and excitement in evaluating persistence comes from the potential to identify areas that foster and advocate excellence in higher education. Finally, this passion and excitement stems not only from the desire to increase persistence rates but also from the desire to truly understand more about college students, institutions, and what higher education is all about.

Conclusion

Student departure trends continue to challenge all institutions of higher education. Braxton (2000) painfully reminded us that over the last hundred years student persistence rates have remained steady at approximately 45%, with more students leaving college than staying. Although retention has been a widely studied construct, Tinto (1987) revealed that "much of what we know is incorrect, or misleading" (p. 3).

The changing demographics suggest that much of the growth in higher education will come from diverse students consuming higher education in nontraditional formats. The lack of quantitative persistence investigations for these subpopulations and institutions cannot be understated. The results of the current study should assist institutions to enhance persistence for diverse student populations.

CHAPTER 2

LITERATURE REVIEW

This chapter presents an evaluation of the literature for student persistence in higher education. The constructs put forward in this evaluation consider both traditional and nontraditional students and settings. This chapter includes an overview of persistence literature, a synthesis of influences of persistence, and a presentation of the theoretical model.

Historical Overview of Longitudinal Models of Student Persistence

During the building of the theoretical model, numerous longitudinal models of college persistence were assessed in order to create a framework appropriate for this investigation. A longitudinal study allows the researcher to observe the time-variable character of a particular process. All four of these models observed student persistence over a period of time. A historical account of four seminal theories of student persistence will be reviewed in this section: (a) Tinto's Interactionalist Model (1975, 1987); (b) Pascarella's Model of Student-Faculty Informal Contact (1980); (c) Bean's Student Attrition Model (1980); and (d) Pascarella, Duby, and Iverson's Model of College Withdrawal (1983). Collectively, these models will serve as a foundation for the theoretical model that will be advanced in this investigation.

Tinto's Interactionalist Model

Tinto (1975, 1987) presented a theoretical model that focused on the interactions that transpire between students and their institutions, causing different types of students to depart from college. The model is predicated on person-environment fit theory, earlier work of Spady (1970, 1971), and Durkheim's suicide model. Tinto proposed an interactional model of student departure. Important variables include looking at the social and intellectual systems of the institution, which are both formally and informally structured. Students enter the institution with varying backgrounds (family backgrounds, individual attributes, and precollege schooling) that influence their initial institutional choice/commitments and educational goals. It is this commitment that then influences integration into the social and academic systems of the institution. The social system is defined by interactions between student peers and students and faculty. The academic system is represented by academic performance (Grade Point Average [GPA]) and intellectual development (individual's evaluation of the academic system). The levels of such integration into these systems build new levels of commitment. Specifically, "other things being equal, the higher degree of integration of the individual into the college systems, the greater will be his commitment to the specific institution and to the goal of college completion" (Tinto, 1975, p. 96). Tinto argued that it is this interaction between an individual's commitment to the goal of both completing college and the commitment to the institution that determines whether the individual will persist or not. He recognized that varying levels of these commitments to the institution, to the social and academic systems, and to overall goals of completing college exist. A student with low levels of

these types of commitments is more likely to depart from the institution, whereas a student with higher levels of these types of commitments will likely choose to persist.

Additionally, Tinto (1975) recognized that not all dropout decisions are a factor of interactions between the student and the institution and pointed to external forces, both social and economic. However, he argued that they are reflected by levels of the individual's commitment to the institution and goals of completing college. Tinto's model is longitudinal in nature, mainly looking within the institution after admission, making the model "longitudinal and interactional" in character. It emphasizes the process of "interactions that arise among individuals within the institution which can be seen over time to account for the longitudinal process of withdrawal or disassociation which marks individual departure" (1987, p. 112).

In 1987, Tinto introduced phases/stages in the process of student departure. Tinto incorporated work from Van Gennep and the rites of passage, using the perspective from the field of social anthropology. Building on the stages of "separation, transition, and incorporation" (1987, p. 92). Tinto built a foundation for a longitudinal, time-dependent process of student departure, and focused on the challenges as students move through the stages.

The model is explanatory in nature. It seeks to explain which interactions among different individuals within the academic and social systems of the institution lead to departure prior to degree completion. The model was intended to address student departure in a traditional setting. However, several studies have used the model as a foundation to test alternative types of students and institutions. Tinto's (1975, 1987) model is the most widely used and cited in the existing student persistence literature. The

model serves as an appropriate foundation for this investigation. A copy of Tinto's 1975 conceptual schema for dropout from college can be found in Appendix B.

Pascarella's Student-Faculty Informal Contact Model

Pascarella (1980) grounded his conceptual model of student departure in a critical analysis of the literature that focused on the dynamic associations between students and faculty members. He contended that colleges are socializing organizations and argued that students' behaviors, attitudes, and academic performance are influenced by the institution through organizational attributes, such as size and policies as well as informal interactions with peers, faculty, and the administration. Based on organizational behavior and reference group theory, he declared that it is the informal interaction with these "agents of socialization" that fosters "effective social learning of normative attitudes and values in college" (p. 546). He suggested it is this informal contact that achieves desirable college outcomes. Pascarella recognized these outcomes in terms of career plans and educational aspirations, satisfaction with college, intellectual and personal development, academic achievement, and degree completion. He built a longitudinal model to understand the influence of nonclassroom faculty-student contact on educational outcomes based on a student's background, institutional characteristics, and experiences of the students once enrolled. Specifically, the model states background attributes (family background, aptitudes, aspirations, personality orientations, secondary school achievement, expectations of college, and openness to change) create a profile of the student. These background characteristics interact with institutional factors that include faculty culture, organizational structure, institutional image, administrative policies, institutional size, and admission/academic standards. "Students with certain pre-

enrollment traits tend to apply to, be accepted by, and enroll in those institutions that accentuate initial dispositions and traits" (p. 570). Conversely, these characteristics influence the environment of the institution, causing these two variables to have a reciprocal linkage with each other. In addition, these background traits influence informal contact with faculty, college experiences, educational outcomes, and persistence decisions. The model assumes, too, that institutional factors influence informal contact with faculty and other college experiences.

Pascarella's model emphasized the powerful dynamics among student background characteristics, institutional factors, and student-faculty contact. The model makes an excellent argument that student-faculty contact, especially informal in nature, plays an important role in educational outcomes and persistence in college. In commuter institutions where social opportunities are fewer, the faculty member may serve as the gateway into the social and academic system of the organization. A copy of Pascarella's model is found in Appendix C.

Bean's Dropouts and Turnover Theory of Student Attrition

The student attrition model (Bean, 1980) was built on a theory using an organizational framework based on employee turnover in work organizations. Bean argued that student attrition is associated with membership in a specific institution rather than higher education in general; therefore, he studied attrition in a single institution. Bean advocated that student departure is similar to an individual's leaving work organizations and based his theory on Price's 1977 model of employee turnover. Bean's model assumes background attributes (past academic performance, socioeconomic status, state residence, distance from home, and hometown size) of students influence the

"prematriculation characteristics of the student's interaction with the organization" (p. 157). Bean's model used a total of 15 variables to define and measure the organization. He posited "the student interacts with the institution, perceiving objective measures, such as grade point average or belonging to campus organizations as well as subjective measures, such as practical value of the education and the quality of the institution" (p. 160). Additionally, organizational variables are expected to affect satisfaction and institutional commitment, which then influence departure. Bean created a longitudinal model of persistence that has been validated using path analysis. He developed gender specific empirical models that indicate that men and women leave institutions for different reasons. He concluded that the most significant variable in explaining departure by gender was institutional commitment, which he defined as "degree of loyalty toward membership in an organization" (p. 160). Bean noted "one major difference is that men left the university even though they were satisfied, whereas women who were satisfied were more committed to the institution and less likely to leave" (p. 183).

Bean's model, like Pascarella's (1980), emphasized the importance of organizational factors on departure decisions. Unlike Tinto's (1975, 1987) model, the student attrition model included external factors: employment opportunities, family commitment, and opportunity to transfer. Finally, because of the target institution's for-profit status, it shares common values and attributes with the work organization. That being said, Bean's model served as a solid foundation in building the theoretical framework for this study because of its inclusion of external and organizational factors. A copy of Bean's Student Attrition model is displayed in Appendix D.

Pascarella, Duby, and Iverson—Theoretical Model of College Withdrawal in a Commuter Institution Setting

Pascarella et al. (1983) tested the validity of Tinto's interactional model (1975) in a nonresidential setting. The study took place at a large urban, doctoral granting commuter institution in the Midwest. The model was predicated on Chickering's (1974) assessment of the difficulties that exist for commuter students to become involved with the institution's agents of socialization. Commuter students could have fewer opportunities to interact socially with peers and faculty (Pascarella & Chapman, 1983). Investigators posited that interactional variables may contribute less to a commuter student's decision to persist. The study set out to test departure influences, hypothesized by Tinto, in a nonresidential, urban institution. Conclusions affirm the researchers' theory that background attributes not only influence interaction with the institutional environment but also have a direct and strong effect on persistence. Note that these findings are quite different from Tinto's, which suggested these variables have an indirect association with voluntary departure and only serve as determinants of students' interactions with the social and academic systems. Secondly, the constructs of social and academic integration continue to play a critical role in the model. Findings of academic integration seem consistent with those of residential settings—direct influence on institutional commitment and persistence. However, social integration was found to be nonsignificant or strongly negative. The researchers presented several justifications for this finding. It was apparent that commuter institutions provide significantly fewer social opportunities than their residential counterparts. Second, they maintained that there appears to be a far more complex relationship that exists between social integration and

persistence than Tinto originally recognized. Lastly, the researchers declared that students who are extremely integrated socially may seek other institutions of higher education that provide additional social opportunities. A final modification to Tinto's model was to include an intention variable: intent to re-enroll. It was found that "intent to continue at the institution had the strongest direct effect of any single predictor on freshman year persistence/withdrawal decisions" (Pascarella et al., 1983, p. 99).

The model sets itself apart from the others due to the fact it was conducted at a large urban commuter institution, although the authors never defined commuter institution or commuter student. The researchers recognized the importance of social and academic integration and attempted to carefully define the concepts. The Pascarella et al. model served as an important foundation for the theoretical model due to its specificity to a commuter institution and its diligence in defining academic and social integration. An example of the conceptual model on student faculty informal contact can be found in Appendix E.

Building the Conceptual Framework—Factors that Influence Persistence

One must recognize that the body of research on student persistence alone is complex in nature. Current literature dictates that researchers choose from a variety of models from which to approach their studies.

Due to the complexity and the large impact that persistence decisions have upon the institutions of higher education, attempts to define this "departure puzzle" that Braxton (2001-2002) referred to, require a "multi-theoretical" approach (p. 1). The primary purpose of the current study was to develop and test a theoretical model of student persistence. When building a theoretical model, it is important that the process be

guided by theory. The remainder of this section will be devoted to presenting the constructs and variables that were selected for the theoretical model.

The Student

Evidence indicates that different types of students have different experiences within college that affect their decision to persist (Bean, 1990). The majority of these persistence studies have focused on the experiences of traditional students attending traditional, residential institutions of higher education. Far fewer studies exist emphasizing the experiences of nontraditional students and/or students who attend nontraditional institutions.

Murdock and Hoque (1999) estimated that "the U.S. college population will grow more slowly, be older, and be increasingly diverse" (p. 10). Institutions of higher education are faced with increasing age, economic, ethnic, and racial diversity (Horn & Berger, 2004). Horn and Berger studied persistence over a 6-year period and found that African American, Hispanic, and low-income students increased their representation in college. Recognizing influences of departure for these diverse populations will be a necessity.

The Commuter Student

The majority of students enrolled in higher education continue to commute to college (Horn & Berttold, 1998; Stewart & Rue, 1983). Horn, Peter, and Rooney (2002) reported that 80% of students commute to their institutions of higher education. Stewart, Merrill, and Saluri (1985) claimed there is tendency to assume that commuter students are mainly a product of the community colleges. The truth is that commuter students are a

significant part of the national student body that attends all types of institutions (Jacoby & Garland, 2004-2005).

Bean and Metzner (1985) indicated that a commuter student is a subset of what is known as a nontraditional student. They defined a nontraditional student as a student who is

> older than 24 years old, or does not live in a campus residence (commutes), or is a part-time student, or some combination of these three factors; is not greatly influenced by the social environment of the institution; and is chiefly concerned with the institution's academic offerings. (p. 489)

Jacoby (2000) defined a commuter student as one whose place of residence while attending college is not in a campus residence hall or in a fraternity or sorority house. The urgency for research for nontraditional or commuter students is the fact that their persistence rates are lower compared to traditional students (Astin, 1993; Bean & Metzner, 1985).

Early work of Chickering (1974) recognized differences that exist among commuter students and their residential counterparts. The important issue for the commuter student and persistence revolves around the issues of involvement and engagement (Chickering, 1974; Levitz & Noel, 1989). Pascarella (2001) defined engagement as the amount of time and effort students devote to their classes and educational activities. Kuh (2001) described these activities as learning, preparing for class, and interacting with peers and faculty. Involvement also plays an important role in student persistence. The more involved the student is in the various social and academic communities of the college, the more likely that individual will persist to graduation (Astin, 1975; Astin & Chang, 1995; Hossler, Bean, & Associates, 1990; Kuh et al. 1991; Stage & Hossler 2000; Tinto, 1997). Moreover, Tinto (1993) revealed the relationship

with student involvement and learning: "Students will be more likely to invest in greater effort to learn where they become involved as members of the college community" (p. 71). Evidence affirms that commuter students are less engaged overall than their residential counterparts (Bean & Metzner, 1985; Levitz & Noel, 1989; National Survey on Student Engagement [NSSE], 2000; Pascarella & Terenzini, 1991). Literature points to several reasons of why this is the case. Institutions that are dominated by commuter students usually fail to provide basic facilities and offer fewer opportunities for students to interact with the various facets of their college environment (Jacoby & Garland, 2004-2005). Secondly, these students are less likely to take advantage of educational resources and activities where proximity to campus seems to matter (Kuh, Gonyea, & Palmer, 2001). Finally, commuter students tend to spend the majority of their time working off campus and caring for family members, leaving little time to fully experience the multiple dimensions of college life (Ashar & Skenes, 1993; Bean & Metzner, 1985; Murray, 1938). Jacoby and Garland (2004-2005) indicated "despite their commitment, many commuter students simply cannot always make college life on campus as their primary focus" (p. 63). As Likens (1988) summarized, residential students see the campus as their homes, whereas commuter students see the campus as a place to visit.

Kuh et al. (2001) recognized the inconclusive results of engagement pertaining to the commuter student. These conflicting conclusions warrant the need for further research to understand more about the needs and experiences of commuter students as they progress through college.

Background Variables

All four longitudinal models of persistence summarized earlier in this chapter distinguished the importance of the attributes that students bring with them to college and their relation to persistence decisions (Bean, 1980; Pascarella, 1980; Pascarella et al., 1983; Tinto, 1975, 1987). Pascarella et al. argued that background characteristics take on a central role for the commuter student. Their research found that within commuter institutions preenrollment traits of the student plays a more predominant role in persistence than their college experiences after enrollment. Both Tinto (1975, 1987) and Bean (1980) noted the importance of the interaction that takes place among background variables, social and academic integration, and organizational determinants. However, both Tinto's and Bean's models studied persistence with traditional students and institutions. Their results showed that the background variable effects on student persistence were mainly indirect, mediated through other interactional variables of their models. Regardless, attributes that students bring with them to college have proven to have effects on persistence decisions.

Previous studies have identified several background variables that are related to student persistence. Student attributes discussed in this section include (a) age, (b) ethnicity, (c) gender, (d) enrollment status, (e) initial educational goals, (f) initial institutional choice/commitment, and (g) academic preparedness.

Age. Older students continue to appear on college campuses in large numbers (Horn & Berger, 2004; Pappas & Loring, 1985). Horn and Berger (2004) analyzed demographic data for students who started college from 1990 and 1996. During this

period there was an increase in the percentage of 19-20-year-olds starting college with a decrease in the portion of 18-year-olds students starting college.

Older students enter postsecondary education with varying characteristics and needs; therefore, factors that affect their persistence decisions are an obvious concern for institutions (Pappas & Loring, 1985). Early literature on age suggested that age was not an important factor or was a mixed bag (Cambiano, Denny, & DeVore, 2000; Johnson, 1997; Lenning, Beal, & Sauer, 1980) and therefore was not frequently studied. Conflicting evidence exists, with some concluding that older students are more prone to drop-out/stop-out behavior (Bean & Metzner, 1985; Lenning et al. 1980). For adult learners the student role is always secondary to other commitments—family, work, and other various commitments (Pappas & Loring, 1985). However, despite their various commitments adult learners come with a higher sense of commitment, self-direction, and self-motivation to complete college (Pappas & Loring). Ashar and Skenes (1993) indicated that many adults return to college to enhance their current careers or enhance their career potential and are very motivated to succeed and persist. Cubeta, Travers, and Sheckley (2001) found age is related to academic performance, showing that older students perform better academically than younger students.

Although the literature has demonstrated mixed results, there have been factors that have been identified as positive factors with persistence. Adult programs that have effective support services, advising, and flexible scheduling options, retain a large number of their adult learners (Pappas & Loring, 1985).

Ethnicity. Horn and Berger (2004) analyzed postsecondary student demographic data from 1990-1996 and reported a change in the ethnic/racial composition during this

period. In particular, over these 6 years there was an increase in the percentage of African American and Hispanic students, whereas the number of Caucasian students decreased. An ACT (2004b) policy report pointed out "although access to and participation in higher education has increased, African American and Hispanics are less likely to attend and complete college then are Caucasian students" (p. 2).

Numerous studies have been conducted to investigate the influences of why minority students leave college early. Early findings of Lenning et al. (1980) were that Hispanics, African Americans, and Native Americans have lower persistence rates compared to Caucasian students. Later investigations validated Lenning et al.'s earlier findings; there continues to be substantial evidence that minority students are significantly less likely to persist in predominantly White institutions compared to Caucasian students (Astin, 1993; Braxton, Duster, & Pascarella, 1988; Horn & Berger, 2004). Morley (2003) pointed to the issue "that there are unique experiences that minority students face at predominantly White institutions that hinder their persistence, particularly those of African-American and Latino/a descent" (p. 148). Morley's study found six racial/ethnic dynamics that hindered minority students' ability to integrate into the academic and social systems at White institutions: the role of the family, being placed socially by race/ethnicity, racial/ethnic responsibility, the pervasiveness of White culture, the pursuit of a color-blind society, and overrepresentation of weaker minority students.

Bean and Metzner (1985) posited that minority students experience poorer secondary education compared to Caucasian students and therefore are more likely to perform poorer academically. African American and Hispanic students are more likely to face educational disadvantages due to high levels of poverty and limited learning

opportunities that make them more likely to enroll in higher education with weaker academic backgrounds (Morley, 2003).

For African American students, Bean (1990) concluded that the higher the GPA, the more likely they persist. But just as important as their academic performance is how they perceive being treated in the classroom by faculty members. If African American students are treated inappropriately, or inferior to other ethnic groups, their persistence decisions are negatively affected. Person and Christensen (1996) found that African American institutions that lack adequate support systems tend to make the students feel isolated, which could have a negative effect on their persistence decisions. Conversely, Nettles, Wagener, Millet, and Killenbeck (1999) found that quality student-faculty contact coupled with advising and a mentor program can improve persistence decisions for African American students. If African American students have experienced positive interracial interaction prior to and during college, they are more likely to persist (Astin, 1993).

Gonzalez (2000-2001) built a grounded framework from Hispanic students' points of view focusing on cultural survival and transformation stressing the effect of campus culture on persistence issues in Anglo dominated institutions. Gonzalez concluded that different ethnic groups do, indeed, "experience alienation and marginalization in predominantly White colleges and universities" (p. 87). Gonzalez contended that these issues have an affect on Hispanic student persistence decisions.

Hune (2002) revealed that Asian Pacific Americans make up approximately 4% of the population and 6% of college students. Horn and Berger (2004) reported that both Asian and Caucasian students are more likely to persist in predominantly White

institutions compared to the other minority students. Because of these issues Asian Pacific Americans are rarely seen as an underrepresented and underperforming ethnic minority. Yeh (2004) stated that persistence of Asian Pacific Americans has been overlooked due to the stereotype that these students have been generally successful in higher education. Furthermore, Asian Pacific Americans are often referred to as the "model minority." Yeh (2004) revealed that subgroups within Asian Pacific Americans actually do demonstrate low college attendance and persistence rates. Lan (2004) studied Asian students in the Electronic Engineering Technology programs at DeVry University. Lan's research revealed no significant differences between Asian students and other ethnic groups in regards to their cumulative GPA and persistence rates. There is evidence that Asian Pacific Americans also experience obstacles that may hinder their persistence in higher education and therefore their persistence should be evaluated.

Bean (1990) noted some differences among different ethnic groups and institutional variables.

> When White students feel controlled by rules and regulations at colleges it could reduce their overall student satisfaction. [However,] when African American students feel controlled by the rules and regulations of a predominantly White institution, they are likely to withdraw from school. (p. 167)

Tinto (1982) himself noted that his model failed to highlight the issues of gender, race, and socioeconomic status. Although minority students' participation in college has increased over time, the gaps in their graduation rates have not (Morley, 2003). Uncovering why these gaps continue to persist is an important issue for minority student persistence.

Gender. The relation between gender and persistence has been evaluated in many of the models of student persistence. Many studies indicate that female students have a

higher chance of persisting than their male counterparts (Astin, 1993; Chen & Thomas, 2001; Horn & Berger, 2004; Pascarella et al., 1983; Spady, 1971). The literature dictates that most of this variation can be explained by differences in socioeconomic status, marriage status, motivation, and academic performance (Astin, 1993).

However, there is evidence that female students face persistence challenges in certain programs and curriculums. This is most evident in the male-dominated fields of science, mathematics, and engineering (McGrath-Cohoon, 2001). Sadker and Sadker (1990) indicated "low enrollment of females in traditionally masculine fields continues, as does the lower level of confidence by college women" (p. 177). These challenges revolve around the ideas of a "chilly" female environment and insufficient numbers of female professors and role models in these specified areas (Pascarella & Terenzini, 1991). Hall and Sandler (1984) argued that females especially experience a "chilly climate." They indicated that females feel unwelcome, which in turn causes them to question their competence. Whitt, Nora, Edison, Terenzini, and Pascarella (1999) concluded that at the end of women's first year of college they rated the climate as "chilly," significantly more often than their male counterparts. McGrath-Cohoon (2001) found that the single strongest factor related to whether females persisted or not in science, mathematics, and engineering was the gender composition of the peer group. Furthermore, departments where females were enrolled in large numbers possessed higher retention rates compared to those departments where there were only a small number of females. Astin and Astin (1992) found that when females found peers similar to themselves they were more likely to persist.

McGrath-Cohoon (2001) also found that departments that had female faculty members present, that had positive attitudes toward female students, and that put forth effort to mentor these students were also more likely to retain females at rates similar to males. These issues of "chilly climate" and lack of peer group will be evaluated to see if they demonstrate any effect on persistence decisions.

Enrollment status. Enrollment status is known to have an indirect and negative effect on persistence (Astin, 1975, 1993; Bean & Metzner, 1985). Astin (1993) stated that when students can devote their full attention and time to college, they are more likely to persist. The NSSE (2000) denoted that full-time students are generally more involved than part-time students. They can spend more time on campus and have more opportunities to interact with the college environment, which in turn can have a positive effect on persistence decisions.

Part-time students generally have more external demands than full-time students (Bean & Metzner, 1985; Tinto, 2004). The NSSE (2000) reported "48% of part-time students over the age of 30 spend more than 20 hours a week caring for dependents" (p. 10). Furthermore, Bean and Metzner (1985) indicated that part-time students can experience frustration and burnout due to the amount of time between matriculation and degree completion, thus affecting their levels of satisfaction and persistence decisions.

Initial educational goals. Educational aspirations/goals can be defined as the highest amount of education a student may hope to attain or the probability of attaining a degree. Educational aspirations are known to be a source of motivational influence that affects degree attainment at time of matriculation (Bean, 1990). It is hypothesized that students come to college with different values on degree completion with different

motivators for that completion. The more value one puts on a degree, the more likely that individual will persist. Ramist (1981) wrote that students attend and leave college because they choose to. He suggested that even involuntary academic dismissal is really an artifact of the student's choosing not to do the required work to achieve adequate grades and cites motivation as a significant predictor of educational attainment. The concept of educational goals and aspirations has been tested with the majority of studies yielding findings that revealed goals and departure to be negatively related (Astin, 1975; Bean & Metzner, 1985; Ishitani & DesJardins, 2002-2003).

Initial institutional choice/commitment. Institutional commitment is usually operationalized as the student's rank of college choice. Sometimes this variable is related to level of selectivity of the institution. Highly selective institutions have students who come with a high level of commitment or work to establish commitment within that particular institution. Furthermore, for some students the level of effort and cost to get in an institution are substantial, therefore making the stakes high if they depart early (Pascarella & Terenzini, 1991). However, one could argue, and particularly in this study, that these issues may also be evident in less selective institutions. Less selective institutions may also have students who come with a high level of commitment to succeed, graduate, and seek employment.

Admission scores/aptitude scores/academic preparedness. The literature suggests that prior knowledge influences later learning. There is ample evidence in the literature that students with high entrance scores have a higher probability of persisting (Bean, 1986, 1990; Chen & Thomas, 2001; Lenning et al., 1980; Pascarella et al., 1983). The Texas Higher Education Coordinating Board (2000) found that good high school

preparation is related to ongoing college success. Conversely, students who are academically underprepared have more difficulty persisting in college (Cambiano et al., 2000; Levitz & Noel, 1989; Moore & Carpenter, 1985). However, there is evidence that students who were categorized as developmental were nevertheless capable of persisting and graduating (Boylan & Bonham, 1992).

These data reflect the level of complexity of student persistence when dealing with different types of students. Furthermore, they call for additional research to validate Pascarella and Terenzini's (1991) suggestion that "different types of students in the same institution may benefit differentially from different types of social and academic experiences" (p. 413).

The College Environment

Another prominent factor in student persistence is the dynamic interaction that occurs between the student and the institution. Based on person-environment theories, this interaction can be defined as congruence, or fit between the students and the institution. This construct is often measured in terms of integration, satisfaction, or involvement between the student and his and her environment. This study will focus on the (a) institutional, (b) social, (c) academic, and (d) external dimensions of the college environment.

The Institution

The higher education system in America is composed of various types of institutions. In addition to this diversity, national retention rates vary with differences up to 50 percentage points from institution to institution (ACT, Inc., 2004a). Tinto (1987)

stated, "The institution, in its behavioral and normative manifestations, has as much to do with the failure of students as do the students themselves" (p. 90).

Departure decisions come from a combination of institutional and individual attributes. "Despite having acquired information from a variety of successful retention programs, we have yet to distinguish those attributes of successful programs that are institution-specific from those that are essential to the success of all types of retention" (Tinto, 1987, p. 3). A large body of evidence exists suggesting the importance of where one begins his or her college career influences the persistence of that individual.

Introducing the Organizational Perspective

The focus of this section will be to introduce the organizational perspective to explain student departure. The organizational perspective recognizes the influences of organizational attributes on student departure (Berger & Braxton, 1998; Braxton & Brier; 1989). The perspective is predicated on the assumption that colleges are organizations where patterns of organizational behavior pose as important factors in understanding student persistence (Berger, 2001-2002). The remainder of the section will be devoted to presenting the variables used to represent the institutional perspective.

This evaluation recognizes the importance and powerful influence an institution has on its students. Prior scholarship has been able to explain some of the relationships that exist between student departure and institutional attributes. Some of these influences are direct and obvious, whereas others are quite indirect and complex.

Educational/institutional quality. Institutional quality can be defined in terms of selectivity, reputation, or institutional resources. Most studies have focused on the level of selectivity for a particular institution. Selectivity is defined as the average academic

preparedness of the student body, measured in terms of entrance requirements. In terms of selectivity, ACT (2004a) has established five categories determined by average ACT/SAT scores and high school rank. The five selectivity levels listed in order of selectivity are: highly selective, selective, traditional, liberal, and open. The relation between institutional quality and persistence is inconclusive. In evaluating selectivity, several studies have reported an inverse relationship with departure rates (Astin, 1975; Beal & Noel, 1980; Pascarella, 1982; Pascarella & Terenzini, 1991). "The more selective institutions as a group tend to graduate a larger portion of their students then less selective institutions" (Tinto, 1987, p. 33). However, Terenzini and Pascarella (1994) argued, "real quality in undergraduate education resides more in an institution's educational climate and in what it does programmatically than in its stock of human, financial and educational resources" (¶ 9). In fact, ACT (2004a) reported that institutions defined as "open" had higher graduation rates than institutions defined as "traditional" and "liberal."

Institutional communication/justice. Students are more likely to persist when they perceive the institution as doing a good job of communicating on items such as expectations, policies, and course requirements (Bean 1980, 1983; Berger & Braxton, 1998). Institutions that treat their students in a fair and just manner and handle complaints efficiently and effectively can more easily establish trust with their students, which in turn influences the students' overall satisfaction (Grossman, 1999).

Sense of community. Investigators caution that differences in retention rates are also a manifestation of a shared culture for that specific institution, a culture that assists in shaping the life at that particular institution. It should be noted that similar types of

colleges, such as public 4-year institutions, may or may not share the same type of campus culture. A sense of community, no matter what type of institution, enhances student retention (Johnson, 1997). Community and the ability to build community within our institutions becomes a central construct in student persistence.

Today more than ever there is a need for creating a stronger sense of community, not for retention enhancement only but also for civility reasons. Investigators point to out-of-control dormitories, overconsumption of alcohol, increases in abusive language, sex discrimination, and racial tensions. Students themselves appear to be overly frustrated and at any point in time ready to explode (Carnegie Foundation for the Advancement of Teaching [Carnegie Foundation], 1990; O'Hara, 2001-2002). Astin (1993) investigated students' satisfaction levels, and reported the "environmental variable with the strongest negative effect on overall satisfaction is lack of student community" (p. 279). Tinto (1987) advocated that the higher education community is no different than any other community. "Departure mirrors the absence of social and intellectual integration into the mainstream of community life of the campus" (p. 180). Huber (2001) indicated that higher education needs to be transformed into an integrated campus community in search of the educational enterprise—not through new logos, revised policies, and mission statements but by transforming the student experience. "Just as it takes a community to raise a child, it takes a campus community to educate a student" (p. 126). O'Hara (2001-2002) stressed the health of any community depends on its ability to make people feel comfortable and believe they are part of something that is much larger than themselves.

Institutional size and persistence have yielded inconclusive results; however, size does appear to have a relationship with a campus's ability to build community (Banning, 1988; Chaney & Farris, 1991; Pascarella & Terenzini, 1991).

Boyer (1987) spoke specifically about the need to build community within campuses that links academic and cocurricular activities into one community of learners. Boyer reminded us that the nation's campuses were at first small, face-to-face communities that are now large and administratively complex (Carnegie Foundation, 1990). Boyer's theory of community is guided by six principles that lead to a purposeful, open, just, disciplined, caring, and celebrative integrative college community. Boyer advocated that these principles should be deeply embedded in our institutions and the basis for day-to-day decision making on campus.

Thomas Jefferson promoted small, interactive, and engaging learning communities when creating the University of Virginia in the early 1800s. Jefferson envisioned students and faculty living and working with each other side by side—building a community of learning (Bober, 1997). Even as late as 1870, the typical American campus had, on average, only 10 faculty and 90 students (O'Hara, 2001-2002). Tinto (1987) claims that institutions that put their students first and are committed to their welfare "keep and nourish their members" (p. 26). It is this deep sense of community that sets those types of institutions apart from the rest.

The challenge is being able to build community when the institution's student body is primarily commuter. Although it is difficult to build community with commuter students, Johnson (1997) found that regardless of a student's residential status a sense of community is increasingly important.

The Academic and Social Communities of the Institution

At the crux of Tinto's interactionalist model are the constructs of academic and social integration. "The more integrative those experiences are, that is, the more they are seen as satisfying and leading into integration into the life of the college, the more likely are individuals to persist until degree completion" (Tinto, 1987, p. 53). Pascarella and Terenzini (1991) indicated there is "a growing body of evidence indicating that measures of social and academic integration tend to have a differential influence on persistence for different kinds of students" (p. 411). Tinto (1997) focused on community college students and contended that if integration is to occur, especially for the commuter student, it must occur in the classroom. Tinto perceived the classroom for this population as an entryway into the academic and social communities of a college.

Academic Development

Tinto (1975, 1987) contended that the more academically integrated one is, the more likely one is to persist. Academic integration has been defined as students' perception of their academic development. Or, said differently, their estimation of how they think they are advancing academically. Tinto focused on factors such as GPA or perceptions of faculty concern for teaching and development to measure academic integration. The postulate has been validated by numerous studies positing that academic integration/development has a positive influence on persistence (Pascarella et al., 1983; Tinto, 1975, 1987)

Involvement theory hypothesizes that academic involvement is associated with the amount of physical and psychological energy that students devote to the academic experience. Hence, the more involved academically a particular student is, the more

likely that student is to persist (Astin, 1975; Astin & Chang, 1995; Hossler et al., 1990; Kuh et al., 1991; Stage & Hossler, 2000; Tinto, 1997).

Academic Grade Point Average. Suicide and turnover theories allude to the concept that low academic performance may cause low levels of confidence and academic satisfaction, therefore influencing departure. Spady (1971) hypothesized that GPA was more of an award when students use it as a resource to negotiate future success. Pascarella and Terenzini (1991) posited that strong academic performance is an indicator of "successful adaptation to an academic environment" as well as "desirable personal work habits and attitudes" (p. 388). The persistence literature continues to yield compelling results supporting the relationship of strong academic performance with student persistence (Astin, 1993; Bean, 1990; Chen & Thomas, 2001; Ishitani & DesJardins, 2002; Lenning et al., 1980; Tinto, 1975). Although differences exist between the residential and commuter student, the commuter student seems to put forth similar amounts of effort when it comes to academic activities and achievement (Kuh et al., 2001; Jacoby & Garland, 2004-2005).

Faculty-student formal interaction. The importance of effective faculty-student relationships reaches back to one's preschool experience. Patten (2001) detailed the importance of teacher-child relationships to the further success of the student. Patten's research indicated that children who had close relationships with teachers in their preschool years continually rated high in the areas of social competence and school achievement in later grades. This relationship continues to be recognized as important at the college level. Early studies of Astin (1975) indicated that student-faculty interaction has a stronger relation to student satisfaction than any other involvement or institutional

variable. "Students who interact frequently with faculty are more satisfied with all aspects of their institutional experience, to include student friendships, variety of classes, and intellectual environment" (p. 223). A large collection of literature exists that supports the principle that faculty interaction with students enhances academic integration (Bean, 1986; Lenning, 1982; NSSE, 2000; Pascarella, 1982; Tinto, 1987, 1997). "Formally, the actions of faculty inside the classroom prove to be important precursors to subsequent contact" (Tinto, 1987, p. 65).

Tinto (1987) supported interaction between faculty and students in academic and informal activities. Furthermore, Tinto noted that the frequency and quality of the interactions are central in determining persistence and commitment to the institution. Tinto revealed "institutions with low rates of student retention report low student faculty contact, where institutions with high rates report high rates of these interactions" (p. 66). Chickering and Gamson (1987) revealed student-faculty contact is the most important factor in student motivation and involvement. "Knowing a few faculty members well enhances students' intellectual commitment and encourages them to think about their own values and future plans" (¶ 13). Toy (1985) noted that faculty can be liaisons to the rest of the institution; they have the ability to connect students with other facets of the institution—advising, student services, academic groups, and financial aid. They can reduce student frustration by "explaining the rationale behind a particular policy, rule or regulation" (p. 387).

Tinto recognized the important interactions within the classroom in our current college environment where "the classroom may be the only place where students and faculty meet, where education in the formal sense is experienced" (1997, ¶ 1). This is

especially true in institutions where a large percentage of the student body is commuter and adult students with multiple external demands.

Braxton, Milem, and Sullivan (2000) noted that teaching practices also play a significant role in student departure. They advocated that institutions should focus on efforts to improve pedagogy for faculty to both reduce retention and improve learning outcomes.

Faculty members who are concerned about students' cognitive and social development facilitate positive attitudes amongst students and their attitudes toward themselves and school. These factors also have a potential to enhance retention (Astin, 1993; Beal & Noel, 1980; Bean, 1986; Hossler et al., 1990; Johnson, 1997). Conversely, the absence of such interactions between faculty and students may also serve as a predictor of student departure.

By devoting additional resources to teaching, faculty have more opportunities for frequent interactions with their students and are more in tune to students' needs. Faculty should possess a strong orientation toward students. Astin (1993) indicated "having student-orientated faculty pays rich dividends in the affective and cognitive development of the undergraduate" (p. 342). Empirical evidence indicates that this orientation is statistically significant on a variety of satisfaction and academic outcomes, such as satisfaction with faculty, quality of instruction, bachelor's degree attainment, and even preparation for graduate school.

Stage and Hossler (2000) offered an alternative to Tinto's interactionalist model. They supported a "student centered" approach to persistence. Furthermore, they suggested that future student persistence research should focus around academic

involvement rather than integration. Braxton (2000) echoed these similar themes and suggested that future scholars studying student persistence should better define and measure academic integration.

As the future students in higher education become more nontraditional, the classroom may be their only opportunity for academic integration and involvement. Many of the classrooms in higher education are anything but involving (Tinto, 1997). In 2000, Tinto concluded that these observations provide important insights on the extent to which experiences in the classroom shape persistence decisions (p. 88).

Social Variables

Social integration pertains to the degree of congruency between the student and the social system of a college or university. Therefore, social integration and involvement in life outside of the classroom becomes central to explaining student persistence (Beal & Noel, 1980; Gerdes & Mallinckrodt, 1994; Hossler et al., 1990; Lenning et al. 1980; Pascarella, 1982; Spady, 1970; Tinto, 1975). Drawing from suicide and turnover theory, the more involved the student becomes in the social community of the institution, the more likely that individual is to persist. Social-psychological life-cycle models (Hanks & Eckland, 1976; Sewell & Hauser, 1975) recognize that interactions with others are an influence on the attainment process. These models specifically focus around the ideas of obtaining or discovering unrealized goals and aspirations through development of skills acquired by these interactions and/or linking students to other students who share similar goals and aspirations, thereby strengthening those convictions. Measurements of social integration for this investigation include campus life and informal student-faculty interaction.

Campus life. The time students spend outside of the classroom plays an important role in a student's overall college experience (Kuh et al., 1991). A typical college student spends approximately two thirds of their time in activities other than attending class and studying (Kuh et al.) Bean (1990) stated "when a variety of programs are offered to meet the needs of different types of students who provide meaningful involvement for students, faculty, and staff which focus on changing student attitudes are most likely to improve retention" (p. 156).

Participation in cocurricular programs, such as debate, science club, and other special interest groups, has been well supported in the literature (Astin, 1975; Hossler et al., 1990). These programs enhance opportunities for social integration/involvement to occur, which have been related to enhancing persistence.

High levels of student satisfaction are associated with involvement in campus life and cocurricular programs, such as socializing with other students, participating in student activities, and attending campus workshops (Astin, 1993). Involvement in these types of student activities also has a positive influence on academic variables, such as student GPA (Astin).

Although difficulties exist for commuter students to become socially integrated into the institution, it is still critical that campus life exist. Even when these types of students choose not to participate, just having activities on campus has a positive effect on persistence.

Faculty-student informal interaction. Students interact with many different individuals or what Pascarella (1980) referred to as "agents of socialization" outside of the classroom. It has been well documented that an important variable related to student

persistence is the interactions that students acquire with faculty. As previously indicated, faculty interaction is an important factor in promoting academic integration. However, this interaction also affects the degree in which students integrate in the social climate of the institution. Informal contact with faculty, especially out-of-classroom contact with students, increases a student's probability to persist (Bean, 1986; Terenzini & Pascarella, 1994). The Carnegie Foundation (1990) added, "in addition to their advising role, departments can become a creative intellectual and social unit on the campus through special seminars, lectures, and social events for students and faculty" (p. 13). Lenning et al. (1980) suggested creating additional opportunities for faculty-student interaction. Examples include "faculty involvement in orientation, joint student-faculty committees, joint student-faculty lounges, and even receptions in faculty homes" (p. 31).

Moreover, "students who feel accepted by faculty members and consider faculty as friends and mentors are more likely to stay in school" (Bean, 1990, p. 162). Tinto (1987) validated all of these points and concluded that out-of-classroom interaction between students and faculty is critical, specifying that "the more frequent those interactions are, and the warmer and more rewarding they are seen by the student, the more likely the student is to persistence" (p. 84).

Faculty members are allocating their time to research and teaching, leaving little time for out-of-class contact. Across all institutions faculty members were spending significantly less time advising and counseling students (Milem, Berger, & Dey, 1997). Laden, Milem, and Crowson (2000) revealed that, "while contact is emerging as importantly strategic in student retention, it could well be losing power as an institutionalized characteristic of higher education" (p. 250). Terenzini and Pascarella

(1994) believed that "instruction must be understood more broadly to include the important teaching that faculty do both inside and outside their classrooms" (¶ 30).

Stage and Hossler (2000) advocated a student-centered model for persistence that focuses on variables that measure social involvement rather than social integration. They posit that involvement reflects actual behaviors rather than perceptions of social involvement. They noted that many measures of social integration are behavioral. For example, students usually choose whether they will join a sorority, become a member of the university band, or attend a poetry reading. This may explain why social integration variables are strongly associated with student persistence.

However, investigations conducted in nontraditional settings have yielded conflicting results regarding social integration. The majority of findings concluded that social factors are not as predominant in the persistence decision as they are in traditional settings. Chickering (1974) reported that commuter students exhibit less social integration. Older, nontraditional students are less involved, have few friends, and express little interest in social activities (Louis, Colten, & Demeke, 1984). Pascarella et al. (1983) found social integration and persistence to be inversely related, contradicting most traditional models of attrition. Conclusions point to lack of programming, causing students to transfer or to experience inadequate social opportunities. This lack of social opportunities may be an artifact of the lower persistence rates that exist for commuter and nontraditional students (Ashar & Skenes, 1993; Jacoby & Garland, 2004-2005).

Several conclusions have been made for why this may be the case. Some attribute these results to a lack of attention, programming, and physical space to operate these programs (Jacoby & Gardner, 2004-2005). Interestingly enough, residential institutions

looking to enhance retention rates have been successful though facilitation of additional social opportunities. The influence of social factors is inconclusive, warranting additional assessment of this concept in nontraditional settings.

Whether it is the existence of close friendships, membership in a special interest group on campus, or interaction with a faculty member outside of the classroom, students need to feel that someone cares about them and that they are not just another number. The degree of informal out-of-classroom interaction with faculty, peers, and other socializing agents of universities is frequently the best predictor of student persistence (Braxton, Sullivan, & Johnson, 1997).

Integration into the social and academic communities continues to play a central role in student persistence. It is important to mention that these constructs are not completely independent of each other (ACT, Inc., 2004b). Kuh (1995) believed the lines between the social and academic environments are blurred or "seamless." Banta and Kuh (1998) stated that "college impact studies have been advocating for years that the curricular and out-of-class activities are not discrete, independent events; they affect one another in ways that are often not obvious" (¶ 8). What is clear is that levels of integration and involvement into these communities continue to be a fundamental focus of student persistence across all types of institutions and students.

Environmental Variables

Employment status. Early persistence literature suggested that part-time employment is positively related to persistence, but full-time work is negatively related (Lenning et al., 1980). Most persistence literature indicates a negative relation with full-time employment and persistence decisions (Astin, 1993; Ryder, Bowman, & Newman,

1994). The NSSE (2000) found that "68% of part-time students work 30 or more hours week" (p. 10). Bean (1990) stated "the heterogeneity of most nontraditional student populations who have work responsibilities or family responsibilities may leave school because of these outside responsibilities" (p. 164). An employment indicator will be evaluated to test the influence of job status on persistence.

Financial attitudes and access. Bean (1990) noted that the effects of financial aid and persistence are mixed. Bean recognized that students with limited funds may persist and those who have ample funds may not persist. Gohn, Swartz, and Donnelly (2001) suggested that financial factors are not directly related to persistence. Astin (1993) found financial aid not to be contributing to student satisfaction or success, suggesting it is an artifact of the current financial aid environment and government policy. Tinto (2004) suggested that increasing financial aid can produce an increase in persistence.

Cabrera, Stampen, and Hansen (1990) formulated an integrated persistence model to illustrate that the ability to pay for college was intercorrelated with other interactional variables in college persistence. Their study found ability to pay had a direct effect on persistence and indirect effects on goal commitments. They concluded that students who were satisfied with their financial situation were more motivated and had a greater chance of persisting. Bean (1986) noted that students who lack or who perceive themselves as lacking finances are likely to withdraw from school. Ryder, Bowman, and Newman (1994) looked at barriers to degree completion, finding financial issues as the largest barrier to degree completion.

The inclusive results for the effect of financial attitudes and access on persistence decisions, merits additional analysis. The proposed model tests these same relationships set out by Cabrera et al. (1990) to investigate this perspective.

Short-Term Outcomes

Satisfaction. Institutions are realizing that in order to remain competitive, they must devote considerable attention to students' expectations (Elliot, 2002). Elliot defined student satisfaction as a short-term outcome where students evaluate whether actual performance meets or exceeds their expectations. Astin (1993) believed that student satisfaction data should be given considerable attention when determining outcomes. Bean and Metzner (1985) defined satisfaction as the "degree in which the student enjoys being a student" (p. 523). They recommended future investigations conducted in nontraditional settings include these variables. Bean (1990) believed a sense of satisfaction with other facets of the educational environments can have a positive impact on persistence decisions.

Lenning et al. (1980) posited that satisfaction is related to persistence. However, they also suggested some dissatisfied students persist. They believe it is an issue of how students endure their dissatisfaction rather than the actual dissatisfaction itself. Bailey, Bauman, and Lata (1998) reviewed satisfaction scores for 14 schools in the Pennsylvania state system. They compared persisters to nonpersisters and found that those who persisted were most satisfied with their overall student experience.

Intent to re-enroll. This variable is based on Ajzen and Fishbein's (1980) theory that past attitudes and behaviors act through intentions in future behavior. Both Bean (1982b) and Pascarella et al. (1983) found intent to re-enroll was the single best predictor

of student persistence. Bean (1990) defined intent to re-enroll as a predictor of persistence stating, "students who intend to leave are unlikely to stay enrolled, and by asking students if they intend to return next year, or next semester can identify very simply the students who are at highest risk"(p. 166). There is much support for the inclusion of this variable; noting its strong relationship with persistence (Bean & Metzner, 1985; Braxton, Vesper, & Hossler, 1995).

The Theoretical Model

The variables selected for this study were based on a thorough review of the literature and have demonstrated being correlated with persistence decisions (see Figure 1.1). This study also used an approach known as "theory integration." Berger and Braxton (1998) defined theory integration as the "combination of two or more sets of propositions to form a larger more comprehensive explanation of the phenomenon" (pp. 105-106). Researchers contend that student persistence models are quite complementary. Milem and Berger (1997) tested the possibility of combining Tinto's theory of departure and Astin's involvement theory. Cabrera, Castañeda, Nora, and Hengstler (1992) tested the integration of Tinto's interactionalist theory and Bean's student attrition model. Braxton and Brier (1989) tested Tinto's interactional model using an organizational perspective built on Bean's (1980) model of student attrition. Conclusions from these studies encourage further integration of existing models of departure. Integration brings a richer understanding of complex interactions that emerge between students and their institutions of higher education.

The theoretical model presented borrows from Braxton and Brier's (1989) study, which integrated Tinto's interactional theories with Bean's (1980) organizational theory

that was conducted at a commuter institution. Tinto's model is interactional in that it focuses on person-environment fit, the "interactions" that take place with a student's set of background characteristics and how those characteristics interact with both the social and academic environments. Bean introduced organizational theory into student persistence research where organizational attributes, such as fairness in the administration, and organizational communication, can also affect integration into social and academic environments as well as persistence decisions.

This model also integrated the Cabrera et al. (1990) ability-to-pay model that showed that financial attitudes and access to financial aid also affect persistence decisions. Additionally, this model included a set of environmental variables from Bean and Metzner's (1985) study because the study was conducted at a commuter institution.

It is necessary to point out that there are similarities and differences of the theoretical model introduced in this study from previous models of persistence. The current model included external variables. Tinto (1975) excluded such variables, believing that these issues would be apparent through changing levels of institutional commitment and educational attainment goals. However, there is substantial evidence that commuter and nontraditional students have what Murray (1938) referred to as environmental presses. These presses can be defined as issues related to employment, family, finances, and support networks. Bean and Metzner (1985) assumed these issues were especially critical to the nontraditional student. Their theory posited that these types of students have far more opportunities to interact with their external environments than their collegiate environment. Because of that fact, these presses also have the ability to influence the level of integration into the academic and social communities of the

institution. The theoretical model set out to test the relation of environment presses to student persistence.

The theoretical model also expanded organizational attributes beyond size and selectivity to promote the organizational perspective in explaining departure decisions. Derived from previous studies advocating this framework (Bean, 1980; Berger & Braxton, 1998; Braxton & Brier, 1989), the theory focused on the issues of communication, fairness, and a sense of community.

Additionally, the model emphasized the economic perspective in persistence decisions. Using the Cabera et al. (1990) ability-to-pay model as a foundation, the proposed model set out to examine how financial aid and access to financial aid correlate with the other interactional variables of the model.

Further differences revolved around the issues of academic and social integration, where both have been critically reviewed in the literature. Braxton (2000) noted that when academic integration was tested with multi-institutional tests the results yielded empirical support. However, single institution tests yielded only modest empirical support. With this investigation focusing on a single system, it seemed appropriate to acknowledge these shortcomings. Braxton specifically called on two courses of action: (a) completely abandon the construct of academic integration from further research using Tinto's model or (b) revise how the construct is defined. However, several points need to be made. First, Tinto's model is geared toward the traditional student in a traditional setting. The current investigation took place at an atypical institution comprised of mainly commuter students. Second, Tinto's (1997) study conducted at a commuter institution acknowledged these shortcomings of academic integration and persistence and

argued that academic integration might have been misrepresented. These results may be attributed to the fact that some classrooms were not involving, and therefore were not exemplifying an influence on persistence. Regardless, in commuter institutions the classroom is in most cases the only opportunity for students to experience interaction with their institution, its agents, and other students. An array of academic variables was included in the model, taking these cautions into account. Additionally, careful steps were taken to appropriately measure the academic environment.

On the issue of social integration, several studies conducted in nontraditional settings have chosen to delete the construct whereas others have included them. The proposed model retained the construct with the purpose of identifying whether social variables were nonsignificant or were merely an artifact of inadequate programming, services, and opportunities.

As previously acknowledged, the theoretical model integrated the interactional, organizational, and economic perspectives to promote more comprehensive understanding persistence decisions. There is evidence that the melding of theoretical frameworks can greatly enhance our understanding of student departure (Braxton & Brier, 1989).

Conclusion

In conclusion, the focus of any persistence study should never lose sight of the fact that the objective is always to provide quality education. With quality present, improved retention rates should naturally follow. Secondly, it should be recognized that student retention is the responsibility of all members of the academy. It is critical that those of us involved in higher education realize the importance of the entire campus's

perceiving itself as, first and foremost, a "developmental community which facilitates the holistic, total development of all campus community members, with all other missions actually serving this spiritual, and therefore, truly meaningful, purpose" (See, 1990, ¶ 22). By better understanding the influences of student persistence decisions, we improve the chances of retaining students and thus allowing institutions to carry out their momentous mission.

CHAPTER 3

METHOD

The purpose of this section is to present procedures employed by the researcher to investigate influences of student persistence. Methodological standards have been established that call for persistence research that is guided by theory, that utilizes a longitudinal design, and that identifies influences of persistence beyond prematriculation characteristics (Bean, 1982a, 1990; Braxton, 2001-2002; Braxton et al., 1988; Munro, 1981; Pascarella, 1982, 1986). This chapter outlines the procedures used in this study while considering these standards. A longitudinal panel is defined, a theoretical model is presented, and a series of analytical tools are used to test the theory.

General Approach

The approach for this quantitative study was longitudinal. The longitudinal nature of persistence decisions has been well documented in the literature, originating with Spady (1971). This design permitted the researcher to observe students and their experiences from matriculation through degree completion. Moreover, this design identifies whether individual or institutional characteristics are more important and to what extent social and/or academic factors affect persistence decisions (Bean, 1982a, 1990).

Subjects/Data

Data were collected in a three-step process over a 5-year period; 1999 (Year 1); 2000 (Year 2); and 2004 (Year 5). The accessible population for the study included all first-year students at the target institution who participated in the Student Satisfaction Inventory (SSI) in 1999 (Year 1). Approximately 9,000 new students entered the institution in 1999, with 7,000 students participating in the SSI that year. Approximately 50% of the students who responded to the inventory voluntarily provided identifying information. The identifying information allowed the student records database to link to the student satisfaction database, creating a complete record for each respondent. As a result, any student not voluntarily providing the information was excluded from the sample. A total of 4,571 new students provided this voluntary information.

A longitudinal panel was established consisting of all background, initial goal, initial institutional choice/commitment, and Year 1 student satisfaction data (see Figure 1.1) for all 4,571 students. The student cohort was measured for a second time the following year (2000, Year 2), which established a second student panel consisting of 697 subjects. A second set of data was obtained for the same cohort, consisting of all relevant satisfaction data (see Figure 1.1, variables 6-17). The cohort was measured a third and final time after the fall term of 2004. This third set of data included information on whether the student graduated or departed.

Sampling

No sampling was done for the study. All accessible cases were included in the study. There is no damage to external validity from taking all of the accessible cases. Table 3.1 shows the demographic characteristics of the two student panels that were

Table 3.1

Demographic Characteristics of Participants for Year 1 and Year 2

Characteristic	Baseline Data ($N = 4,571$)		Year 2 ($N = 697$)	
	n	%	*n*	%
Age				
24 and younger	2895	64.2%	392	57.3%
25 and older	1611	35.8%	293	42.7%
Campus				
Alpharetta	112	2.5%	18	2.6%
Chicago	220	4.8%	24	3.5%
Columbus	629	13.8%	79	11.4%
Colorado Springs	1	0.0%	—	—
Dallas	319	7.0%	30	4.3%
Decatur	175	3.8%	17	2.4%
DuPage	290	6.3%	35	5.0%
Fremont	167	3.7%	42	6.1%
Kansas City	378	8.3%	79	11.4%
Long Beach	257	5.6%	46	6.6%
Mississauga	1	0.0%	1	0.1%
North Brunswick	544	11.9%	44	6.3%
New York	187	4.1%	32	4.6%
Phoenix	632	13.8%	99	14.3%
Pomona	436	9.5%	80	11.5%
West Hills	223	4.9%	68	9.8%
Ethnicity				
African American	779	17.0%	90	13.0%
Asian	532	11.6%	123	17.7%
Caucasian	2392	52.3%	349	50.3%
Hispanic	681	14.9%	103	14.8%
Native American	52	1.1%	10	1.4%
Other/Not reported	135	3.0%	19	2.7%
Gender				
Male	3276	73.0%	474	68.3%
Female	1184	27.0%	206	29.7%
Graduated by fall of 2004				
Graduated	1858	40.6%	472	68.0%
Not graduated	2713	59.4%	222	32.0%
Student employment status				
Part-time	1764	38.9%	325	38.3%
Full-time	1790	39.5%	268	39.5%
Not employed	979	21.6%	97	14.1%
Student enrollment status				
Part-time	990	21.8%	136	19.6%
Full-time	3550	78.2%	554	78.9%
Academic preparedness				
Developmental	725	16.1%	109	15.7%
Standard	2246	50.0%	337	48.6%
Quality	1519	33.8%	248	35.7%

established for the students' first and second years of college (Year 1 and Year 2, respectively). Due to missing values and rounding errors, some of characteristics may not total to 100%.

Instrumentation

The data used for the study came from a combination of student records and self-report student satisfaction institutional surveys. Both the student records and self-report surveys are maintained and updated by the university by means of a statistical database: SPSS.

Student Records

The student records are the official legal records of the institution. The student records are used to obtain information on the student, such as gender of the participant, academic preparedness rating, and enrollment status. This study assumed the records were a reliable and valid source for the information needed.

Student Satisfaction Inventory

The instrument used to capture student self-reports is the Noel-Levitz Student Satisfaction Inventory (SSI). The inventory measures "student satisfaction with a wide variety of college experiences" (Noel-Levitz, 2000, p. 1). Noel-Levitz is a well-known consulting firm that has been providing services and programs to over 1500 institutions of higher education since 1984. Areas of focus include student retention, staff development, marketing, recruiting, and financial aid. The current study focused on the satisfaction scores of the survey, measuring how satisfied students were with their institution's ability to meet their expectations. High scores indicate high levels of satisfaction and low scores indicate low levels of satisfaction. The satisfaction inventory

was used to obtain information on initial goals and commitments of the student, interactional variables, overall satisfaction, and intent to re-enroll. Astin (1993) believed that students put forth a significant amount of time and effort in college. Therefore, he contended, their perceptions and satisfaction with their college environment should be given considerable attention.

The usage of student self reports is recognized as a valid technique to measure students' perceptions and attitudes in college accurately (Bean, 1980; Pike, 1995). This study assumed the responses were an appropriate reflection of students' college experiences. A copy of the inventory appears in Appendix A.

Reliability and Validity

Reliability measures. Noel-Levitz (2000) reported their inventory was reliable and provided several measures. Cronbach's coefficient alpha for the set of satisfaction scores equaled .98, demonstrating a high rate of internal reliability for all 99 satisfaction items. Because reliability is not properly assessed with Cronbach's alpha alone, score reliability over time was computed. Test-retest reliability was administered, resulting in a coefficient of .84 for the entire set of satisfaction scores. However, the high rates of reliability should be interpreted cautiously. These ratings were very high and were overestimated because all 99 items were used rather than the much shorter 2-6 item scales used in this study.

Validity measures. Convergent construct validity was used by Noel-Levitz (2000) to evaluate the measures. For the Student Satisfaction Inventory, Noel-Levitz provided convergent validity rates by correlating the College Student Satisfaction Questionnaire (CSSQ) with the Student Satisfaction Survey (SSI). The results yielded a Pearson

product-moment correlation for the two instruments of $r = .71$; $p < .001$. These ratings indicate that the satisfaction scores of the SSI measure a construct similar to the CSSQ.

The Proposed Theoretical Model

Persistence inquiry can take on varying theoretical perspectives (e.g., interactional, organizational, psychological, environmental, economic, and societal) with each providing the opportunity to evaluate persistence from a "unique lens" (Berger, 2001-2002, p. 3). This study proposed a theoretical model that embraced several frameworks from the literature for the purpose of advancing a more comprehensive representation of the persistence process. Acknowledged as theory integration, this practice has been supported as a means of enhancing the explanatory power of student departure decisions (Berger & Braxton, 1998; Braxton, 2000, 2001-2002).

Decisions to include or not include variables were based on a critical analysis of the persistence literature and relevance to the target institution. A full explanation of the conceptual model is found in chapter 2. The conceptual model reveals four sets of constructs in a causal sequence: (a) background attributes (student gender, academic preparedness, enrollment status, initial education goals, and initial institutional choice/commitment); (b) institutional variables (educational quality, communication/justice, sense of community); (c) interactional variables (social variables, academic variables, environmental variables); and short-term outcomes (satisfaction, intent to re-enroll).

Reliability and Validity

Reliability Measures

Internal consistency was assessed on 10 of the variables with multiple measures. Cronbach's coefficient alphas were computed and appear in Table 3.2. All of the alpha coefficients were .7 and above, the recommended minimum (Gliner, Morgan, & Harmon, 2001).

Validity Measures

For the theoretical model, it was critical that the model appropriately portray the constructs the researcher was attempting to measure. This was attempted by predicating variable measures on previous literature in which concepts were similarly represented and defined.

Table 3.2

Number of Items and Cronbach's Alpha for Variables in the Theoretical Model

Variable	Number of items	Cronbach's Alpha
Educational quality	2	.73
Communication/justice	5	.80
Sense of community	4	.83
Campus life	4	.78
Faculty-student informal interaction	3	.73
Academic development	5	.81
Faculty-student formal interaction	6	.88
Financial attitudes/access	4	.81
Overall satisfaction	3	.84
Intent to re-enroll	3	.79

Measures and Definitions

Measures were based on perceptions by students of psychological concepts, such as satisfaction and facts such as GPA. Measures and definitions are presented in their posited sequence in Tables 3.3-3.8.

Table 3.3

Definitions and Measures of Background Determinants and Variables

Variables		Definitions and measures	Source	Survey item(s) and values
Background variables		Attributes of the students admitted to the institution. In a causal model, these variables are defined as exogenous and explained outside of the model.		
1	Gender	Reported gender of the student.	SR	1 = Female 2 = Male
2	Academic preparedness	Academic preparedness rating based on admission.	SR	1 = Developmental 2 = Standard 3 = Quality
3	Enrollment status	Reported enrollment status of the student.	SSI	Current class load 1 = Full-time 2 = Part-time
4	Initial educational goals	Level of degree the student hopes to attain. Item based on Bean (1980), Bean and Metzner (1985), and Pascarella et al. (1983).	SSI	Educational goal 1 = Associate's 2 = Bachelor's 3 = Master's and Beyond 4 = Other
5	Initial institutional choice/ commitment	Initial level of institutional commitment of student, measured by using student's rank of institution in the college choice process. Items based on Bean (1980); Bean and Metzner (1985); Berger and Braxton (1998); and Braxton and Brier (1989).	SSI	When I entered this institution, it was my 1 = First choice 2 = Second choice 3 = Third choice or lower

Note: SSI = Student Satisfaction Inventory, SR = Student Records.

Table 3.4

Definitions and Measures of Institutional Determinants and Variables

Variables		Definitions and measures	Source	Survey item(s) and values
Institutional variables		Predicated on organizational theory, the following variables are included in the model to advance the institutional perspective on the persistence process (Berger, 2001, 2002).		
6	Educational quality	The degree to which the institution is viewed as providing quality education, reputation, and image. Item based on Bean (1980) and Pascarella (1980).	SSI	Composite of two SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. The institution has a good reputation in the community. 2. There is a commitment to academic excellence on this campus.
7	Communication/ Justice	The degree to which the institution is viewed as communicating openly and fairly. Items based on Bean (1980), Berger and Braxton (1998), and Braxton and Brier (1989).	SSI	Composite of five SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. Administrators are approachable to students. 2. I seldom get the "run around" when seeking information. 3. I generally know what is happening around campus. 4. I am able to register for classes I need with few conflicts. 5. Channels for expressing student complaints are readily available.
8	Sense of community	The degree to which students perceive the organization as a community including respect and care for one another.	SSI	Composite of three SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. Most students feel a sense of belonging here. 2. The campus staff are caring and helpful. 3. Students are made to feel welcome on this campus. 4. The institution shows concern for students as individuals.

Note: SSI = Student Satisfaction Inventory.

Table 3.5

Definitions and Measures of Social Interactional Determinants and Variables

Variables		Definitions and measures	Source	Survey item(s) and values
Interactional variables		Interactional variables become a major focus of student retention because of the complex relationships that transpire between students and their institution. Many opportunities for interaction exist for the student. This study focuses on social, academic and environmental variables.		
Social variables		Social Integration/Involvement. The degree in which the student participates or is integrated into the social environment of the institution. Operationally specified as the total of the subsequent two variables.		
9	Campus life	The degree to which the student is involved and satisfied with campus life.	SSI	Composite of four SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. I can easily get involved in campus organizations. 2. The student center (commons) is a comfortable place for students to spend their leisure time. 3. Student activity fees are put to good use. 4. The student handbook provides helpful information.
10	Faculty student informal interaction	The amount and quality of informal contact with faculty. Justification for measures used for social integration based on Braxton and Brier (1989), Pascarella et al. (1983), and Pascarella & Terenzini (1983) where quality and impact and quality of non-classroom interactions were assigned to social integration.	SSI	Composite of three SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. Faculty care about me as an individual. 2. Faculty are fair and unbiased in treatment of individual students. 3. Faculty are usually available after class and during office hours.

Note: SSI = Student Satisfaction Inventory.

Table 3.6

Definitions and Measures of Academic Interactional Determinants and Variables

Variables		Definitions and measures	Source	Survey item(s) and values
Academic variables		The degree in which the student participates or is integrated into the academic community of the institution. Operationally specified as the total of the subsequent three variables.		
11	Academic GPA	The degree to which the student performs academically at DeVry University.	SR	Student GPA
12	Academic development	Measures assigned to this construct were based on the researchers best interpretation of what Tinto (1975) and Pascarella and Terenzini (1983) defined as "intellectual development" in addition to what Braxton and Brier (1989) described as "academic development."	SSI	Composite of five SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. I am able to experience intellectual growth here. 2. The content of the courses within my major is valuable. 3. Computer labs are adequate and accessible. 4. Major requirements are clear and reasonable. 5. There is a good variety of classes provided on campus.
13	Faculty student formal interaction	The level and quality of interaction between students and faculty members. Justification for measures of academic integration based on Pascarella et al. (1983) study that was conducted at a commuter institution as well as Pascarella and Terenzini (1983). Questions centered around faculty concern for teaching and the individual in a classroom setting are included in the composite.	SSI	Composite of six SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. The instruction in my major field is excellent. 2. The quality of instruction I receive in most of my classes is excellent. 3. Adjunct faculty are competent as classroom instructors. 4. Nearly all faculty are knowledgeable in their field 5. Faculty take into consideration student differences as they teach. 6. Faculty provide timely feedback about student progress in a course.

Note: SSI = Student Satisfaction Inventory, SR = Student Records, GPA = Grade Point Average.

Table 3.7

Definitions and Measures of Environmental Interactional Determinants and Variables

Variables		Definitions and measures	Source	Survey item(s) and values
Environmental variables		Environmental variables are exogenous variables that could cause conflict/and or benefit to the student and their interaction with the institution. Inclusion of such variables come from Bean and Metzner (1985).		
14	Employment status off-campus	Reported employment status of the student based on Bean and Metzner (1985).	SSI	Employment 1 = Part-time 2 = Full-time 3 = Not employed
15	Financial attitudes/ access	Level of satisfaction of financial attitudes of the student. Items based on Bean (1982a), Bean and Metzner (1985); Braxton et al. (1997), Cabrera et al. (1990), and Cabrera et al. (1992).	SSI	Composite of four SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. Adequate financial aid is available for most students. 2. Financial aid awards are announced to students in time to be helpful. 3. Financial aid counselors are helpful. 4. Billing policies are reasonable.

Note: SSI = Student Satisfaction Inventory.

Table 3.8

Definitions and Measures of Short-term and Outcome Determinants and Variables

Variables		Definitions and measures	Source	Survey item(s) and values
Short-term outcome variables				
16	Overall satisfaction	Level of satisfaction of overall college experience. Model tests Bean's (1983) definition of an outcome of a student's various components of an institution, and experiences of the college environment from Cabrera et al. (1992) as well as Bean and Metzner's (1985) definition of how much a student enjoys the role of a student.	SSI	Composite of three SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. So far, how has your college experience met your expectations? 2. Rate your overall satisfaction with your experience here so far. 3. It is an enjoyable experience to be a student on this campus.
17	Intent to re-enroll	Item derived from Bean (1982b), who described this outcome as the estimated likelihood of discontinuing one's membership in the organization, and Braxton and Berger's (1998) definition of the likelihood that the respondents would re-enroll at the institution again.	SSI	Composite of three SSI items, scored on a scale of 1 to 7 1 = not satisfied at all 7 = very satisfied 1. I feel a sense of pride about my campus. 2. Tuition paid is a worthwhile investment. 1= definitely not 7= definitely yes. 3. All in all, if you had to do it again, would you enroll here?
Outcomes				
	Graduated	Student has graduated from the institution.	SR	Graduation status for Fall 2004 term. 1 = not graduated 2 = graduated

Note: SSI = Student Satisfaction Inventory, SR = Student Records.

Table 3.3 specifies all background variable measures and definitions. For example, academic preparedness rating refers to a rating designated to all new students who are accepted to the university. This rating is based on the student's score on the placement exam (ACCUPLACER), which determines placement in developmental or standard English and math courses for all new students.

Table 3.4 shows the institutional variables represented in the model. The theory expands organizational influences beyond size and selectivity to include organizational behavior measures such as educational quality, communication, and sense of community.

Tables 3.5-3.7 reveal the three sets of interactional variables included in the model: (a) social, (b) academic, and (c) environmental. Historically, the main focus of persistence literature has been based on person-environment theories. These theories are defined as interactional because they measure how students perceive themselves interacting with the institution. They become a major focus of student retention due to the complex relationships that transpire between students and their institution.

Table 3.8 specifies short-term and outcome determinants. The final outcome, persistence, was measured in terms of whether a student graduated by Fall 2004.

Discussion may arise from the assignment of specific variables representing the four sets of variables in the model. Placement of variables was based on the researcher's best estimation as shown in Tables 3.3-3.8 of how these constructs were operationalized in previous retention studies (Bean, 1980, 1982a, 1982b, 1983; Bean & Metzner, 1985; Berger & Braxton, 1998; Braxton, 2000; Braxton & Brier, 1989; Braxton et al., 1995; Braxton et al., 1997; Cabrera et al., 1990; Cabrera et al., 1992; Pascarella et al., 1983; Pascarella & Terenzini, 1983; Tinto, 1975, 1987, 1993, 1997).

The proposed theoretical model resembles the longitudinal nature of persistence that begins with the characteristics and commitments of the student. Then, students interact with the institutional, academic, and social environment of the institution. Additionally, today's college students experience continuous interaction with their external environment. Bean (1990) described interactional variables as "simultaneous forces" that influence persistence decisions (p. 154). It is these sets of interactions that affect short-term outcomes: satisfaction and intent to re-enroll. These outcomes then directly influence persistence decisions. The proposed causal model, along with the posited relationships, is represented as a path diagram (see Figure 1.1).

Data Collection Procedures

For the student self-reports, data were collected through the Student Satisfaction Inventory (SSI). The survey is administered at each of the campuses every Fall term. The inventory contains a total of 104 items, with 48 used in this study. Data were entered into the database via the SPSS statistical program. Individual responses were entered for each student. A complete list of the 48 survey items used in the model appears in Tables 3.3-3.8. For student information, data were obtained from the Office of Institutional Research. Student records were utilized to determine student background information, GPA, and graduation status. The two databases, SSI and the student records, were merged. The end result was a new database that included a complete file for each of the students in the study.

Data Analysis Procedures

The eight research questions that were highlighted in this study investigated persistence using varying methodologies. Differences in age, ethnicity, and changes in

satisfaction scores over time between those who persisted to Year 2 of the study and those who dropped out before Year 2, were analyzed with regard to the constructs represented in the proposed theoretical model. Further analysis included testing of the entire model using both path analysis and logistic regression.

Differences in Persistence to Year 2, Age, and Ethnicity

Independent samples *t* tests, chi-square tests, and Mann–Whitney analyses were employed to test for differences in persistence to Year 2, graduation status, and student age on the constructs represented in the theoretical model. A single factor analysis of variance (ANOVA) tested for differences in student ethnicity on the constructs represented in the theoretical model. A paired *t* test investigated differences between the same 697 students who had data for both Year 1 and Year 2 on the Student Satisfaction Inventory (SSI) to examine changes over time in student satisfaction scores.

Path Analysis

Path analysis was used to evaluate direct and indirect relationships within the theoretical model. Regression can be used for two purposes—to predict and to provide explanations of possible causal relationships among variables. When regression is used in a manner to establish possible cause-and-effect relationships, it falls under the category of causal modeling and is explanatory rather than predictive (Mertler & Vannatta, 2001). Path analysis is one of the statistical procedures used to determine these relationships and recommended for persistence studies (Asher, 1976; Bean, 1980; Berger & Braxton, 1998; Braxton et al., 1988; Pascarella, 1982). Bean (1980) defined it as "an application of multiple regression with causal theory" (p. 165), whereas Asher (1976) described it as an approximation of the significance of various relationships estimated by a causal model.

Mueller (1996) classified formulating the causal linkages among variables based on sound theory as one of the most difficult tasks of the procedure. This was accomplished through extensive consideration from the literature, observations, and experiences. A substantial amount of time was devoted to these activities so that an appropriate model was established. As Wolfe (1985) noted, the models themselves are only as sound as the theories behind them.

For the path analysis, the model was reduced from 18 variables to 11 variables. Multiple indicators were used to measure several of the constructs of the path model, a technique Cabrera et al. (1992) recommended for this type of analysis. Three variables—educational quality, communication and justice, and sense of community—were combined to create one variable, institutional variables. The two variables of campus life and faculty-student informal interaction were combined to create one variable, social variables; and the two variables of academic development and faculty-student formal interaction were combined to create one variable, academic variables. Internal consistency was assessed for all three of the new variables (institutional, social, and academic). Employment status and initial educational goals were dropped from the model due to data assumptions of path analysis. Table 3.9 illustrates the variables in the reduced model and the new codes for the variables. Cronbach's coefficient alphas were computed for the final set of variables. All of the values were .70 and above, the recommended minimum (Gliner et al., 2001), and can be found in Table 3.10.

Table 3.9

Variables, Definitions, and Measures Recoded for Reduced Path Model

Variable		Definitions and measures	Values
1	Gender	Reported gender of the student.	0 = Female 1 = Male
2	Academic preparedness	Academic preparedness rating based on admission requirements.	0 = Standard/Quality 1 = Developmental
3	Enrollment status	Reported enrollment status of the student.	0 = Full-time 1 = Part-time
4	Initial institutional choice/commitment	Initial level of institutional commitment of student.	0 = First choice 1 = Second or third choice
5	Academic GPA	The degree to which the student performs academically.	Student GPA
6	Institutional variables	Educational quality, Communication and justice, and Sense of community.	10 SSI items, scale: 1 to 7
7	Social variables	Campus life, Faculty-student informal interaction.	7 SSI items, scale: 1 to 7
8	Financial attitudes/access	Level of satisfaction of financial attitudes/access.	4 SSI items, scale: 1 to 7
9	Academic variables	Academic development, Faculty-student formal interaction.	11 SSI items, scale: 1 to 7
10	Overall satisfaction	Level of satisfaction of overall college experience.	3 SSI items, scale: 1 to 7
11	Intent to re-enroll	The likelihood that the student would re-enroll at the institution again.	3 SSI items, scale: 1 to 7

Note: A complete description of the variables can be found in Tables 3.3–3.8.
SSI = Student Satisfaction Inventory.

Table 3.10

Number of Items and Cronbach's Alpha for Variables in the Path Analytic Model

Variable	Number of Items	Cronbach's Alpha
Institutional variable	11	.88
Social variable	7	.83
Academic variable	11	.92
Financial attitudes/access	4	.81
Overall satisfaction	3	.84
Intent to re-enroll	3	.79

Path analysis was then administered to estimate the strength of the association among the variables. The arrows reflect paths, or hypothesized relationships among the variables (see Figure 3.1). The variables on the left of each of the arrows had direct effects on the variables to the right of each arrow (Wolfe, 1985). The model begins with background variables, defined as exogenous. These variables are not influenced by any other variable within the model. All of the other variables are categorized as endogenous. As one moves left to right within the path model, these variables may be influenced by other variables in the model (Asher, 1976). Each of the endogenous variables represents a dependent variable at a certain point in the diagram. Referring to Figure 3.1, institutional variables is theorized to be affected by one or all of the background characteristics. Institutional variables was then regressed on each of the background characteristics; academic preparedness, student gender, enrollment status and initial institutional choice/commitment.

Structural equations were constructed to evaluate the direct and indirect effects of each of the variables represented in the model. Path coefficients (beta weights) were derived for each of the equations, indicating the effects of the variables.

Model Testing and Fit Evaluation

Determination of model fit was then conducted. Several factors were considered to determine model fit. First and foremost, one of the major aspects of model fit is the model itself. As mentioned earlier, a sound model is predicated on extensive consideration of current theory and knowledge of the constructs being represented. Secondly, it is important that the data be measured appropriately and accurately. The model is only as good as the data. For this study several fit indexes and approaches were

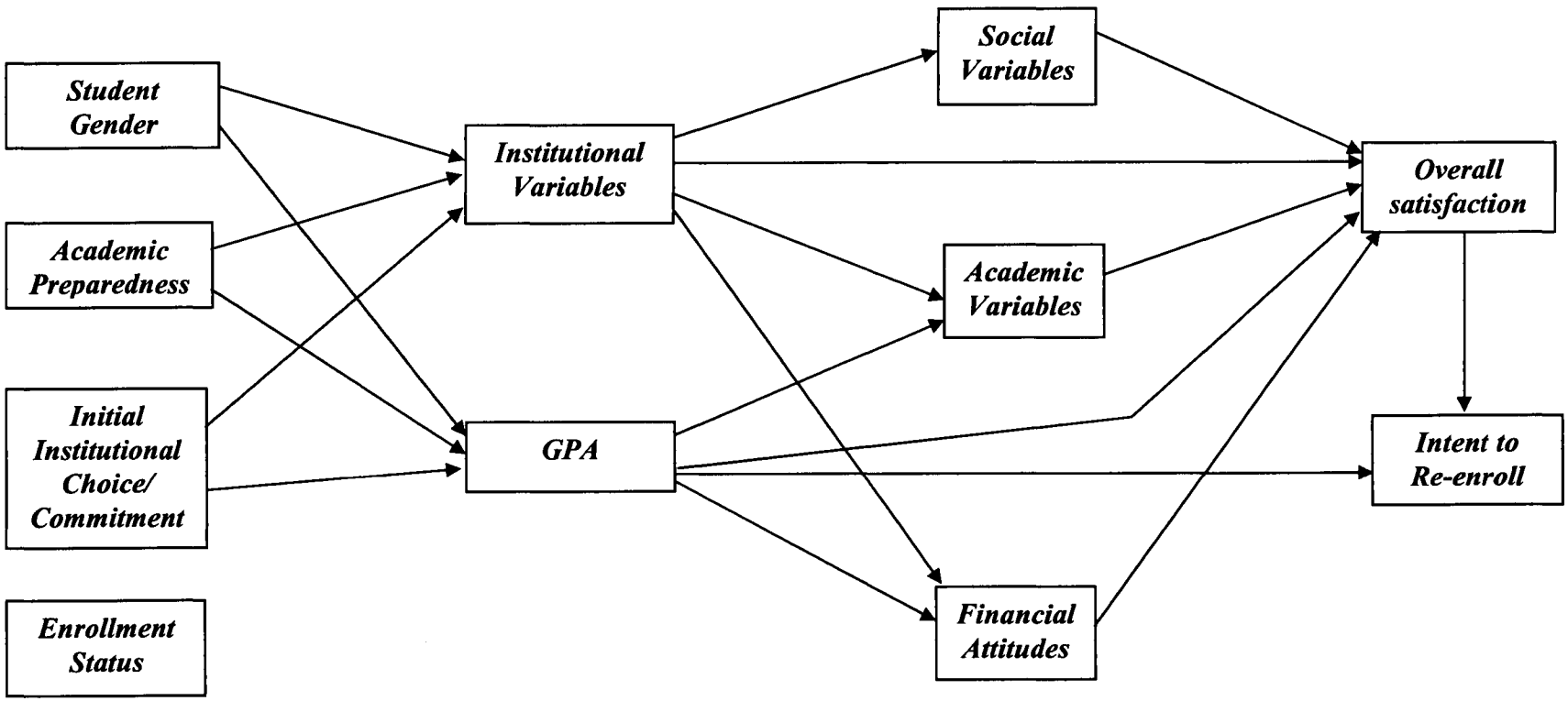

Figure 3.1. The path analytic model.

used. Raykov and Marcoulides (2000) urged researchers to use a combination of indexes to obtain a better picture of model fit.

For overall model fit, chi-square, the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) were used. These are overall indexes and assess the model as a whole. An analysis of the residuals was conducted to determine if the model reproduced the individual elements of the matrix appropriately. It is possible to obtain reasonable overall indexes even when parts of the model are severely misspecified. The statistical package EQS reproduces these residuals between the variable variances and covariances as well as identifies the largest residuals among variables.

When the model was determined to be a reasonable representation of the data, all direct and indirect effects of the model were identified. The employment of such a statistical technique comes with both benefits and limitations. The initial work that is required for the building of the causal model requires extensive attention. Wolfe (1985) suggested the "explicitness" of this step prevents misunderstanding of conclusions. Secondly, the technique offers more than multiple regression, in that it allows the researcher to identify not only direct effects of each independent variable but also the indirect effects through intervening variables (Mertler & Vannatta, 2001). It is equally important to note caution with this method. These models do not ever really prove causal relationships, "they suggest only the possibility that the observed relationship may be causal. One does not confirm a causal relationship with regression coefficients in causal modeling, one only fails to disconfirm it" (Braxton et al., 1988, p. 264). Nonetheless, regression in this manner can be employed to determine possible cause-and-effect

relationships among a set of selected variables and expands the comprehension of persistence beyond pre-matriculation characteristics. Two path models were constructed, one representing the students' first year (Year 1) and the other representing the students' second year (Year 2). The results of the two models were then analyzed and compared.

Logistic Regression

Logistic regression was employed to identify which variables in the model were significant predictors of the outcome variable: graduation status. Two forms of logistic regression were employed; the first entered all of the variables at the same time, and the second, a hierarchical logistic regression, was conducted to determine if interactional variables added to the predicted power of the model. Separate models were constructed and tested to represent the students' first year (Year 1) and the students' second year (Year 2). The results of the two models were accessed individually and compared.

Significance Level—The Bonferroni Adjustment

Due to the number of variables being assessed in the investigation, the Bonferroni adjustment was employed. The equation below was used to determine an appropriate overall significance level.

$$p = \frac{\text{significance level}}{\text{number of variables}} = \frac{.05}{16} = .003$$

Effect Size

To determine the strength of the relationships among the variables, effect sizes were calculated for each of the statistical tests. Effect sizes were established using the guidelines set forth by Cohen (1988) and reflected in Table 3.11.

Table 3.11

Interpretation of the Strength of a Relationship (Effect Sizes)

General Interpretation of the Strength of a Relationship	The *d* Family[a]	The *r* Family[b]		
	d	*r* and ϕ	*R*	η (eta)[d]
Much larger than typical	≥ 1.00[c]	≥.70	.70+	.45+
Large or larger than typical	.80	.50	.51	.37
Medium or typical	.50	.30	.36	.24
Small or smaller than typical	.20	.10	.14	.10

[a] *d* values can vary from 0.0 to + or −1.0 infinity, but *d*s greater than 1 are uncommon.

[b] *r* family values can vary from 0.0 to + or −1.0, but except for reliability (i.e., same concept measured twice), *r* is rarely above .70. In fact, some of these statistics (e.g., phi) have a restricted range in certain cases; that is, the maximum phi is less then 1.0.

[c] We interpret the numbers in this table as a range of values. For example, a *d* greater than .90 (or less than -.90) would be described as "much larger than typical" a *d* between say .70 and .90 would be called "larger than typical," and *d* between say .60 and .70 would be "typical to larger than typical." We interpret the other three columns similarly.

[d] Partial etas from SPSS multivariate tests are equivalent to *R*. Use *R* column.

Note. From *SPSS for Introductory Statistics*, by G. A. Morgan, N. L. Leech, G. W. Gloeckner, and K. C. Barrett, 2004, Mahwah, NJ: Lawrence Erlbaum Associates. Copyright 2004 by Lawrence Erlbaum Associates, Inc. Reprinted with permission of the authors.

Human Subjects Approval

The usage of human subjects in this study required the researcher to seek approval. A copy of the letter is included in Appendix F.

Conclusion

This chapter sets out to enhance the knowledge of the student persistence process by the presentation and testing of a theoretical model. Braxton (2001-2002) goes as far as to "demand" these methods take place if departure rates are to be reduced. The evolution of persistence inquiry and progress within institutions of higher education can only occur by taking a serious methodological approach to the phenomenon.

CHAPTER 4

RESULTS

This chapter presents the findings of the eight research questions first presented in chapter 1. The analysis compared students who dropped out of the study before Year 2 to those who persisted to Year 2 in regards to the constructs of the theoretical model.

The model presents four sets of explanatory variables: (a) background variables (*student gender, academic preparedness, enrollment status,* and *initial institutional choice/commitment)*, (b) institutional variables (*educational quality, communication/ justice,* and *sense of community*), (c) interactional variables (*social variables, academic variables,* and *financial attitudes*), and (d) short-term outcomes (*satisfaction* and *intent to re-enroll*).

Further analysis explored for differences between those who not only persisted to Year 2 but also graduated compared to those who did not. Further, the study focused on differences in age and ethnicity of the students as well as student satisfaction scores over time. The researcher used a path analysis to determine direct and indirect effects of the variables in the model and conducted a logistic regression to identify variables that predict whether the student graduated or not. The research questions and results appear in the following sections.

Results of Research Question 1

Is there a difference between those students who persisted to Year 2 of the study versus those students who dropped out before Year 2 in their responses to the constructs represented in the path diagram? For this research question independent samples *t* tests, chi-square tests, and Mann–Whitney tests examined if any differences exist between students who persisted to Year 2 and students who dropped out before Year 2 with regard to the constructs represented in the path diagram. These statistical methods were appropriate because the design was between groups with two levels (those students who graduated in 5 years and those students who did not graduate).

The use of 16 multiple comparisons for research question 1 led the researcher to employ the more conservative Bonferroni correction to test significance. Thus, the alpha for critical significance was reduced from $p \leq .05$ to $p \leq .003$ (.05/16 tests = .003). In addition, effects sizes (*d*) are reported. For clarity, variable names are italicized for chapter 4 and chapter 5. The *t* tests were considered significant if the *p* value was less than .003. Table 4.1 summarizes the 11 independent *t* tests that were run to test for the significance of the differences.

Significant differences at $p < .003$ were discovered among five variables: *educational quality, faculty-student formal interaction, overall satisfaction, intent to re-enroll,* and *academic GPA.* Equal variances were not assumed for all five variables. For *educational quality,* $t(3,263) = 3.71, p < .001, d = .12$. The students who persisted to Year 2 had higher satisfaction levels with the *educational quality* of the institution ($M = 5.79$) than those students who dropped out before Year 2 ($M = 5.66$). The results also indicate that one can be 95% confident that the mean difference is between .06 and .19 and that

Table 4.1

Results of t Test Comparisons of Students Who Persisted to Year 2 Versus Those Who Dropped Out before Year 2 for the Constructs Represented in the Path Diagram

	Persisted to Year 2 (n = 3,213)		Dropped out before Year 2 (n = 1,358)			
Model constructs	*M*	*SD*	*M*	*SD*	*t*	*p*
Educational quality	5.79	1.03	5.66	1.15	3.71[a]	< .001*
Communication/ justice	5.00	1.06	4.94	1.15	1.89[a]	.06
Sense of community	5.36	1.02	5.29	1.12	2.17[a]	.03
Campus life	4.96	1.13	4.94	1.19	0.30	.77
Faculty-student informal interaction	5.35	1.02	5.29	1.12	2.00[a]	.05
Academic development	5.56	0.93	5.49	1.02	2.43[a]	.02
Faculty-student formal interaction	5.37	1.02	5.24	1.13	3.80[a]	< .001*
Financial attitudes	4.89	1.27	4.90	1.31	−0.38	.71
Overall satisfaction	5.22	1.05	4.99	1.18	6.51[a]	< .001*
Intent to re-enroll	5.43	1.14	5.28	1.28	4.13[a]	< .001*
Academic GPA	3.09	0.67	2.07	1.16	27.68[a]	< .001*

[a] Levene's F was statistically significant ($p < .003$), so the "equal variances not assumed" t was used.

* Statistically significant after Bonferroni correction.

there was a small effect size. Comparing *faculty-student formal interaction*, $t(3,291) = 3.80$, $p < .001$, $d = .12$, showed that students who persisted to Year 2 were slightly more satisfied with their formal contact with faculty ($M = 5.37$) than those who dropped out before Year 2 ($M = 5.24$). The results also indicate that one can be 95% confident that the mean difference is between .06 and .19 and that there was a small effect size.

For *overall satisfaction* levels of the students' college experience, $t(3,262) = 6.51$, $p < .001$, d=.12. Students who persisted to Year 2 were more satisfied with their college experience ($M = 5.22$) than those students who dropped out before Year 2 ($M = 4.99$). The results also indicate that one can be 95% confident that the mean difference for overall satisfaction was between .16 and .29 and there was a small effect size. Analysis of *intent to re-enroll* yielded $t(3,250) = 4.13$, $p < .001$, d =.16. Students who persisted to Year 2 were more likely to have enrolled at their target institution ($M = 5.43$) than students who dropped out before Year 2 ($M = 5.28$). The results also revealed that one can be 95% confident that the mean difference is between .08 and .23 and that there was a small effect size. A comparison of *academic GPA* confirmed that the expected differences were statistically significant, $t(1,439) = 27.68$, $p < .001$, $d = 1.11$. Students who persisted to Year 2 had higher GPAs ($M = 3.09$) than students who did not persist to Year 2 ($M = 2.07$). The results showed that one can be 95% confident that the mean difference in GPA for these two groups of students was between .95 grade point and 1.1 grade points, representing a full grade point difference and a very large effect size.

It is worth noting that if the Bonferroni correction had not been employed, three additional variables would have been significant at the .05 level. Therefore, *sense of community, faculty-student informal interaction,* and *academic development* may warrant

further investigation. Three variables; *institutional communication, campus life,* and *financial attitudes* revealed no significant differences between those students who persisted to Year 2 versus those who did not persist to Year 2. Effect sizes for all three variables were also calculated, showing small ratings for all three variables.

Chi-square tests revealed significant differences for *gender, academic preparedness,* and *enrollment status*. Table 4.2 presents the results of those tests. For *Gender* $\chi^2(1, N = 4{,}571) = 13.49, p < .001$, with phi of .05, indicating a very small effect size. Thus, females were slightly more likely to persist to Year 2 (66%) than their male counterparts (62%). Similarly, males were more likely to drop out before Year 2 (38%) than females (34%). For the variable *academic preparedness,* $\chi^2(2, N = 4{,}571) = 82.83, p < .001$, with a Cramer's V of .14 showing a weak association and, thus, a small effect size. Fewer developmental and standard students persisted to Year 2 than expected, with more quality students persisting to Year 2 than expected. *Enrollment status* produced $\chi^2(1, N = 4{,}571) = 37.89, p < .001$. Full-time students were more likely to persist to Year 2 (65%) compared to part-time students (54.3%). Results revealed a small to medium effect size (phi = .19). There were no statistically significant differences for Year 2 persistence and employment status.

A Mann–Whitney test was run on *initial institutional choice/commitment* because the dependent variable was not normally distributed. No significant differences were revealed for *initial institutional choice/commitment* and the two groups of students.

The following descriptive data were included to describe Year 2 persistence and *initial educational goals*. An analysis of educational goals on students persisting to Year 2 showed that 15.7% intended to complete an associate's degree, 63.8% a bachelor's

Table 4.2

Results of Chi-square Comparisons of Students Who Persisted to Year 2 Versus Those Who Dropped Out before Year 2 for Gender, Academic preparedness, Enrollment Status, and Employment Status

Variable	Persisted to Year 2 (n = 2,869) %	Dropped out before Year 2 (n = 1,702) %	χ^2	p
		Gender		
Male	62.0%	38.0%		
Female	66.0%	34.0%	13.49	< .001*
		Academic preparedness		
Developmental	53.9%	46.1%		
Standard	60.0%	40.0%		
Quality	71.6%	28.4%	82.83	< .001*
		Enrollment status		
Part-time	54.3%	45.7%		
Full-time	65.0%	35.0%	37.89	< .001*
		Employment status		
Part-time	60.4%	39.6%		
Full-time	64.6%	35.4%		
Not employed	63.6%	36.4%	7.32	.03

* Statistically significant after Bonferroni correction.

degree, 16.8% a master's degree or beyond, with 3.7% attending the target institution for other purposes, such as job training, certification requirements, and self-improvement. For students who did not persist to Year 2, 18.8% intended to complete an associate's degree, 59% a bachelor's degree, 17% a master's degree or beyond, with 5.2% attending the target institution for such other purposes as job training, certification requirements, and self-improvement. Figure 4.1 compares the educational goals of students who persisted to Year 2 of the study to those who did not persist.

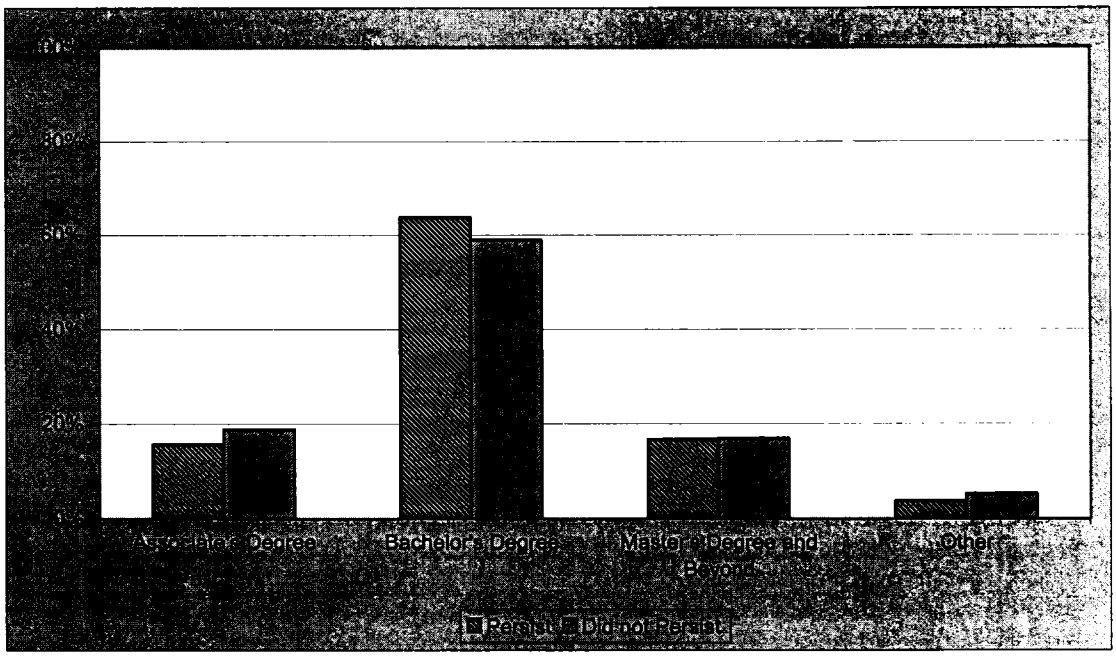

Figure 4.1. Differences in educational goals between students who persisted to Year 2 and those who did not.

Results of Research Question 2

For the students who persisted to Year 2, is there a difference between those students who graduated versus those students who did not graduate in 5 years in their responses to the constructs represented in the theoretical?

For this research question the researcher analyzed the data using independent samples *t* tests, chi-square tests, and Mann–Whitney analyses. The question focused on students who persisted to Year 2 and investigated differences with regard to constructs represented in the theoretical model between students who graduated in 5 years and those who did not. The design was between groups with two levels (Year 2 students who graduated in 5 years and students who did not graduate in 5 years).

Table 4.3 summarizes the results of the 11 independent *t* tests that were executed. Significant differences on *academic GPA* were found between those students who graduated in 5 years versus those who did not graduate. With equal variances not assumed, $t(240) = -10.09$, $p < .001$. Students who did not graduate in 5 years had a lower *academic GPA* (2.74) than those students who did graduate within 5 years (3.31). The results also reveal that one can be 95% confident that the true mean difference in *GPA* of those students who graduated versus those who did not was between .47 and .69 grade points, with a very large effect size ($d = .96$).

Table 4.3

Results of t Test Comparisons of Graduation for Students Who Persisted to Year 2 for the Constructs Represented in the Path Diagram

	Not graduated ($n = 220$)		Graduated ($n = 467$)			
Model constructs	*M*	*SD*	*M*	*SD*	*t*	*p*
Educational quality	5.43	1.27	5.38	1.18	0.51	.61
Communication/ Justice	4.61	1.25	4.52	1.26	0.82	.41
Sense of community	5.05	1.19	4.93	1.12	1.32	.19
Campus life	4.72	1.25	4.63	1.16	0.99	.32
Faculty-student informal interaction	5.09	1.21	4.98	1.14	1.23	.22
Academic development	5.29	1.11	5.19	1.06	1.23	.22
Faculty-student formal interaction	5.00	1.20	4.95	1.23	0.47	.64
Financial attitudes	4.69	1.35	4.54	1.29	1.38	.17
Overall satisfaction	4.81	1.21	4.84	1.17	−0.28	.78
Intent to re-enroll	5.14	1.33	4.92	1.31	2.08	.04
Academic GPA	2.74	0.70	3.31	0.48	−10.01*	< .001*

[a] Levene's *F* was statistically significant ($p < .003$), so the "equal variances not assumed" *t* was used.

* Statistically significant after Bonferroni correction.

It is worth mentioning that if the more conservative Bonferroni correction had not been employed, *intent to re-enroll* would have been significant at the .05 level. Consequently, *intent to re-enroll* may warrant further investigation. Effect size was calculated for *intent to re-enroll* showing a small rating.

The variables *educational quality, institutional communication, sense of community, campus life, faculty-student informal contact, academic development, faculty-student formal interaction, financial attitudes,* and *overall satisfaction with the college experience* did not indicate significant differences when comparing students who graduated in 5 years versus students who did not graduate in 5 years.

Table 4.4 shows the chi-square tests that compared *gender, academic preparedness, enrollment status,* and *employment status* on student graduation.

Table 4.4

Results of Chi-square Comparisons of Graduation Differences in Students Who Persisted to Year 2 for Gender, Academic Preparedness, Enrollment Status and Employment Status

	Not graduated (n = 220)	Graduated (n = 467)		
Variable	%	%	χ^2	p
		Gender		
Male	30.4%	69.6%		
Female	35.0%	65.0%	2.16	.34
		Academic preparedness		
Developmental	55.0%	45.0%		
Standard	31.8%	68.2%		
Quality	22.2%	77.8%	37.62	< .001*
		Enrollment status		
Part-time	61.5%	38.5%		
Full-time	25.5%	74.5%	59.75	< .001*
		Employment status		
Part-time	23.7%	76.3%		
Full-time	44.0%	56.0%		
Not employed	25.8%	74.2%	29.91	< .001*

* Statistically significant after Bonferroni correction.

Significant differences were found with the variables *academic preparedness, enrollment status,* and *employment status*. Comparing *academic preparedness* on graduation or not, $\chi^2(1, N = 687) = 37.61, p < .001$. Among those students who graduated in 5 years, there were fewer developmental students and more quality and standard students than expected. For those students who did not graduate the opposite was observed, with more developmental students and fewer standard and quality students not graduating. The association between the two variables (Cramer's $V = .23$) indicates a small to medium effect size. Comparing *enrollment status* on whether a student graduated, $\chi^2(1, N = 687) = 59.75, p < .001$. Full-time students were more likely to graduate (75%) than part-time students (39%). The association between the two variables (phi = -.29) indicated a medium association and, thus, effect size. Looking at differences between *employment status* on whether the student graduated, $\chi^2(2, N = 687) = 29.91, p < .001$. Students who were employed part- time (76.3%) or not employed at all (74.2%) were more likely to graduate compared to students employed full-time (56%). Effect size calculation indicated a small to medium association among the two variables (Cramer's $V = .21$).

Because *initial institutional choice/commitment/choice* was skewed, a Mann–Whitney nonparametric test was run to examine the differences of *initial institutional choice/commitment* between students who graduated and those who did not. No statistically significant differences were found, $U = -.16, p = .87$. This reveals that differences in a student's *initial institutional choice/commitment* did not affect whether the student graduated within 5 years.

The following descriptive data on *initial educational goals* were included to describe graduation rates for those students who persisted to Year 2. Among students who did not graduate, 5% intended to complete an associate's degree; 77.3% a bachelor's degree, and 15.9% a master's degree or beyond, with 1.8% attending the target institution for other purposes, such as job training, certification requirements, and self-improvement. For students who did graduate, 17.4% intended to complete an associate's degree, 63.8% a bachelor's degree, 16.6% a master's degree or beyond, with 2.1% attending the target institution for other purposes such as job training, certification requirements, and self-improvement. Figure 4.2 compares the educational goals of those students who persisted to Year 2 and graduated within 5 years to those who persisted to Year 2 but did not graduate.

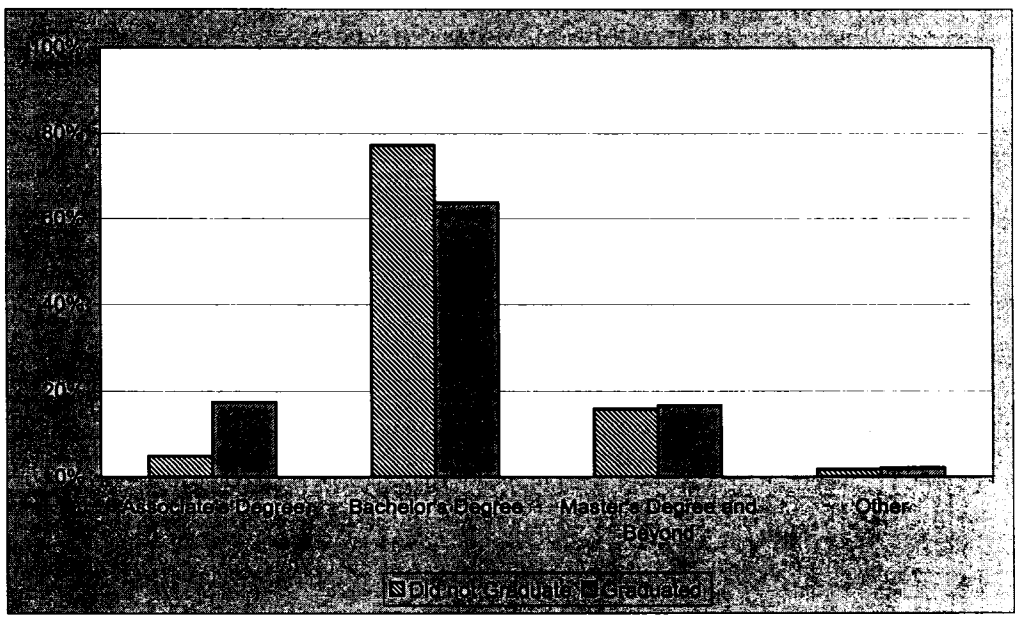

Figure 4.2. Differences in educational goals of students who graduated in 5 years and those who did not.

Results of Research Question 3

Are there differences among ethnicity/races on the responses to the constructs represented in the theoretical model?

For this research question the researcher employed single factor ANOVA tests to examine differences on ethnicity on constructs represented in the path diagram. Significant differences were found with *student ethnicity* and *educational quality of the institution, campus life, faculty-student informal interaction, intent to re-enroll,* and *academic GPA.* Table 4.5 presents the results of the 12 one-way ANOVA tests.

Educational Quality

Significant differences were found between mean satisfaction scores for *educational quality* among ethnicity groups, $F(4, 4{,}388) = 4.78$, $p < .001$. To determine specific significance among the pairs of ethnicity groups, Tukey's Honestly Significant Difference (HSD) multiple comparison test was run. Results indicated that Asian students ($M = 5.57$) had lower satisfaction levels with the institution's ability to provide quality education than African American, Native American, Hispanic, and Caucasian students. All four ethnic groups had statistically significantly higher ratings for *educational quality* than their Asian counterparts. African American students' mean satisfaction score for educational quality was 5.75, Native American students had a mean score of 6.04, Hispanic students reported a mean score of 5.77, and Caucasians' mean score was 5.77. Results indicate that Asian students reported statistically significantly lower satisfaction levels with the institution's ability to provide quality education than African American students ($p = .03$, $d = .16$); Native American students ($p = .03$, $d = .44$), Hispanic students ($p = .01$, d=.17), and Caucasian students ($p = .001$, $d = .19$). The results reveal that one

Table 4.5

Results of One-Way ANOVAs of Path Constructs, by Ethnicity

Source	*df*	Mean Square	*F*	*p*
		Educational quality		
Between	4	5.49	4.76	< .001*
Within	4,388	1.15		
		Communication/Justice		
Between	4	2.98	2.51	.040
Within	4,410	1.18		
		Sense of community		
Between	4	3.60	3.26	.011
Within	4,413	1.10		
		Campus life		
Between	4	5.81	4.41	< .001*
Within	4,355	1.32		
		Faculty-student informal interaction		
Between	4	8.35	7.61	< .001*
Within	4,414	1.10		
		Academic development		
Between	4	0.99	1.08	.364
Within	4,415	0.92		
		Faculty-student formal interaction		
Between	4	3.13	2.80	.025
Within	4,412	1.12		
		Financial attitudes		
Between	4	1.74	1.06	.377
Within	4,377	1.65		
		Overall satisfaction		
Between	4	2.48	2.03	.088
Within	4,428	1.22		
		Intent to re-enroll		
Between	4	7.76	5.49	< .001*
Within	4,427	1.41		
		Academic GPA		
Between	4	28.22	31.59	< .001*
Within	3,661	0.90		

* Statistically significant after Bonferroni correction.

could be 95%confident that the mean difference was between .01 and .89. Effect size calculations yielded small to medium ratings.

Campus Life

Statistically significant differences were observed among mean satisfaction scores for *campus life* by ethnicity groups, $F(4, 4{,}355) = 4.41, p = .001$. Post hoc tests revealed that Hispanic students reported a statistically significantly higher mean satisfaction score for campus life ($M = 5.11, p < .001, d = .19$) than Caucasian students ($M = 4.90$). The results also indicated that one can be 95% confident that the mean difference is as small as .07 or as large as .34 and that there was a small effect size.

Academic GPA

Statistically significant differences on *academic GPA* among the four different ethnic groups were identified, $F(4, 3{,}661) = 31.59, p < .001$. Post hoc tests revealed that Asian students ($M = 2.95$) had statistically significantly higher *GPA*s than African American students ($M = 2.51, p < .001$), Native American students ($M = 2.42, p = .003$) and Hispanic students ($M = 2.62, p < .001$). The results indicated that one could be 95% confident that the Asian students' mean *GPA* was between .12 and .92 grade point higher than the other three ethnic groups. Effect size calculations produced medium ratings, with $d = .49$, $d = .58$, and $d = .37$, respectively. Likewise, Caucasian students had significantly higher *GPA*s ($M = 2.91$) than African American students ($M = 2.51, p < .001$), Native American students ($M = 2.42, p = .005$), and Hispanic students ($M = 2.62, p < .001$). Effect sizes were small to medium, $d = .42$, $d = .50$, and $d = .30$, respectively. One can be 95% confident that the Caucasian students' mean *GPA* was between .10 and.87 grade point higher than the mean *GPA* for the other three ethnic groups. In summary, Asian and

Caucasian students had statistically significantly higher academic *GPAs* than the three (African American, Native American, Hispanic) other ethnic groups. No statistically significant differences were found between Asian and Caucasian student's academic *GPA* or between African American, Native American, and Hispanic students' *GPA*s.

Results also indicated that overall there were some statistically significant differences for *faculty-student informal interaction* and *intent to re-enroll.* The Dunnett's *C* post hoc test was applied because the homogeneity of variances assumption was violated for all three variables.

Faculty-Student Informal Interaction

Differences between mean satisfaction scores for *faculty-student informal interaction* among ethnicity groups were statistically significant, $F(4, 4{,}414) = 7.61, p < .001$. The mean score for informal interaction with faculty was 5.40 for Caucasian students, 5.21 for African American students, and 5.20 for Asian students. Post hoc tests revealed that Caucasian students reported statistically significantly higher satisfaction with their relationships with faculty members ($p < .001$) than African American students reported. The results reveal that one could be 95% confident that mean differences were anywhere between .06 and .32. Effect size calculations showed a small effect ($d = .18$). Likewise, Caucasian students reported statistically significantly higher satisfaction levels with their informal interaction with faculty members than Asian students ($p < .001$). The results indicate that one could be 95% confident that the mean difference is between .06 and .34 and that there was a small effect size ($d = .20$).

Intent to Re-enroll

Differences between mean satisfaction scores for *intent to re-enroll* at the institution among ethnicity groups were statistically significant, $F(4, 4{,}427) = 5.49$, $p < .001$. The mean score for *intent to re-enroll* was 5.19 for Asian students, 5.51 for Hispanic students, and 5.39 for Caucasian students. Post hoc tests showed that Asian students were less likely to re-enroll at the target institution than Hispanic students ($p < .05$, $d = .26$), with a small effect size. The results indicated that one could be 95% confident that the mean difference was between .13 and .50 for these two groups of students. Likewise, Asian students were also less likely to re-enroll at the institution than Caucasian students ($p < .05$). The results revealed that one could be 95% confident that the actual difference in means was between .03 and .35 and that there was a small effect size ($d = .16$).

If the more conservative Bonferroni correction had not been employed, *institutional communication, sense of community,* and *faculty-student formal interaction* would have been significant at the .05 level. Thus, *institutional communication, sense of community,* and *faculty-student formal interaction* may warrant further analysis. No significant differences were found for *academic development* and *financial attitudes* based on student ethnicity.

The following descriptive data were included to describe ethnicity on *student gender, academic preparedness, enrollment status, employment status, initial institutional choice/commitment,* and *educational goals.*

Student Gender

For *gender* and *ethnicity*, 40.2% of African Americans were female and 59.8%, male. For Native American students, there were 36.5% female and 63.5% male. For Hispanic students, 27.4% were female and 72.6%, male. Among Asian students, 29.7% were female and 70.3% were male. For Caucasian students, 21.7% and 78.3% were female and male, respectively. Figure 4.3 illustrates the frequencies of gender and student ethnicity groups.

Academic preparedness

For *academic preparedness* and *ethnicity*, African American students were 23.3% developmental, 50.7% standard, and 25.9% quality students. For Native American

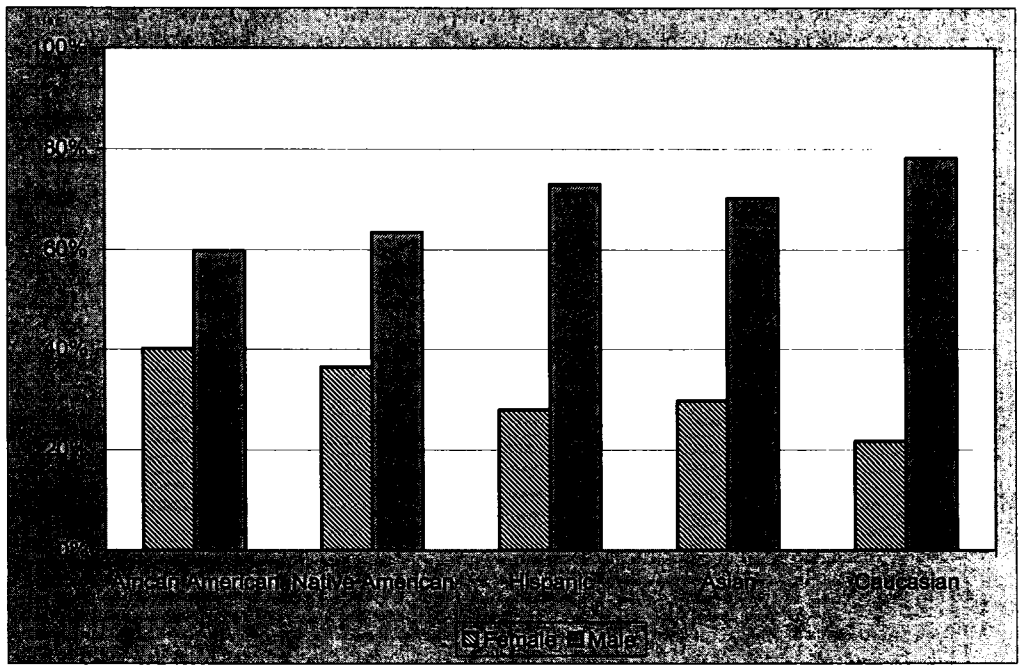

Figure 4.3. Percentage differences between males and females, by student ethnicity.

students, 7.8% were developmental, 68.6% standard, and 23.5% quality. For Hispanic students, 22.1% were developmental, 55.3% standard, and 22.6% quality. For Asian students, 22.7% were developmental, 44.5% standard, and 32.8% quality. For Caucasian students, 11.1% were developmental, 48.1% standard, and 40.8% quality. Figure 4.4 shows the percentages of the three academic preparedness ratings (developmental, standard, and quality) by the five different ethnic groups.

Student Enrollment Status

Looking at *student enrollment status* and *ethnicity*, 75.4% of African American students were full-time students and 24.6% were enrolled as part-time students. For Native American students, 90.4% were full-time students and 9.6% were part-time

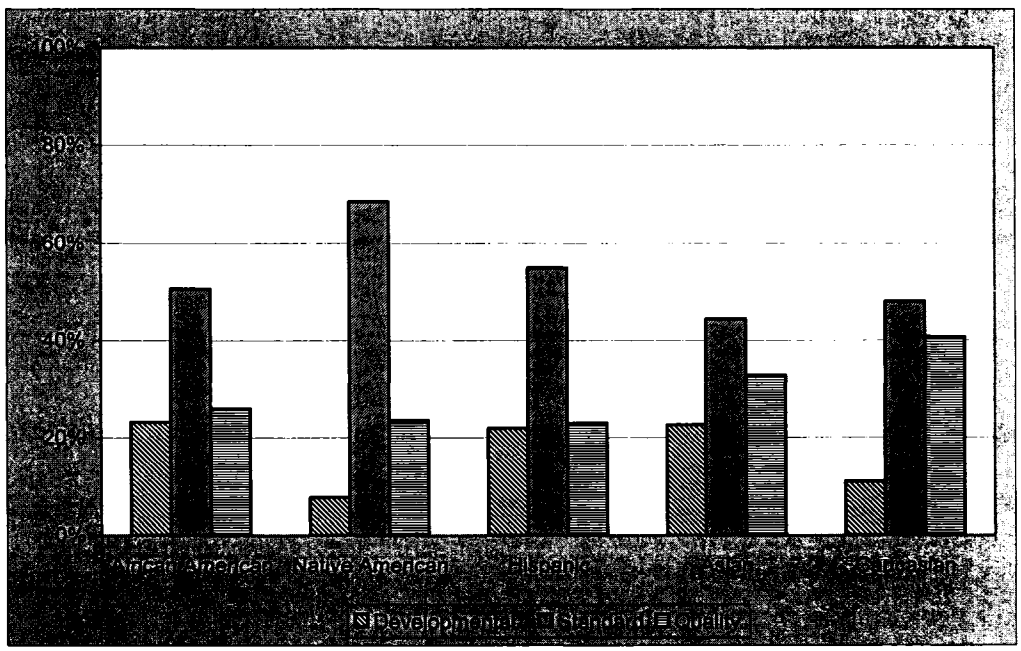

Figure 4.4. Percentage differences of each level of academic preparedness by student ethnicity.

students. For Hispanic students, 74.5% were full-time students and 25.5% were part-time students. For Asian students, 81.2% were full-time students and 18.8% were part-time students. For Caucasian students, 79.5% were full-time students and 20.5% were part-time students. Figure 4.5 shows the enrollment status for the five student ethnic groups.

Employment Status

Examination of *student employment status* and *ethnicity* showed that 34.3% of African American students worked full-time, 47% worked part-time, and 18.7% were not employed. For Native American students, 26.9 worked full-time, 21.2% worked part-time, and 51.9% were not employed. For Hispanic students, 42.8% worked full-time, 37.9% worked part-time, and 19.3% were not employed. For Asian students, 36.9%

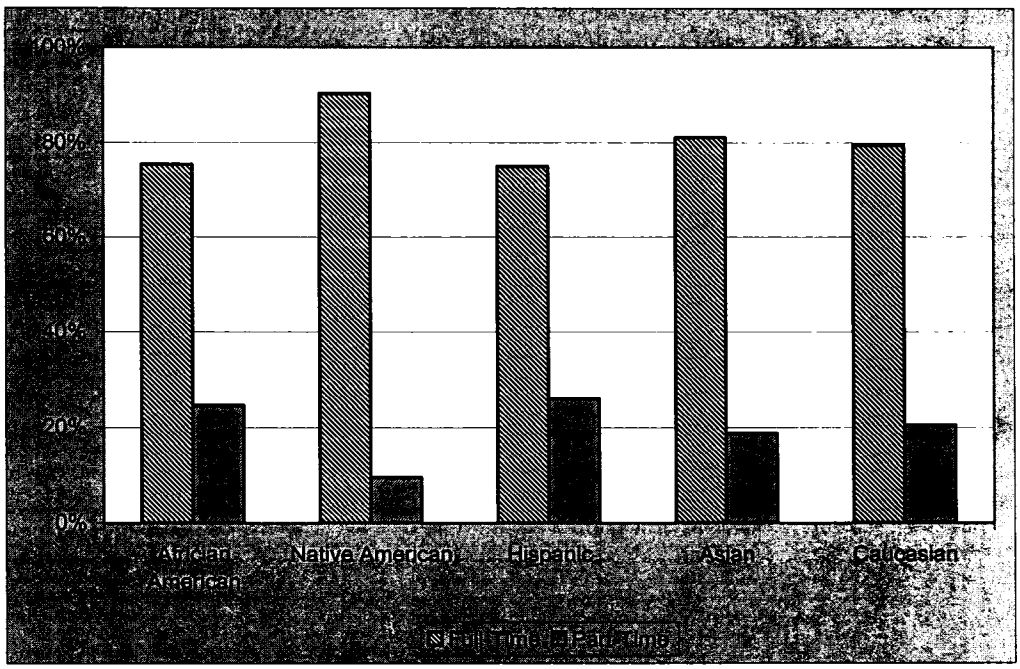

Figure 4.5. Percentage differences between student enrollment statuses by student ethnicity.

worked full-time, 29.4% worked part-time, and 33.7% were not employed. For Caucasian students, 41.3 % worked full-time, 39.1% worked part-time, and 19.6% were not employed. Figure 4.6 shows employment status by ethnicity.

Initial Institutional Choice/Commitment

For *initial institutional choice/commitment* and *ethnicity*, 61.1% of African American students chose the target institution as their first choice, 27.9% as their second choice, and 11% as their third choice or lower. For Native American students, 68.6% chose the target institution as their first choice, 25.5% as their second choice, and 5.9% as their third choice or lower. For Hispanic students, 65.1% chose the target institution as their first choice, 28.3% as their second choice, and 6.7% as their third choice or lower.

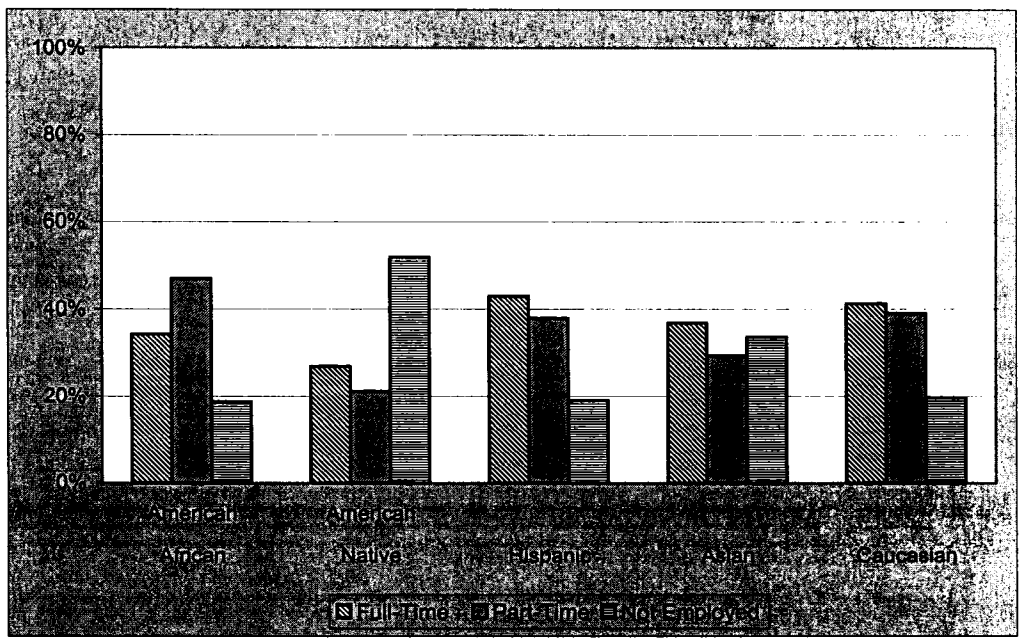

Figure 4.6. Percentage differences between student employment status by student ethnicity.

For Asian students, 52.7% chose the target institution as their first choice, 34.6% as their second choice, and 12.7% as their third choice or lower. For Caucasian students, 75.7% chose the target institution as their first choice, 19.6% as their second choice, and 14.7% as their third choice or lower. Figure 4.7 exhibits *initial institutional choice/commitment* for all of the different ethnic groups at the target institution.

Initial Educational Goals

The analysis of *initial educational goals* and *student ethnicity*, showed that 14.8% of African American students intended to complete an associate's degree, 62.1% a bachelor's degree, 18.9% a master's degree or beyond, with 4.2% attending the target institution for other purposes, such as job training, certification requirements, and self-improvement. For Native American students, 15.4% intended to complete an associate's

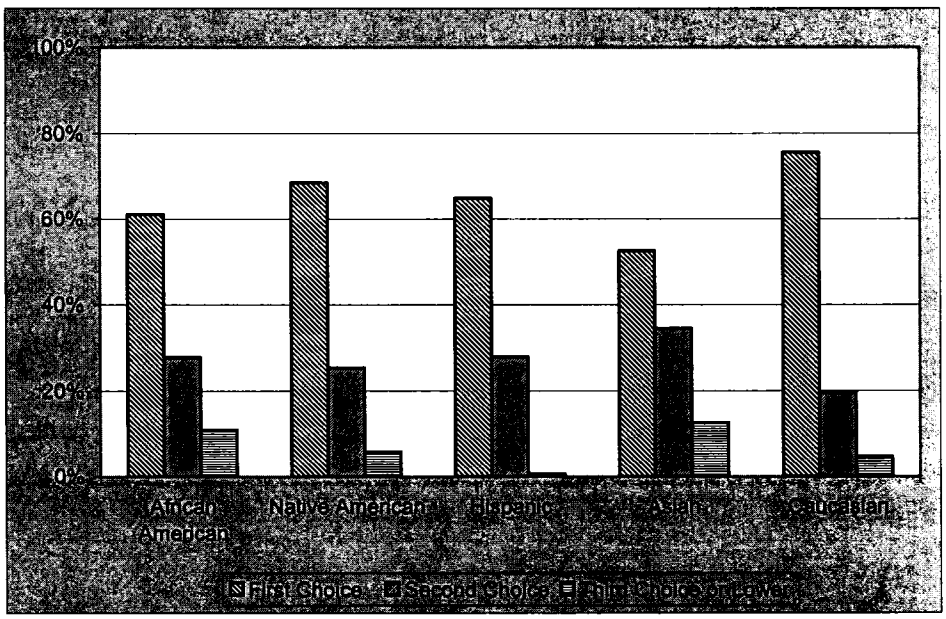

Figure 4.7. Percentage differences between initial institutional choice/commitment levels by student ethnicity.

degree, 71.2% a bachelor's degree, 11.5% a master's degree or beyond, and 1.9% attended for other purposes. For Hispanic students, 19% of the students intended to complete an associate's degree, 60.3% a bachelor's degree, 18.6% a master's degree or beyond, with 2.1% attending the target institution for other purposes, such as job training, certification requirements, and self-improvement. For Asian students, 10.3% students intended to complete an associate's degree, 67.8% a bachelor's degree, 20.4% a master's degree or beyond, with 1.5% attending the target institution for other purposes, such as job training, certification requirements, and self-improvement. For Caucasian students, 18.2% intended to complete an associate's degree, 61.6% a bachelor's degree, 14.9% a master's degree or beyond, with 5.4% attending the target institution for other purposes, such as job training, certification requirements, and self-improvement. Figure 4.8 shows the *initial educational goals* of the five ethnic groups.

Results of Research Question 4

Are there differences among the students who are younger than 25 and those 25 and over on the responses to the constructs represented in the theoretical model?

For this research question independent samples *t* tests, chi-square tests, and Mann–Whitney analyses were employed to test for any differences between age groups of students on constructs represented in the path diagram. The design was between groups with two levels (those students younger than 25 and those students over 25).

Table 4.6 summarizes the results of the 11 independent *t* tests that were performed. Three variables showed significant differences at the $p < .003$ level: *financial attitudes, intent to re-enroll,* and *academic GPA.* Evaluating age on *financial attitudes*, $t(4,449) = -2.94$, $p = .003$, $d = .10$. Students 25 years and older had a greater satisfaction

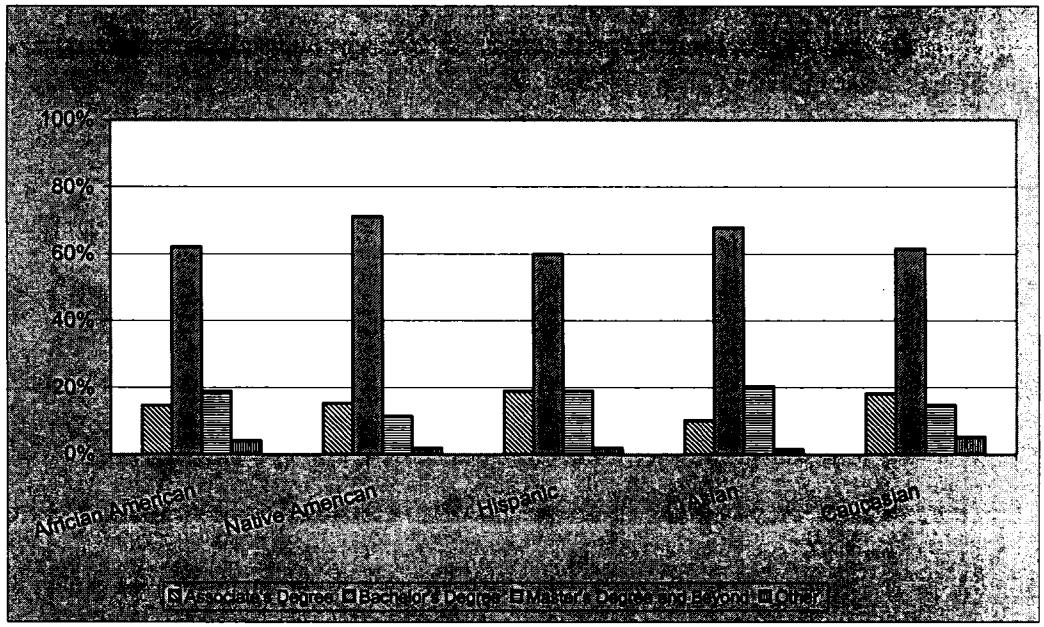

Figure 4.8. Percentage differences in initial educational goals by student ethnicity.

Table 4.6

Results of t Tests on Age Differences for the Constructs of the Theoretical Model

	18-24 years (n = 2,870)		25 years and older (n = 1,591)			
Model constructs	*M*	*SD*	*M*	*SD*	*t*	*p*
Educational quality	5.74	1.07	5.74	1.10	0.06	.95
Communication/ Justice	4.97	1.09	4.99	1.10	−0.36	.72
Sense of community	5.32	1.05	5.36	1.05	−1.27	.20
Campus life	4.96	1.16	4.94	1.13	0.34	.74
Faculty-student informal interaction	5.29	1.06	5.39	1.05	−2.84	.01
Academic development	5.53	0.96	5.55	0.96	−0.69	.49
Faculty-student formal interaction	5.30	1.06	5.36	1.08	−2.06	.04
Financial attitudes	4.86	1.29	4.97	1.27	−2.94	.003*
Overall satisfaction	5.10	1.11	5.19	1.09	−2.44	.01
Intent to re-enroll	5.31	1.20	5.50	1.18	−4.99	< .001*
Academic GPA	2.59	0.95	3.13	0.90	−17.08[a]	< .001*

[a] Levene's F was statistically significant ($p < .003$), so the "equal variances not assumed" t was used.

* Statistically significant after Bonferroni correction.

with financial attitudes ($M = 4.97$) than those students younger than 25 ($M = 4.86$). The results revealed that one could be 95% confident that the mean difference between the two age groups is between .04 and .20 and that there was a small effect size.

Comparing *age* on *intent to re-enroll*, $t(4,500) = -4.99, p < .001, d = .16$. Students 25 years old and older are also more likely to re-enroll at the institution ($M = 5.50$) than students younger than 25 ($M = 5.31$). The results indicate that one could be 95% confident that the mean difference between the two age groups is between .11 and .26 and that there was a small effect size.

Assessing *age on academic GPA*, $t(2,940) = -17.08, p < .001, d = .58$ with equal variances not assumed. Students 25 and older have higher GPAs ($M = 3.13$) than students younger than 25 ($M = 2.60$). The confidence interval results reveal that one could be 95% confident that the mean differences in GPA for the two different age groups is between .47 and .60 grade point and that there was a large effect size.

It is worth mentioning that if the more conservative Bonferroni correction had not been employed, then *faculty-student informal interaction, faculty-student formal interaction, and overall satisfaction* would have been significant at the .05 level. Due to this fact, *faculty-student informal interaction, faculty-student formal interaction, and overall satisfaction* may warrant further analysis. Effect sizes were calculated for all three variables, showing small ratings.

No significant differences were found with *educational quality, institutional communication, sense of community, campus life,* and *academic development.*

Chi-square tests were run to test for significance differences on *age* of student and *gender, academic preparedness, enrollment status*, and *employment status*. Table 4.7 reflects the results.

Statistically significant differences were found with all four variables. *Student gender* reported $\chi^2(1, N = 4{,}506)=24.33, p<.001$. Students 18-24 years of age are more likely to be male (64.9%). Likewise, students 25 and older are more likely to be female (39.3%). Effect size (phi=.073) indicates a small association and, thus, effect size.

Academic preparedness reported $\chi^2(2, N = 4{,}506) = 71.64, p < .001$. Students 18-24 years of age are more likely to be developmental (66.9%) or standard (70%) and less likely to be a quality student (56.6%). Students 25 and older are more likely to be a

Table 4.7

Results of Chi-square Comparisons of Age Differences on Gender, Academic Preparedness, Enrollment Status, and Employment Status

Variable	18-24 years (n = 2,895) %	25 years or older (n = 1,611) %	χ^2	p
		Gender		
Male	64.9%	35.1%		
Female	60.7%	39.3%	24.33	< .001*
		Academic preparedness		
Developmental	66.9%	33.1%		
Standard	70.0%	30.0%		
Quality	56.6%	43.4%	71.64	< .001*
		Enrollment status		
Part-time	38.5%	61.5%		
Full-time	71.5%	28.5%	362.97	< .001*
		Employment status		
Part-time	40.9%	59.1%		
Full-time	83.1%	16.9%		
Not employed	71.8%	28.2%	715.19	< .001*

* Statistically significant after Bonferroni correction.

quality student (43.4%), and less likely to be standard (30%) or developmental (33.1%). Effect size (Cramer's $V = .13$) indicates a small association and, thus, effect size.

Enrollment status reported $\chi^2(1, N = 4{,}506) = 362.97, p < .001$ with phi = .284. Students 18-24 are more likely to be full-time students (71.5%) than part-time (38.5%). Students 25 and older are more likely to be part-time students (61.5%) rather than full-time (28.5%). Effect size (phi =.284) revealed a medium association and effect size for the two variables.

Employment status reported $\chi^2(2, N = 4{,}506) = 715.18, p < .001$. Students 18-24 are more likely to be either employed full-time (83.1%) or not employed at all (71.8%). Students 25 and older are more likely to be employed part-time and were less likely to be employed full-time (16.9%) or not employed (28.2%). Effect size (Cramer's $V = .40$) indicates a medium association among the variables.

Because *initial institutional choice/commitment* was skewed, a Mann–Whitney nonparametric test was run to test differences among the two different age groups of students and *initial institutional choice/commitment*. Statistically significant findings were observed; $U = -11.52$, $p<.001$. Students 18-24 were more likely to choose the institution as their first choice, with students 25 years and old more likely to choose the institution as their second or third choice.

The following descriptive data were included to describe *age* on the variables *initial educational goals*. Comparing *educational goals on age* students 18-24, 16.8% intend to complete an associate's degree, 62% a bachelor's degree, 18.5% a master's degree and beyond, with 2.6% attending the target institution for other purposes such as job training, certification requirements, and self improvement. For students 25 years and

older, 16.6% intend to complete an associate's degree, 62.6% a bachelor's degree, 13.7% a master's degree and beyond, with 7.2% attending the target institution for other purposes such as job training, certification requirements, and self improvement. Figure 4.9 illustrates the initial educational goals for those students who are 18-24 and those who are 25 and older.

Results of Research Question 5

Are there differences between the students' responses in their first year (freshman) and the same students in their second year in regards to the constructs represented in the theoretical model? For simplicity the students' first year is labeled "Year 1" and the same students' second year in college is labeled "Year 2".

For this research question, a paired *t* test was employed to investigate differences between the same 697 students who had both data for Year 1 and Year 2 on the Student

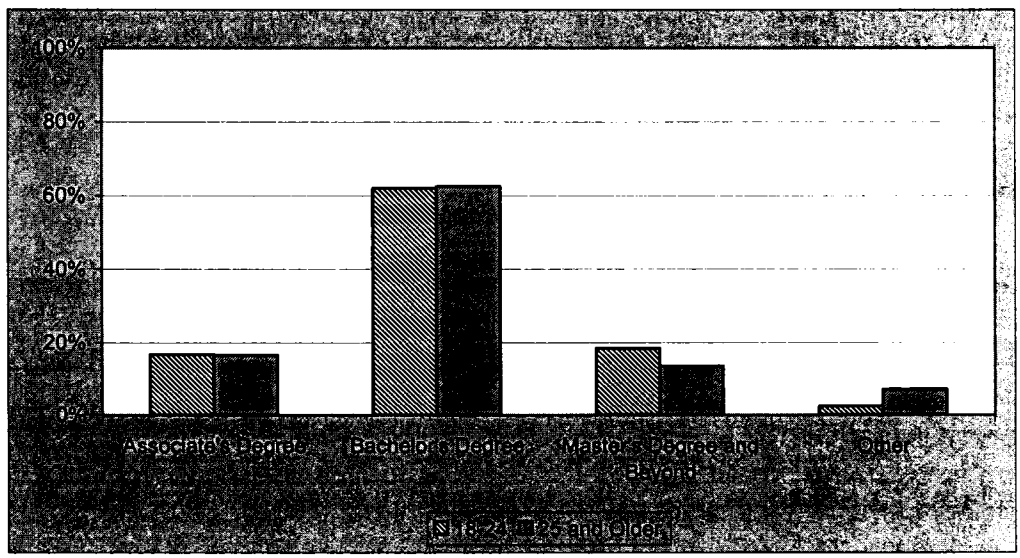

Figure 4.9. Percentage differences in initial educational goals by student's age (18-24 years old and students 25 years and older).

Satisfaction Inventory (SSI). Table 4.8 summarizes the results of the 11 paired *t* tests that were performed. Eleven variables showed statistically significant differences at $p < .003$; *educational quality, institutional communication, sense of community, campus life, faculty/student informal interaction, academic development, faculty/student formal interaction, financial attitudes, overall satisfaction* and *intent to re-enroll.*

Comparing satisfaction with the *educational quality* the institution was providing from Year 1 to Year 2, $t(678) = -8.25, p < .001$. Students' satisfaction with the quality of education the institution is providing was higher in Year 1 ($M = 5.78$) than in Year 2 ($M = 5.41$). The effect size ($d = .33$) was small to medium. Comparing *institutional communication* over time, $t(686) = -11.73, p < .001$. Student's perspective with the

Table 4.8

Results of t Tests on Differences in Student Responses to the Student Satisfaction Inventory from the Students in Year 1 and the Same Students in Year 2

	Year 1 satisfaction ($n = 697$)		Year 2 satisfaction ($n = 697$)			
Model constructs	*M*	*SD*	*M*	*SD*	*t*	*p*
Educational quality	5.78	1.09	5.41	1.20	−8.25	< .001*
Communication/ Justice	5.07	1.05	4.56	1.25	−11.73	< .001*
Sense of community	5.42	1.05	4.98	1.14	−11.07	< .001*
Campus life	5.02	1.14	4.68	1.18	−7.38	< .001*
Faculty-student informal interaction	5.42	1.04	5.02	1.16	−9.11	< .001*
Academic development	5.63	0.92	5.23	1.07	−9.90	< .001*
Faculty-student formal interaction	5.43	1.03	4.98	1.21	−10.24	< .001*
Financial attitudes	4.97	1.24	4.60	1.30	−7.22	< .001*
Overall satisfaction	5.01	1.12	4.84	1.18	−3.93	< .001*
Intent to re-enroll	5.49	1.15	4.99	1.32	−10.48	< .001*

* Statistically significant after Bonferroni correction.

ability of the institution to communicate fairly and justly was 5.07 during Year 1 of the study and only 4.56 in Year 2. Effect size for this pair was medium ($d = .44$). Comparing *sense of community* on campus over time, $t(687) = -11.07, p < .001$. The student's perception of the campus as a caring community was higher for Year 1 ($M = 5.42$) than it was for Year 2 ($M = 4.98$). Effect size indicates a medium rating ($d = .40$). Looking at *campus life* over the two years of the study, $t(674) = -7.38, p < .001, d = .29$. Student's satisfaction with *campus life* issues was higher for Year 1 ($M = 5.02$) than for Year 2 ($M = 4.68$), with a medium effect size. Analyzing *faculty-student informal interaction* over time, $t(687) = -9.11, p < .001$. The student's satisfaction with out-of-classroom interaction with faculty members was higher for Year 1 ($M = 5.42$) than Year 2 ($M = 5.02$). Effect size for this pairing was medium ($d = .36$).

Comparing *academic development* from the students' first year (Year 1) to the students' second year (Year 2), $t(686) = -9.91, p < .001$. Student's satisfaction with the academic environment was higher during their first year ($M = 5.63$) than in their second year ($M = 5.23$). Effect size calculation revealed a medium effect size ($d = .40$). Looking at *faculty-student formal interaction* over the two years, $t(687) = -10.24, p < .001, d = .39$. The student's satisfaction with their faculty members in the classroom was higher for Year 1 ($M = 5.42$) than it was for Year 2 ($M = 4.98$) with a medium effect size. For *intent to re-enroll*, $t(691) = -10.48, p < .001, d = .40$. The student's intent to re-enroll at the target institution was higher in Year 1 ($M = 5.49$) of the study than in Year 2 ($M = 4.99$) of the study. The effect size ($d = .40$) was medium. For *overall satisfaction*, $t(687) = -3.93, p < .001, d = .16$. The overall satisfaction level was 5.01 during Year 1 and 4.84 during Year 2, with a small effect size. Overall, looking at mean scores over time; the

same students reported significantly higher ratings during their first year of college than in their second year, indicating declining satisfaction with all aspects of the institution.

Results of Research Questions 6 and 7

Is the path model consistent with the observed correlations among the variables? The model describes four sets of explanatory variables and how they relate to the outcome. Additionally, if the model is consistent, what are the estimated direct, indirect, and total effects among the variables?

The path model was reduced from 16 variables to 11 variables (see Table 3.9). Multiple indicators were used to measure several of the constructs of the path model. Three variables, *educational quality, communication and justice,* and *sense of community,* were combined to create one variable titled *institutional variables.* The two variables *campus life* and *faculty-student informal interaction* were combined to create one variable titled *social variables.* Lastly, both *academic development* and *faculty-student formal interaction* were combined to create one variable titled *academic variables.* Additionally, *employment status* and *educational goals* were eliminated from the model due to violation of the assumptions of path analysis.

The reduced model set out to test four sets of explanatory variables and how they relate to the outcome. The four sets of constructs are (a) background attributes (*gender, academic preparedness, enrollment status,* and *initial institutional choice/commitment*), (b) *institutional variables,* (c) interactional variables (*GPA, social variables, academic variables, financial attitudes/access*), and (d) short-term outcome (*satisfaction*) and the outcome (*intent to re-enroll*).

Two separate models were tested using path analysis. The Year 1 model represents the students' first year and is therefore labeled Year 1 (see Figure 4.10). The Year 2 model represents the same students in their second year in college and is labeled Year 2 (see Figure 4.11).

Year 1—The Students' First Year

Model Fit

Several model fit indexes were employed to determine if the model was a reasonable approximation of the data. Raykov and Marcoulides (2000) suggested using multiple indexes to determine model fit. For the Year 1 model, fit indexes used to evaluate model fit were chi-square, comparative fit index (CFI), root mean square error of approximation (RMSEA), confidence intervals of the RMSEA, and analysis of the residuals. Overall fit index readings for Year 1 were $\chi^2 = 1346.30$, $p < .001$, CFI = .93, RMSEA = .11. For overall model fit, if CFI is close to 1.0, it can be stated that the model is a reasonable approximation of the data (Raykov & Marcoulides, 2000; Wolfe, 2003). Analysis of the confidence interval of RMSEA revealed a difference of less than .05, again pointing to a plausible model fit. These are all summaries of model fit and assess the model only in its entirety. An analysis of the residuals was conducted because the chi-square value was significant. The chi-square index is rejected when the model produces a p value that is less .05 and is retained when the p value is greater than .05. With path analysis, one never confirms that these relationships exist, one only rejects the relationships (Raykov & Marcoulides, 2000). After reviewing the variable variances and

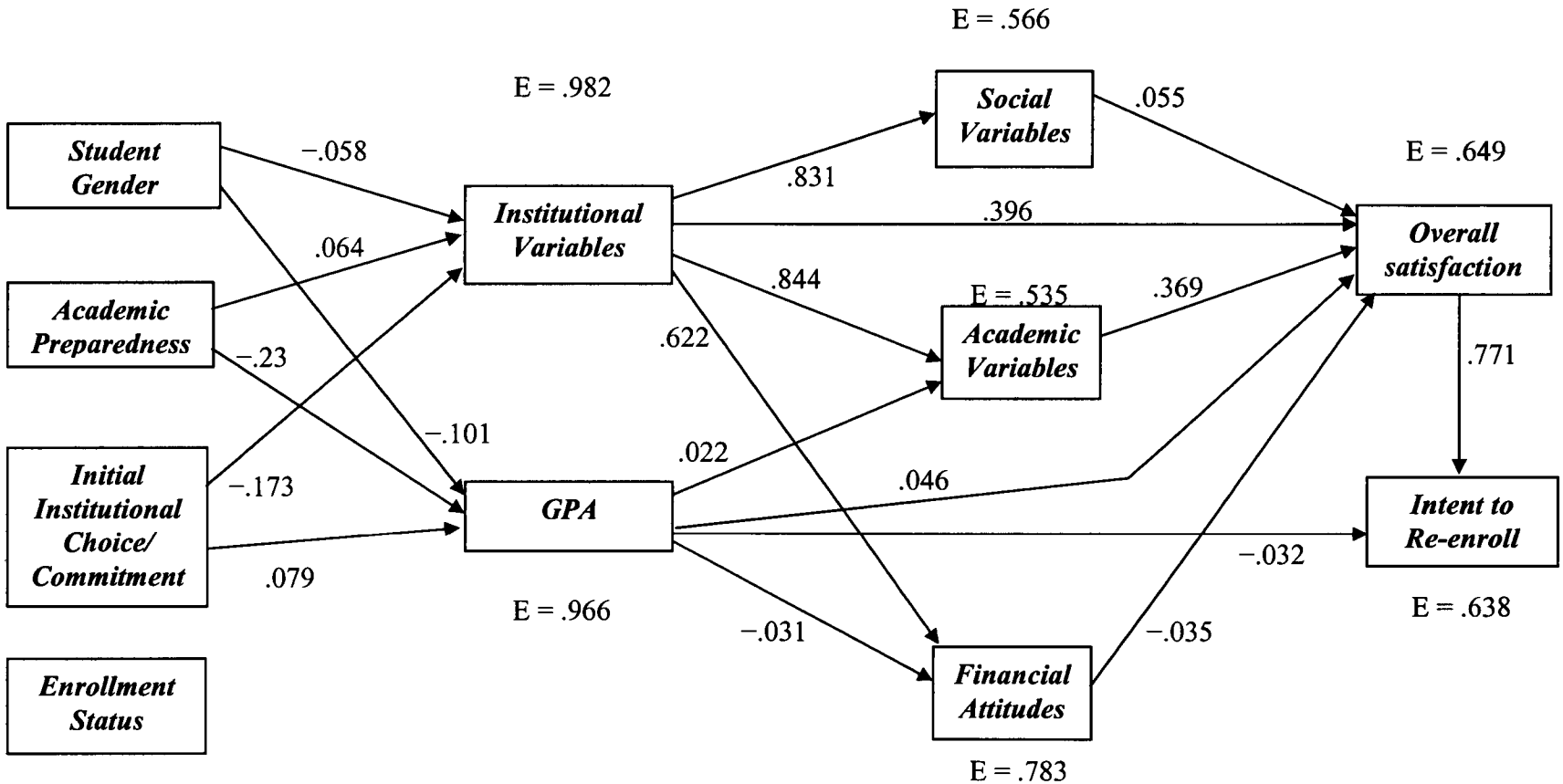

Figure 4.10. The path analytic model for Year 1.

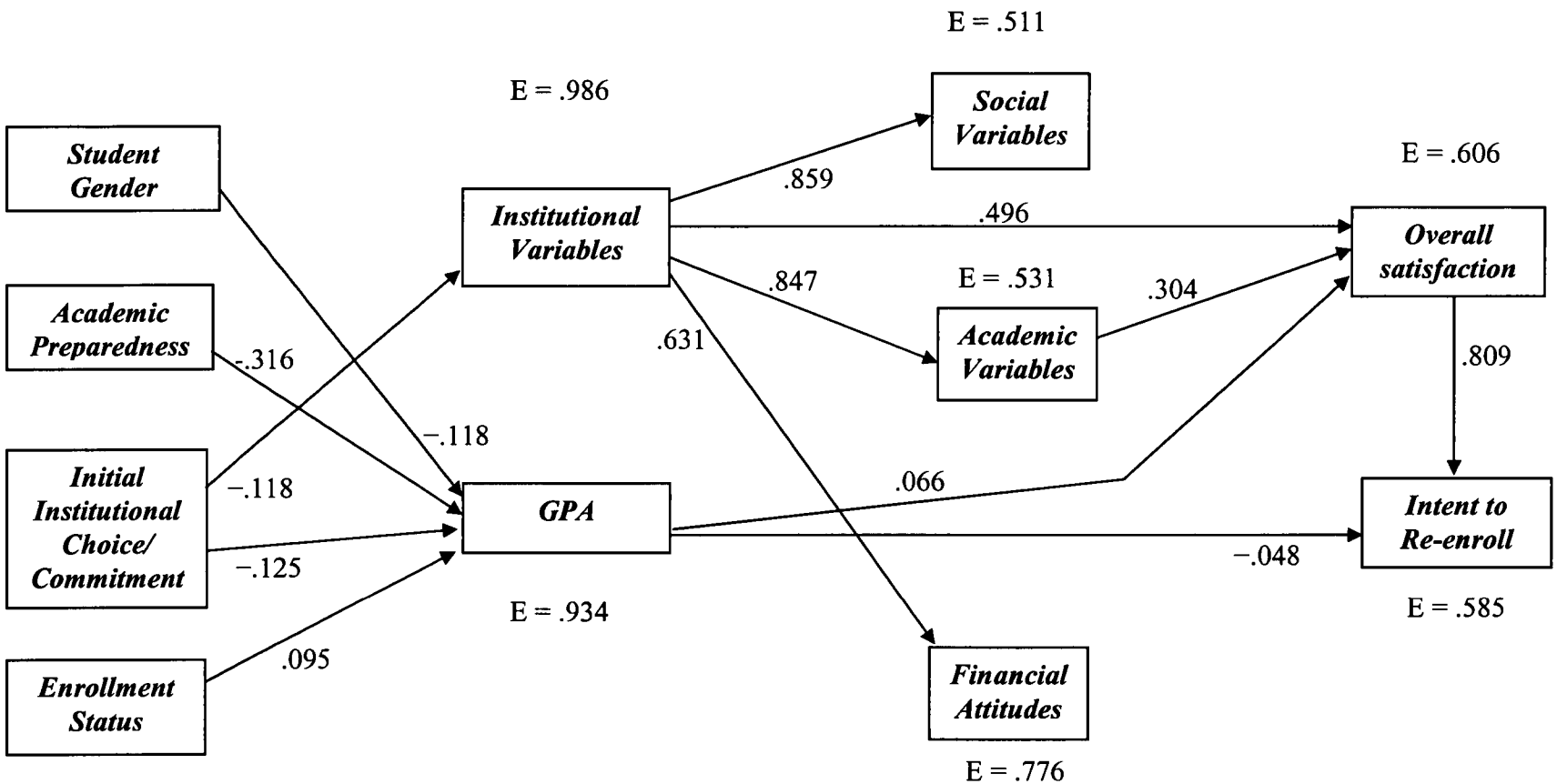

Figure 4.11. The path analytic model for Year 2.

covariances, it was determined that the model did a good job of reproducing the individual elements of the matrix. Raykov and Marcoulides (2000) indicated "this paradox may emerge because the chi-square is a measure of overall fit" (p. 42). All of these indexes collectively show that the model for Year 1 is a reasonable approximation of the data. Furthermore, the only statistically nonsignificant pathways for Year 1 were student *enrollment status* (full-time versus part-time) and *academic preparedness* on *intent to re-enroll.* All other pathways were statistically significant. However, any path coefficient less than .05 should be interpreted with caution (Pascarella et al., 1983).

Results

Table 4.9 displays the statistically significant and nonsignificant pathways for the path model for the students' first year (Year 1). Hypothesized pathways were established based on an extensive review of the literature. See Figure 4.10 for the path model and statistically significant pathways for the students' first year.

The 11 independent variables accounted for 59% of the variance ($R^2 = .592$) of a student's *intent to re-enroll* at the target institution. The beta from the unidentified exogenous variables (E_{11}) was .64; 41% ($.64^2$) of the variance in intent to re-enroll was explained by variables outside of the model not measured by the model (Raykov & Marcoulides, 2000). Numbers on the path are the path coefficients, or the partial regression coefficients, which are also displayed in parentheses below and in Table 4.9.

For *institutional variables*, only 3.5% of the variance was explained by the background variables, with the most contribution coming from *initial institutional choice/commitment* (−.173). Other significant variables include *academic preparedness*

Table 4.9

Beta Values (Partial Regression Coefficients) for Pathways in a Causal Model Predicting Intent to Re-enroll from the Students' First Year Data (N = 4,571)

Pathway	R^2	β
Background to Institutional variables	.035	
Enrollment status to Institutional variables		−.008
Academic preparedness to Institutional variables		.064*
Initial institutional choice/commitment to Institutional variables		−.173*
Student gender to Institutional variables		−.058
Background to GPA	.068	
Enrollment status to GPA		.019
Academic preparedness to GPA		−.230*
Initial institutional choice/commitment to GPA		−.079*
Student gender to GPA		−.101*
Institutional variables to Social variables	.691	
Institutional variables to Social variables		.831*
Prior to Academic variables	.714	
Institutional variables to Academic variables		.844*
GPA to Academic variables		.022*
Prior to Financial attitudes	.387	
Institutional variables to Financial attitudes		.622*
GPA to Financial attitudes		−.031*
Prior variables to Overall satisfaction	.578	
Social variables to Overall satisfaction		.055*
Academic variables to Overall satisfaction		.369*
Financial attitudes to Overall satisfaction		−.035*
Institutional variables to Overall satisfaction		.396*
GPA to Overall satisfaction		.046*
Prior variables to Intent to re-enroll	.592	
Overall satisfaction to Intent to re-enroll		.771*
GPA to Intent to re-enroll		−.032*
Academic preparedness to Intent to re-enroll		−.007

* $p < .05$.

(.064) and *student gender* (−.058). Both *initial institutional choice/commitment* and *student gender* were negative, meaning low *initial institutional choice/commitment* and male students were more likely to be satisfied with *institutional variables.*

For academic *GPA*, 6.8% of the variance was explained by the background variables (*academic preparedness, student gender, enrollment status* and *initial institutional choice/commitment*). The largest relationship to *GPA* was *academic preparedness* (−.230). Other statistically significant variables included *student gender* (male) (−.101) and *low initial institutional choice/commitment* (−.079).

For *campus life* and *faculty-student informal interactions* (the *social variables*), 69% of the variance was explained by the preceding *institutional variables,* which had a statistically significant relationship with the *social variables* (.831).

For *academic development* and *student-faculty formal interactions* (the *academic variables*), 71% of the variance was explained by the preceding variables. Statistically significant contributions were *institutional variables* (.844) and *GPA* (.022).

For *financial attitudes*, 39% of the variance was explained by the predictor variables. *Institutional variables* were the largest contribution to *financial attitudes* (.622) but low *GPA* (−.031) was also a statistically significant predictor.

For *overall student satisfaction*, 58% of the variance can be explained by the independent variables. The largest contribution to *overall student satisfaction* was *institutional variables*: the ability for the institution to provide quality education, the ability of the institution to communicate fairly and justly, and sense of community established on campus (.396). The student's satisfaction with their academic development and ability to form positive formal relationships with faculty (the *academic variables*)

was also a large predictor (.369). Other statistically significant variables included *GPA* (.046), *social variables* (.055), and low *financial attitudes* (−.035).

For *intent to re-enroll*, 59% of the variance can be explained by the independent variables. Of the variables related to *intent to re-enroll, overall satisfaction* (.770) was the strongest, indicating that for this model, students who were more satisfied with their college experience were also more likely to re-enroll at the target institution. The other variables related to *intent to enroll* included low *GPA* (−.032).

Causal Effects

One of the benefits of path analysis is that it allows the researcher to identify not only the direct effects of each independent variable but also the indirect effects through intervening variables (Mertler & Vannatta, 2001). The direct and indirect effects represent the total influence of one variable on another (Bean, 1982, Wolfe, 2003). A direct effect is defined as the "associated structural coefficient that links the two variables (Mueller, 1996, p. 2). An indirect effect is the "product of the coefficients along a specific structural chain of paths that link the two variables" (Mueller, p. 2). These indirect effects were calculated and statistically tested for significance. Indirect effects provide a way to understand the interrelationships between the variables in the model and to guide future research (Bean & Metzner, 1985). The total or sum of the direct and indirect effects is defined as the total effects for that variable. Tables 4.10-4.14 show the total effects for each of the variables presented in the model for the students' first year at the institution (Year 1).

One must be cautious when interpreting causality among variables, as the issue of causality has created much discussion in the research community (Mueller, 1996). These

Table 4.10

Direct, Indirect, and Total Effects on Financial Attitudes for Year 1

Variables	Direct Effects on Financial Attitudes	Indirect Effects Through GPA	Indirect Effects Through Institutional Variables	Total Effects for Financial Attitudes
GPA	−.031*			−.031*
Institutional variables	.622*			.622*
Academic preparedness		.007*	.039*	.047*
Student gender		.003*	−.036*	−.033*
Enrollment status			−.005	−.005
Initial institutional choice/commitment		−.002*	−.107*	−.105*

* Statistically significant effects.

Table 4.11

Direct, Indirect, and Total Effects on Academic Variables for Year 1

Variables	Direct Effects on Academic Variables	Indirect Effects Through GPA	Indirect Effects Through Institutional Variables	Total Effects for Academic Variables
Academic GPA	.022*			−.022*
Institutional variables	.844*			.844*
Academic preparedness		−.005*	.054*	.049*
Student gender		−.002*	−.049*	−.051*
Enrollment status		.001	−.007	−.006
Initial institutional choice/commitment		−.002*	−.146*	−.148*

* Statistically significant effects.

Table 4.12

Direct, Indirect, and Total Effects on Social Variables for Year 1

Variables	Direct Effects on Social Variables	Indirect Effects Through Institutional Variables	Total Effects for Social Variables
Institutional variables	.831*		.831*
Academic preparedness		.053*	.053*
Student gender		−.048*	−.048*
Enrollment status		−.006	−.006
Initial institutional choice/commitment		−.144*	−.144*

* Statistically significant effects.

models suggest only the possibility that the observed relationship may be causal or, said another way, structural (Braxton et al., 1988; Mueller, 1996). The next section reveals all direct and indirect effects for each of the variables in the model.

Financial Variables. Table 4.10 shows that for Year 1, significant direct effects on *financial attitudes* were *institutional variables* and *GPA*. The table also shows in the second and third columns the significant indirect effects of the student's *gender,* the *academic preparedness* of the student prior to enrollment, and the *initial institutional choice/commitment* of the student, based on whether the institution was the student's first, second, or third choice. Although *student gender, academic preparedness,* and *initial institutional choice/commitment* did not affect *financial attitudes* directly, they did affect both *GPA* and *institutional variables* directly, which in turn affected *financial attitudes* and *access*. For example, *academic preparedness* had indirect effects through *GPA* (.007) and *institutional variables* (.039) equaling a total effect of .047 for *financial attitudes.* One can see how the identification of these indirect affects assists in understanding the

Table 4.13

Direct, Indirect, and Total Effects on Overall Satisfaction for Year 1

Variables	Direct Effects on Overall Satisfaction	Indirect Effects Through GPA	Indirect Effects Through Institutional Variables	Indirect Effects Through Social Variables	Indirect Effects Through Financial Attitudes	Indirect Effects Through Academic Variables	Total Effects on Overall Satisfaction
Financial variables	-.035*						-.035*
Social variables	.055*						.055*
Academic variables	.369*						.369*
Academic GPA	.046*				-.001*	.008*	.055*
Institutional variables	.396*			.045*	-.022*	.311*	.731*
Academic preparedness		-.012*	.046*				.034*
Student gender		-.006*	-.042				-.048*
Enrollment status			.005				.005
Initial institutional choice/commitment		-.004*	-.126*				-.131*

* Statistically significant effects.

Table 4.14

Direct, Indirect, and Total Effects on Intent to Re-enroll for Year 1

Variables	Direct Effects on Intent to Re-enroll	Indirect Effects Through GPA	Indirect Effects Through Institutional Variables	Indirect Effects Through Social Variables	Indirect Effects Through Financial Variables	Indirect Effects Through Academic Variables	Indirect Effects Through Satisfaction	Total Effects on Intent to Re-enroll
Overall satisfaction	.771*							.771*
Financial variables							-.027*	-.027*
Social variables							.042*	.042*
Academic variables							.284*	.284*
Academic GPA	-.032*				-.001*	.006*	.036*	.010*
Institutional variables				.035*	-.016*	.240*	.305*	.564*
Academic preparedness	-.007	.006*	.028*					.027*
Student gender		-.002*	-.032*					-.034*
Enrollment status			-.004					-.004
Initial institutional choice/commitment		-.001*	-.097*					-.098*

* Statistically significant effects.

interrelationships between background variables, *institutional variables,* and *financial attitudes*. However, there appears to be only weak evidence that *enrollment status* (full-time or part-time) might matter in affecting *financial attitudes*. Note the total effects for *GPA, student gender,* and *initial institutional choice/commitment* were negative, which means that low *GPA*, being male, and lower *initial institutional choice/commitment* are more likely to be satisfied with financial aid issues. Table 4.10 displays all direct and indirect effects of *financial attitudes* for Year 1.

Academic Variables. For Year 1, *GPA and institutional variables* had a significant direct effect on *academic variables*. Again, three out of the four background variables had significant indirect effects on *academic variables*. *Academic preparedness, student gender,* and *initial institutional choice/commitment* had indirect effects that mediated through *GPA* and *institutional variables.* Note the total effects for *student gender* and *initial institutional choice/commitment* were again negative, which means that males and lower *initial institutional choice/commitment* are more likely to be satisfied with *academic variables*. Table 4.11 shows the total effects on *academic variables*.

Social Variables. For Year 1, *institutional variables* had a significant direct effects on *social variables*. Similar to *academic variables*, three out of the four background variables had significant indirect effects on academic variables. *Academic preparedness*, student (male) *gender*, and (low) *initial institutional choice/commitment* all showed indirect effects that mediated through *institutional variables*. Although *student gender, academic preparedness,* and *initial institutional choice/commitment* did not affect *social variables* directly, they affected *GPA* and *institutional variables* directly,

which, in turn, affected *social variables*. Table 4.12 shows all of the effects on *social variables*.

Overall Satisfaction. Important factors in influencing overall satisfaction directly were *institutional variables, academic variables, social variables, financial attitudes,* and *GPA.* In addition to having direct effects, *institutional variables* had significant indirect effect on satisfaction that mediated through *social variables* (.045), low *financial attitudes* (−.022), and *academic variables* (.311). *GPA* also had very small indirect effects on *overall satisfaction* that mediated through *financial attitudes* (−.001) and *academic variables* (.008).

Significant indirect effects on satisfaction were low *initial institutional choice/commitment, gender* (male), and *academic preparedness* mediated through *GPA* and *institutional variables.* Meaning that low *initial institutional choice/commitment, academic preparedness,* and *GPA* did not affect *overall satisfaction* directly, but did affect institutional variables and GPA, which in turn affected *overall satisfaction.* Table 4.13 displays all direct and indirect effects for *overall student satisfaction* for a students' first year (Year 1).

Intent to Re-enroll. Table 4.14 shows that for Year 1, *overall satisfaction* was the most important influence on *intent to re-enroll.* Low *GPA* also had a statistically significant direct effect on *intent to re-enroll.* Statistically significant indirect effects on *intent to re-enroll* were low *financial attitudes, social variables,* and *academic variables,* all of which mediated their effects through *overall satisfaction.* In addition to having direct effects on *intent to re-enroll,* both *institutional variables* and *GPA* had indirect effects on *intent to re-enroll,* mediating through *social, academic, and financial variables*

as well as *overall student satisfaction.* Other indirect effects were *student gender* (male) and low *initial institutional choice/commitment,* mediating their effects through *GPA* and *institutional variables.* Table 4.14 shows all effects for intent to re-enroll.

In summary, when observing the model for Year 1 in its entirety, *overall student satisfaction* has the greatest total effect on the student's *intention to re-enroll* at the target institution. Furthermore *institutional* and *academic variables* had statistically significant indirect effects on *intent to re-enroll.* Issues that revolve around the ability of the institution to provide quality education, communicate in a fair and just manner, and create a sense of community (the *institutional variables*) as well as satisfaction with the academic development and formal relationships with faculty (the *academic variables*) had statistically significant total effects on *intent to re-enroll.* Surprisingly, background variables seemed to have less of an effect during the students' first year than hypothesized.

Year 2—The Students' Second Year

The Year 2 model represents the same students in their second year in college and is labeled Year 2. Year 2 represents students who remained at the institution, had satisfaction data, and provided identification data ($N = 697$).

Model Fit

The same model evaluation and fit analysis was conducted to determine appropriate model fit for Year 2. The overall model fit indexes were $\chi^2 = 271.51$, $p < .001$, CFI = .93, RMSEA = .12. Further model fit analysis of RMSEA confidence intervals and residuals concluded that the model was a reasonable approximation of the data for Year 2 (Raykov & Marcoulides, 2000; Wolfe, 2003).

Results

Table 4.15 reveals the statistically significant and nonsignificant pathways for the students' second year (Year 2). Figure 4.11 displays the statistically significant pathways for the Year 2 path model.

The 11 independent variables accounted for 66% of the variance ($R^2 = .658$) of a student's *intent to re-enroll* at the target institution for the students' second year (Year 2). The path coefficient from the unidentified exogenous variables (E_{11}) was .59; 34% ($.59^2$) of the variance of *intent to re-enroll* is being explained by factors outside of the model.

For *institutional variables*, only 2.7% of the variance was explained by four exogenous variables. Low *initial institutional choice/commitment* (−.118) was the only contributor to *institutional variables.*

The four exogenous variables accounted for 13% of the variance in *GPA.* Variables with relationships with academic *GPA* include low *academic preparedness* (−.316), male *gender* (−.118), *enrollment status* (.095), and *low initial institutional choice* (−.125).

For *campus life* and *social environment* (*social variables*), 74% of the variance was explained by the preceding variables. *Institutional variables* were statistically significantly related to the social environment (.859).

For *academic development and faculty formal interactions* (*academic variables*), 72% of the variance is explained by the preceding variables. Significant contributions were *institutional variables* (.847).

Table 4.15

Beta Values (Partial Regression Coefficients) for Pathways in a Causal Model Predicting Intent to Re-enroll from the Students' Second Year Data (N = 697)

Pathway	R^2	β
Background to Institutional variables	.027	
Enrollment status to Institutional variables		.070
Academic preparedness to Institutional variables		.073
Initial institutional choice/commitment to Institutional variables		-.118*
Student gender to Institutional variables		-.026
Background to GPA	.128	
Enrollment status to GPA		.095*
Academic preparedness to GPA		-.316*
Initial institutional choice/commitment to GPA		-.125*
Student gender to GPA		-.118*
Institutional variables to Social variables	.738	
Institutional variables to Social variables		.859*
Prior to Academic variables	.718	
Institutional variables to Academic variables		.847*
GPA to Academic variables		.013
Prior to Financial attitudes	.398	
Institutional variables to Financial attitudes		.631*
GPA to Financial attitudes		-.006
Prior variables to Overall satisfaction	.633	
Social variables to Overall satisfaction		.058
Academic variables to Overall satisfaction		.304*
Financial attitudes to Overall satisfaction		-.047
Institutional variables to Overall satisfaction		.496*
GPA to Overall satisfaction		.066*
Prior variables to Intent to re-enroll	.658	
Overall satisfaction to Intent to re-enroll		.809*
GPA to Intent to re-enroll		-.048
Academic preparedness to Intent to re-enroll		-.040

* $p < .05$.

For *financial attitudes*, 40% of the variance was explained by the predictor variables. *Institutional variables* had the strongest relationship with *financial attitudes* (.622).

For *overall satisfaction* of the college experience, 63% of the variance can be explained by the independent variables. The variables with the strongest relationship to *overall student satisfaction* were *institutional variables* (.396) and the *academic environment* (.369) and *GPA* (.066).

For the preceding variables to *intent to re-enroll*, *overall satisfaction* was the strongest (.809).

Causal Effects

Direct and indirect effects were calculated for the students' second year (Year 2). Tables 4.16-4.20 show the total effects for each of the variables presented in the path model for Year 2.

Financial Attitudes. For Year 2, only *institutional variables* had a direct effect on *financial attitudes*. Thus there appears to be only weak evidence that *GPA* might matter in affecting *financial attitudes*. The only background variable that had a significant indirect effect, mediating through *GPA* and *institutional variables* on *financial attitudes* was low *initial institutional choice/commitment*. Table 4.16 presents the total effects for *financial attitudes*.

Academic Variables. For Year 2, *institutional variables* had a direct effect and statistically significant effect on *academic variables*. The only background variable that had a statistically significant effect on the *academic variables* was low *initial institutional*

Table 4.16

Direct, Indirect, and Total Effects on Financial Attitudes for Year 2

Variables	Direct Effects on Financial Attitudes	Indirect Effects Through GPA	Indirect Effects Through Institutional Variables	Total Effects for Financial Attitudes
Academic GPA	-.006			-.006
Institutional variables	.631*			.631*
Academic preparedness		.002	.046	.048
Student gender			-.016	-.016
Enrollment status			.044	.044
Initial institutional choice/commitment		-.074*		-.074*

* Statistically significant effects.

Table 4.17

Direct, Indirect, and Total Effects on Academic Variables for Year 2

Variables	Direct Effects on Academic Variables	Indirect Effects Through GPA	Indirect Effects Through Institutional Variables	Total Effects for Academic Variables
Academic GPA	.013			.013
Institutional variables	.847*			.847*
Academic preparedness		-.004	.061	.058
Student gender		-.002	-.022	-.024
Enrollment status		.001	.059	.060
Initial institutional choice/commitment		-.002*	-.099*	-.102*

* Statistically significant effects.

Table 4.18

Direct, Indirect, and Total Effects on Social Variables for Year 2

Variables	Direct Effects on Social Variables	Indirect Effects Through Institutional Variables	Total Effects for Social Variables
Institutional variables	.859*		.859*
Academic preparedness		.063	.063
Student gender		-.022	-.022
Enrollment status		.06	.06
Initial institutional choice/commitment		-.102*	-.102*

* Statistically significant effects.

choice/commitment. This effect mediated through *GPA* and *institutional variables*. Table 4.17 shows all of the effects for *academic variables*.

Social Variables. Institutional variables had a direct effect and statistically significant effect on social variables. Similar to *academic and financial attitudes*, the only background variable that had a significant indirect effect was *initial institutional choice/commitment. Initial institutional choice/commitment* mediated through *institutional variables*. Table 4.18 shows all of the effects for *social variables*.

Overall Satisfaction. Important factors in influencing satisfaction directly were institutional variables, academic variables, and GPA. Institutional variables also had significant indirect effects on satisfaction, mediating through financial, social and academic variables. Significant indirect effects on satisfaction were low initial institutional choice/commitment and enrollment status. These indirect effects mediated through GPA and institutional variables. Table 4.19 shows all of the effects for *overall satisfaction*.

Table 4.19

Direct, Indirect, and Total Effects on Overall Satisfaction for Year 2

Variables	Direct Effects on Overall Satisfaction	Indirect Effects Through GPA	Indirect Effects Through Institutional Variables	Indirect Effects Through Social Variables	Indirect Effects Through Financial Attitudes	Indirect Effects Through Academic Variables	Total Effects on Overall Satisfaction
Financial variables	-.047						-.047
Social variables	.058						.058
Academic variables	.304*						.304*
Academic GPA	.066*			.001	.004		.070*
Institutional variables	.496*			.049*	-.029*	.257*	.774*
Academic preparedness		-.022	.056				.034
Student gender		-.007	-.021				-.028
Enrollment status		.006	.053*				.061*
Initial institutional choice/commitment		-.008*	-.090*				-.100*

* Statistically significant effects.

Table 4.20

Direct, Indirect, and Total Effects on Intent to Re-enroll for Year 2

Variables	Direct Effects on Intent to Re-enroll	Indirect Effects Through GPA	Indirect Effects Through Institutional Variables	Indirect Effects Through Social Variables	Indirect Effects Through Financial Variables	Indirect Effects Through Academic Variables	Indirect Effects Through Satisfaction	Total Effects on Intent to Re-enroll
Overall satisfaction	.809*							.809*
Financial variables							-.038	-.038
Social variables							.047	.047
Academic variables							.246*	.246*
Academic GPA	-.048				-.001*	.003*	.053*	.009
Institutional variables				.040*	-.023*	.208*	.401*	.627*
Academic preparedness	.040*	-.004	.047					.083*
Student gender		-.002	-.016					-.017
Enrollment status		.001	.044					.045
Initial institutional choice/commitment		-.002*	-.073*					-.075*

* Statistically significant effects.

Intent to Re-enroll. For Year 2, *overall satisfaction* was again the most important influence on *intent to re-enroll.* Having a statistically significant indirect effect on *intent to re-enroll* was *academic variables*, which mediated through *overall satisfaction.* Additionally, both *GPA* and *institutional variables* had indirect effects that mediated through *social, academic, financial,* and *satisfaction variables.* Low *initial institutional choice/commitment* and *academic preparedness* also had statistically significant indirect effects, mediating through both *institutional variables* and *GPA.* Table 4.20 shows the total effects for *intent to re-enroll*

When analyzing the Year 2 model in its entirety, again *overall student satisfaction* had the greatest total effect on the student's *intention to re-enroll* at the target institution (.809). Similarly, *institutional* (.627) and *academic variables* (.246) continued to show statistically significant indirect effects on *intent to re-enroll.* Background variables also had a smaller effect on the Year 2 model than originally presumed.

In summary, the Year 1 and Year 2 models did a reasonable job of estimating the data. For the students' first year, 59% of the variance was explained for *intent to re-enroll,* with 67% being explained during the students' second year. Each of the variables and its effects contributed significantly to understanding the persistence process for both years of the study.

Results of Research Question 8

Is there a combination of (a) background attributes (*student gender, academic preparedness, enrollment status, initial institutional choice/commitment, employment status*); (b) institutional variables (*educational quality, communication/justice, sense of community*); (c) interactional variables (*social variables, academic variables, financial*

attitudes/access); and (d) short-term outcomes (*satisfaction, intent to re-enroll*) that predicts whether students graduates or not?

For this final analysis of student persistence, a logistic regression was employed to reveal variables that may predict student persistence. The outcome variable was whether the student graduated or did not graduate. Sixteen of the variables from the theoretical model were run on graduation status of the student for both Year 1 and Year 2 data of the students. Similar to the path model, the Year 1 model represents the students' first year and is therefore labeled Year 1. The Year 2 model represents the same students in their second year in college and is labeled Year 2.

Year 1---The Students' First Year

Two methods of logistic regression were conducted. The first analysis entered all of the variables together simultaneously. When all of the variables were considered collectively they significantly predicted graduation status of the student χ^2 (16, N = 3,536) = 1,599, $p < .001$. Approximately 36% (Cox & Snell) or 49% (Nagelkerke) of the variance in whether a student graduates can be predicted from the linear combination of the 16 independent variables. It should be noted that Cox and Snell R^2 is usually underestimated (Leech, Barrett, & Morgan, 2004). For Year 1, 78% of the students were predicted correctly. This combination of variables allowed us to predict students who graduated (80%) better than those who did not graduate (75%). Considered separately, *GPA, overall satisfaction, academic preparedness,* and *enrollment status* were related to graduation status. Table 4.21 reveals the results and odds ratios when all 16 variables are considered together. Results indicate only *student gender, enrollment status,* and *academic GPA* were statistically significantly related to graduation status at the .003

Table 4.21

Logistic Regression Predicting Who Will Graduate—The Students' First Year (Year 1)

Variable	β	*SE*	Odds Ratio	*p*
Student gender	.32	.09	1.4	< .001*
Academic preparedness	-.15	.13	0.86	.252
Enrollment status	.21	.11	1.2	.057
Initial institutional choice/commitment	.15	.10	1.2	.106
Educational quality	.07	.06	1.1	.264
Communication/justice	.03	.07	1.0	.728
Sense of community	-.14	.08	0.87	.083
Campus life	.08	.06	1.1	.162
Faculty-student informal interaction	.02	.07	1.0	.745
Academic development	-.04	.08	0.97	.637
Faculty-student formal interaction	-.07	.08	0.97	.637
Financial attitudes	-.01	.05	0.99	.865
Overall satisfaction	.19	.07	1.2	.007
Intent to re-enroll	-.02	.07	0.98	.805
Academic GPA	2.0	.08	7.7	< .001*
Constant	-6.5	.39	0.01	< .001

* Statistically significant after Bonferroni correction.

level. This suggests that some of the variables may have relationships with each other, thereby causing *student gender* and *overall satisfaction* to no longer be significant. It is common for interactional variables to have relationships with each other (Astin, 1993).

The odds ratios indicate that a student with a higher *GPA* is approximately 7.7 times more likely to graduate. A student is also 1.4 times more likely to graduate being a female, and much less likely to graduate being part-time.

It is worth mentioning that if the more conservative Bonferroni correction had not been employed, *overall student satisfaction* would have been significant at the .05 level. Due to this fact, *overall student satisfaction* may warrant further analysis.

For the second analysis, hierarchical logistic regression was conducted to assess whether the interactional variables contributed significantly to the model. The five background variables (*gender, academic preparedness, enrollment status, employment status and initial institutional choice/commitment*) were able to explain 7.8% to 10.4% of the variance of whether the student graduates or not. The background variables were able to predict correctly for 61% of the students with overall model at $\chi^2 = 286.01, p<.001$. When considering all five background variables, *academic preparedness and student enrollment status* were significant predictors of graduation status. When the remaining 11 interactional variables were added to the model the predictive power was enhanced, $\chi^2 = 1599.18, p <.001$. This result suggests that the interactional variables, specifically *GPA*, enhanced the prediction of whether a student graduates. As noted previously, *overall satisfaction* was significant at the .05 level and may warrant additional analysis. In summary, the Year 1 model showed that *GPA, student gender, and student enrollment status* were statistically significant in predicting whether a student graduates or not. Moreover, when controlling for the five background variables, the addition of the 11 interactional variables were able to add to the prediction of whether a student graduates.

Year 2—The Students' Second Year

The same technique was conducted using data from the students' second year. When all of the variables were considered collectively they significantly predicted graduation status of the student χ^2 (16, $N = 629$) = 219.83, $p < .001$. Approximately 30% (Cox & Snell) or 43% (Nagelkerke) of the variance in whether a student graduates can be predicted from the linear combination of the 16 independent variables. The model was able to predict graduation status correctly for 83% of the students, an increase of 5% from

the Year 1 model. Additionally this combination of variables allowed us to predict students who graduated better (93%) than those who did not graduate (56%). When looking at the variables individually, *enrollment status, academic preparedness,* and *GPA* were all significantly related to graduation status at the .003 level. Table 4.22 reveals the results and odds ratios when all 16 variables are considered together. For Year 2, only two variables were significantly related to whether a student graduated or not—*GPA* and *enrollment status*. Just as in the Year 1 model some of the variables may have had relationships with each other, causing *academic preparedness* to no longer be statistically

Table 4.22

Logistic Regression Predicting Who Will Graduate—The Students' Second Year (Year 2)

Variable	β	*SE*	Odds Ratio	*p*
Student gender	.45	.24	1.6	.068
Academic preparedness	-.43	.29	0.65	.138
Enrollment status	-2.4	.29	0.09	< .001*
Employment status	.08	.29	1.1	.794
Initial institutional choice/commitment	.19	.25	1.2	.439
Educational quality	.18	.17	1.2	.284
Communication/justice	.25	.16	1.3	.129
Sense of community	-.14	.20	0.87	.481
Campus life	.03	.14	1.0	.864
Faculty-student informal interaction	-.29	.18	0.75	.113
Academic development	-.10	.21	0.90	.624
Faculty-student formal interaction	.11	.19	1.1	.579
Financial attitudes	-.05	.12	0.95	.677
Overall satisfaction	.20	.18	1.2	.271
Intent to re-enroll	-.17	.18	0.85	.343
Academic GPA	2.3	.24	9.9	< .001*
Constant	-5.6	.98	0.01	< .001

* Statistically significant after Bonferroni correction.

significant (Astin, 1993). A student was 9.9 times more likely to graduate with a higher *GPA*, and was less likely to graduate being a part-time student.

For the second analysis hierarchical logistic regression was again conducted to access whether interactional variables contributed to the predictive power of the model for Year 2. When considering the five background variables, *academic preparedness* and *student enrollment status* were statistically significant predictors of graduation status. The five background variables were able to explain 11% to 17% of the variance of whether the student graduates or not. Additionally, the background variables were able to predict correctly for 76% of the students with overall model assessment at $\chi^2 = 76.29, p < .001$. When the remaining 11 interactional variables were added to the model the predictive power was again enhanced, $\chi^2 = 219.84, p < .001$. This result parallel's Year 1 results concluding that the 11 interactional variables assisted in the prediction of whether a student graduates.

In summary, the Year 2 model showed that academic *GPA* and *student enrollment status* were statistically significant in predicting whether a student graduates. Moreover, when controlling for the 5 background variables, the 11 interactional variables again added to the predictive power of the model that determined whether a student graduates.

CHAPTER 5

DISCUSSION

The primary purpose of this study was to investigate the influences on persistence decisions in college. A theoretical model was presented that focused on variables that are known to affect persistence decisions in higher education. Background characteristics, initial goals, and commitments of the students were collected to establish student profiles. Students' interactions with the institutional, academic, social, and external variables of their college environments were evaluated. These interactions were then tested to see the effects on short-term outcomes and persistence decisions.

The study was longitudinal in that persistence decisions were evaluated from matriculation to graduation. Data were collected in a three-step process over a 5-year period: 1999 (Year 1), 2000 (Year 2), and 2004 (Year 5). There were 4,571 students included in the first cohort. For Year 2, 697 students were still enrolled and responded to the Student Satisfaction Inventory (SSI) survey. Students who did not complete a survey and did not identify themselves in Year 2 could not be matched to their Year 1 responses and were dropped from the three-step longitudinal analysis. Out of the 697 students, 472 (68%) graduated by Fall 2004.

A secondary purpose of this analysis was to identify influences on student persistence to assist administrators, staff, and faculty members (a) to establish effective intervention strategies and (b) to refocus institutional resources for the intent to increase student success and persistence in nontraditional settings.

The following sections discuss the findings of the eight research questions presented in chapter 4 and introduce a revised theoretical model based on the results of this study. Additionally, recommendations for future research and practice are presented.

Discussion of Research Question 1

Research question 1 compared student responses to the constructs represented in the path diagram for students who persisted to Year 2 of the study to those who did not persist to Year 2. The four sets of constructs are: (a) background attributes (*student gender, academic preparedness, enrollment status, initial institutional choice/ commitment, initial educational goals*); (b) institutional variables (*educational quality, communication/justice, sense of community*); (c) interactional variables (*social variables, academic variables, external environment variables*); and (d) short-term outcomes (*satisfaction, intent to re-enroll*).

Out of the 4,571 students who started the study during Year 1, 70% ($N = 3,213$) were still enrolled during Year 2, with 30% ($N = 1,358$) dropping out. This finding is consistent with existing research of freshman year persistence identifying that on average, approximately one third of entering freshman leave that institution one year later (ACT, Inc., 2003; Beal & Noel, 1980; Levitz & Noel, 1989; Tinto, 1993).

Overall, students who persisted to Year 2 were more satisfied with the *educational quality* of the institution, their *academic* and *classroom relationships with faculty* members, their *overall satisfaction* with their college experience, possessed much higher *GPA*s, and were *more likely to re-enroll* at the institution. Additionally, *student gender, academic preparedness,* and *full-time enrollment status* also showed significant differences between students who persisted to Year 2 and those who did not.

Educational Quality

Significant differences were found for Year 2 persistence in regard to *educational quality*. Students who persisted to Year 2 were more satisfied with the quality of education the institution was providing. This is an interesting outcome in that the institution being studied is defined by ACT (2004a) as an "open" institution; meaning an institution that is generally open to all students with a high school diploma or equivalent. This finding shows that regardless of selectivity or the academic preparedness of the student body, students can achieve success when there is a commitment to academic excellence on campus. In fact, this study shows that the institution retains 70% of its students between the first and second year. This is considerably higher than the average persistence rate for "open" institutions, which ACT (2004a) reported at 59%. This result validates Terenzini and Pascarella's (1994) theory that a positive education climate coupled with good programming can enhance persistence, regardless of selectivity of the institution. Moreover, these results indicate that selectivity alone does not define academic quality or guarantee student success in higher education. Student success can be achieved with academically diverse student populations.

Faculty-Student Formal Interactions

Significant differences were found for Year 2 persistence on *faculty-student formal interactions*. Students who persisted to Year 2 were also more satisfied with their in-classroom relationships with faculty members. This finding was expected and well supported in the literature. Students who interact and form positive academic/formal relationships with faculty members were more likely to persist and/or to continue their academic career (Astin, 1975, 1993; Beal & Noel, 1980; Bean, 1986; Braxton et al.,

2000; Hossler & Bean, 1990; Johnson, 1997; Tinto, 1987, 2000). This finding adds further support to the importance of the interactions that take place in the classroom. This result is especially important for commuter institutions, where the classroom may be the only opportunity for students to interact with faculty and peers. Furthermore, this result highlights not only the importance of these relationships but the importance of these relationships even during the first year of college (Milem & Berger, 1997).

Overall Student Satisfaction

Statistically significant differences were found for Year 2 persistence on *overall student satisfaction*. Students who persisted to Year 2 were more satisfied with their overall college experience. This supports the importance and inclusion of satisfaction in nontraditional settings when studying persistence (Astin, 1993, Bailey et al., 1998; Bean, 1990; Bean & Metzner, 1985, Elliot, 2002). Not only does this finding support the inclusion of this issue in persistence research but it also shows that students who are more satisfied with their overall student experience are more likely to continue their academic career.

Intent to Re-enroll

Significant differences were found for Year 2 persistence on *intent to re-enroll*. Students who intended to re-enroll at the institution during Year 1 persisted to Year 2 at higher rates than those that did not intend to re-enroll. This result confirms Bean's (1982b), Berger and Braxton's (1998), and Pascarella et al.'s (1983) models where *intent to re-enroll* was the single best predictor of persistence decisions. However, both Bean's and Berger and Braxton's models tested their theories in traditional residential institutions. These results confirm that *intent to re-enroll* is also a strong predictor of

student persistence for a commuter institution. Additionally, this finding adds further support for the usage of this variable in both traditional and nontraditional settings.

Student Gender

Statistically significant differences were found for Year 2 persistence on *student gender*. Females were more likely to persist to Year 2 compared to their male counterparts. The finding that females persisted at higher rates compared to males was somewhat unexpected due to the gender composition of the institution (73% male, 27% female). National demographic data show that more females attend colleges than males. Horn & Berger (2004) reported the average national gender breakdown on college campuses at 55% female to 45% male. This result contradicts the "lack of critical mass theory" and "chilly climate" issues that are typical of curricula dominated in the science and technology fields (Hall & Sandler, 1984; McGrath-Cohoon, 2001; Whitt et al., 1999). However, this supports theory in traditional institutions where female students are more likely to persist than male students (Chen & Thomas, 2001; Horn & Berger, 2004; Pascarella et al., 1983; Spady, 1971). As stated earlier, females dominate the college population in traditional institutions. This outcome is of particular importance because females do not dominate the student population at the target institution. In fact, it is common for a typical classroom to have only one or two females in a class. The obvious lack of critical mass, role models, female professors, and "chilly climate" issues did not demonstrate to be a significant issue for female persistence at this institution. However, what should be of great concern is the underrepresentation of female students in this student population.

Academic preparedness

Statistically significant differences were found for Year 2 persistence on *academic preparedness*. Students who entered the institution rated as quality students persisted to Year 2 at higher rates compared to developmental and standard students. Although expected, this result endorses the theory that past academic performance can be an important factor in persistence decisions (Astin, 1993; Bean, 1986, 1990; Chen & Thomas 2001; Lenning et al. 1980; Pascarella et al., 1983).

Enrollment Status

Significant differences were found with Year 2 persistence and whether a student was a part-time or full-time student. Students who attended college full-time also persisted to Year 2 at higher rates than part-time students. These lower persistence rates could be due to the other commitments. Students who attend part-time do so because of either employment obligations or other external demands that prevent them from attending full-time (Bean & Metzner, 1985). The lower persistence rates for part-time students could also be due to the fact that these students spend less time on campus and therefore have little opportunity to interact with their peers, faculty members, and other elements of the college environment. These results corroborate prior studies that point out that students who can devote their full attention and time to college are more likely to persist (Astin, 1975, 1993; Bean & Metzner, 1985).

Academic GPA

The most greatest statically significant difference between students who persisted to Year 2 of the study and those who did not was their *GPA*. Students who were still enrolled in Year 2 of the study had as much as one grade point higher ($M = 3.09$) than

those students who dropped out ($M = 2.07$). The literature shows compelling support for the relationship between strong academic performance and persistence (Astin, 1993; Bean, 1990; Chen & Thomas, 2001; Ishitani & DesJardins, 2002-2003; Lenning et al., 1980; Tinto, 1975). This result adds further support that strong academic performance (*GPA*) is related to persistence.

No significant differences were found for Year 2 persistence on *institutional communication, sense of community, faculty-student informal interactions, campus life, academic development, financial attitudes, employment status,* and *initial institutional choice/commitment.*

Discussion—Research Question 2

Research question 2 focused on the same constructs as research question 1, but analyzed the student cohort that persisted to Year 2. A total of 697 students persisted to Year 2, completed the Student Satisfaction Inventory (SSI), and provided their social security number. The question investigates whether any differences exist between those students who graduate in 5 years to those who do not. Many of the factors that were significant during the students' first year of college were no longer statistically significant during their second year. There is overwhelming support in the literature that students' experiences during their first year of college have an impact on their overall success (Upcraft & Gardner, 1989). This finding adds further support to this principle. Differences in whether a student graduated were found with the *student's quality rating*, their *employment status*, whether they attended college *full-time* or *part-time*, and their *GPA*. It should be noted that the Year 2 sample was smaller ($N = 697$) than the Year 1

sample (N = 4,571). Students who persisted to Year 2 could be lower risk, making it more difficult to predict whether they graduate or not.

Academic preparedness

Statistically significant differences were found on *academic preparedness* for whether a student graduated or not. Students who were rated quality students were not only more likely to persist to Year 2 but were also more likely to graduate. These results indicate that past academic performance was an important factor as the students continued to pursue their degree (Astin, 1993; Bean, 1986, 1990; Lenning et al., 1980; Chen & Thomas 2001; Pascarella et al., 1983).

Employment Status

Statistically significant differences were found on *employment status* for whether a student graduated or not. Students who were not employed or who worked part-time were also more likely to graduate. This confirms prior research indicating that working full-time has negative outcomes with completion of a bachelors' degree (Astin, 1993; Ryder et al., 1994). These results suggest that full-time employment commitments may be a barrier to degree completion for students.

Enrollment Status

Statistically significant differences were found on *enrollment status* for whether a student graduated or not. Students who attended the institution full-time were not only more likely to persist to Year 2 but also were more likely to graduate within 5 years. As part-time students matriculate, they continue to be faced with obstacles. It is possible that part-time students continue to put their other obligations in front of college (Bean & Metzner, 1985). In other words, college becomes secondary for part-time students, and

this affects their ability to graduate. Secondly, the lack of time and effort spent on campus and getting involved in campus activities may have also been related to why these students did not graduate (Astin, 1993; NSSE, 2000).

Academic GPA

Statistically significant differences were found on *GPA* for whether a student graduated or not. Students with higher *GPAs* were not only more likely to persist to Year 2, but they were also more likely to graduate. Students who persisted to Year 2 and graduated 5 years later possessed a *GPA* that was at least .50 grade point higher than those students who did not graduate. Strong academic performance continued to be positively related to persistence during the students' second year of college. Chen and Thomas (2001) also found *GPA* to be a significant predictor of persistence for not only the first term but throughout a student's academic career as well.

In summary, many of the background variables that were statistically significant during Year 1 of the study continued to be statistically significant in determining whether the student graduated or not. Some observations when comparing the results of the first two research questions should be highlighted. A common theme among the results over the two years was that good academic performance (*GPA*) continued to be statistically significant as students move forward in their academic career. Another important observation when comparing the two years is that many of the interactional variables that were significant during Year 1 (*educational quality, faculty-student formal interaction, overall satisfaction,* and *intent to re-enroll*) were no longer statistically significant for Year 2. It is possible that in this study the student cohort that persisted to Year 2 was more homogenous. As previously indicated, students who persisted to Year 2 were

probably less at-risk than those who did not persist to Year 2. Chen and Thomas (2001) found similar results and attributed their outcomes to social bond theory. It could be possible that some of these bonds (both socially and academically) were made during the students' first year, and changed very little during their second year of college.

No statistically significant differences were found on *educational quality, institutional communication, sense of community, campus life, faculty-student informal contact, academic development, faculty-student formal interaction, financial attitudes, overall satisfaction, intent to re-enroll,* and *student gender.*

Discussion—Research Question 3

Research question 3 focused on *student ethnicity* and the constructs presented in the theoretical model. As anticipated, statistically significant differences were discovered among the five ethnic groups evaluated in this study. African American students made up 17% of the student population, 11.6% were Asian, 52.3% Caucasian, 14.9% Hispanic, and 1.1% of the student population were Native American.

Educational Quality

Statistically significant differences were found on *educational quality* among Asian, African American, Native American, and Hispanic students. Asian students reported lower satisfaction levels with the institution's ability to provide quality education than African American, Native American, Hispanic, and Caucasian students. One could conclude that Asian students have higher expectations when it comes to the quality of education that should be provided by an institution.

Campus Life

Statistically significant differences were found between Hispanic students and Caucasian students for *campus life* issues. Hispanic students were more satisfied with campus life issues compared to Caucasian students. This result showed that the "alienation and marginalization in predominantly White colleges and universities" that Gonzalez (2000-2001, p. 87) suggests could exist in predominantly White institutions did not materialize in this study. For this predominantly White institution, Hispanic students felt comfortable with their ability to get involved in the social environment of the campus, perhaps because of the relatively high percentage (48%) of ethnic minority students.

Faculty-Student Informal Interaction

Statistically significant differences were found for informal out-of-classroom relationships with faculty between Caucasian and African American students. Caucasian students reported significantly higher satisfaction with their out-of-classroom relationships with faculty members than did African American students. Interaction with faculty members is an important issue for African American students (Astin, 1993). It is important that African American students feel they are being treated appropriately and are not inferior to the other ethnic groups. Experiencing unfair treatment or feeling as though they are being treated unfairly could have a negative effect on their persistence decisions (Bean, 1990). These results could mean that African American students are feeling isolated and not supported by faculty, which could have a negative effect on their persistence decisions.

Statistically significant differences also were found for *faculty-student informal interactions* between Caucasian and Asian students. Results indicated that Caucasian students reported statistically significantly higher satisfaction with their out of classroom relationships with faculty members than Asian students reported. These results showed that although Asian students are commonly stereotyped as the "model minority," they also can experience obstacles and isolation issues similar to those that are common to other minority students (Yeh, 2004). Hune (2002) revealed that Asian students can feel particularly alienated because they are accepted by neither minority groups nor by the majority population. Hune points to issues of chilly climate, racial stereotyping by faculty, discrimination, and hate crimes as serious barriers for Asian students. It appears that maybe some of these undertones are present in this institution as well.

Additionally, Rendon (1994) theorized that academic and interpersonal validation is critical to the success of minority and nontraditional students. Faculty support and interaction can play an important part in this validation process (ACT, Inc., 2004b). These results show that both African American and Asian students may be experiencing inadequate support and validation from faculty members.

Academic GPA

Statistically significant differences were found on *GPA* among *student ethnicities.* Both Asian and Caucasian students reported significantly higher *GPAs* than the three other ethnic groups (African American, Native American, and Hispanic). These results indicate that is it possible that African American, Native American, and Hispanic students were academically less prepared for college, which may have affected their academic performance during college. This would validate theories that minority students

face educational disadvantages due their higher levels of poverty and limited learning opportunities in secondary education (Bean & Metzner, 1985, Morley, 2003). Caucasian and Asian students performed equally academically.

Intent to Re-enroll

Statistically significant differences were found on *intent to re-enroll* among Asian, Hispanic, and Caucasian students. Results identified that Asian students reported that they were less likely to re-enroll at the target institution compared to Hispanic and Caucasian students. However, Asian students graduated at higher rates compared to the other four ethnic groups. These latter results contradicted previous studies that found that Asian students had lower persistence rates (DesJardins et al. 1999; Ishitani & DesJardins, 2002-2003). Furthermore, although some barriers may exist for Asian students in this institution, these barriers did not affect their ability to persist.

Overall, results indicate that Asian students were less satisfied with the quality of education that was being provided and less likely to say they would re-enroll. Interestingly, they performed better academically and were more persistent compared to the other ethnic groups. Several issues could explain these results. First, this outcome could be an artifact of the Lennings et al. (1980) theory of student satisfaction that focuses on how students deal with their dissatisfaction rather than the actual dissatisfaction itself. The current study concludes that Asian students in particular have high academic standards, and, although ultimately dissatisfied, they endure that dissatisfaction and persist. Additionally, because they are commonly stereotyped as the model minority, there is pressure put on them to succeed, which could also affect their determination to persist.

Yeh (2004) contended that Asian students could undergo similar barriers and obstacles to student persistence that other underrepresented minorities' experience. Lan (2004) studied Asian students in this same institution (DeVry University) and found no significant differences with academic performance and persistence rates of Asian and other ethnic minorities. However, Lan's study was concentrated in the Electronic Engineering Technology department within a certain region of the United States (Chicago), which could explain the differences in outcomes.

In summary, although it is possible that Asian students may have experienced barriers to degree completion, the current findings provide no additional support for either Yeh's (2004) theory or Lan's (2004) study. Asian students performed better academically and persisted at higher rates than the other ethnic groups.

Descriptive data were included to describe *student ethnicity* on *gender, academic preparedness, enrollment status, employment status, initial institutional choice/commitment,* and *initial educational goals.* No significant ethnicity differences were found for the variables, *institutional communication, sense of community,* and *faculty-student formal interactions, academic development, financial attitudes,* and *overall satisfaction on student ethnicity.*

Discussion—Research Question 4

Research question 4 looked for any potential differences in age on the constructs of the theoretical model. Students 18-24 years old accounted for 64% of the sample, with students 25 years and older totaling 36% of the sample. Statistically significant differences were found between the two ages of the student on *financial attitudes, GPA,*

intent to re-enroll, student gender, academic preparedness, enrollment status and *employment status.*

Financial Attitudes and Access

The results of this study found statistically significant differences between *ages* of the student on *financial attitudes and access*. Students 25 years and older were more satisfied with their financial situation and had better access to financial aid. This is likely due to older students' having more access to financial resources, tending to be more financially stable, and having access to tuition reimbursement programs from places of employment (Pappas & Loring, 1985).

Academic GPA

Statistically significant differences were found for *age* on academic performance (*GPA*). Students 25 years and older had higher academic *GPAs* than students 18-24 years old. These results show no evidence that external commitments, common for this population, affected their grade performance. Furthermore, it adds further support to the finding that older students are more academically successful compared to younger students (Cubeta et al., 2001). Additionally, prior results of the current study indicated a relationship with strong academic performance and persistence.

Intent to Re-enroll

Statistically significant differences were found on *intent to re-enroll* for *age* of the student. Students 25 years and older were more likely to say they would re-enroll at the target institution. Findings of the current study indicated that *intent to re-enroll* had a positive relationship with persistence decisions. Additionally, these findings support prior

literature that older students are self-motivated and more committed to completing college than younger students (Ashar & Skenes, 1993; Pappas & Loring, 1985).

The exact opposite was observed for students 18-24 years old. Younger students had lower *GPAs*, lower satisfaction with *financial attitudes and access*, and were *less likely to re-enroll* at the institution.

Student Gender

Statistically significant differences were found for *age* of a student on *student gender*, *academic preparedness, enrollment status,* and *employment status*. Students over the age of 25 were more likely to be female compared to students 18-24 years old, who were more likely to be male.

Academic preparedness

Statistically significant differences between the *age groups* of the students on *academic preparedness* were found. Students 25 years and older were more likely to be *quality students*. Prior results of this study alluded to the positive relationship between strong prior academic performance and persistence. Likewise, students 18-24 years old were more likely to be either standard students or developmental students. Especially concerning is the large percentage of younger students who are determined to be developmental prior to enrollment at the institution. Results showed that students 25 years and older are coming to the institution more academically prepared compared to younger students (those students 24 years old and younger).

Enrollment Status

Statistically significant differences were found for *age* groups on student *enrollment status*. Students 18-24 years old were more likely to be enrolled full-time.

Students 25 years and older were more likely to be enrolled part-time. These findings are somewhat of a concern due to the fact that some research has indicated that older students are more prone to dropping out and/or stopping out due to their external demands and commitments (Bean & Metzner, 1985; Lenning et al., 1980).

Employment Status

Statistically significant differences were found for *age* on *employment status.* Students 18-24 are more likely to be either employed full-time or not employed at all. Students 25 and older are more likely to be employed part-time. Prior findings of this study point the negative impact that employment may have on persistence decisions. However, Lennings et al. (1980) suggested that part-time employment could be positively related to persistence. The real issue is how students, regardless of age, are able to balance their academic and employment commitments.

Initial Institutional Choice/Commitment

Statistically significant differences were found for *age* of a student on *initial institutional choice/commitment.* Students over the age of 25 were more likely to choose the institution as their second or third choice compared to students 18-24 years old, who were more likely to choose the institution as their first choice.

In summary, literature on age and student persistence has produced mixed results. The outcomes from this study indicate that students 25 years and older possess attributes that may allow them to persist at higher rates than students 18-24 years old. Moreover, there appears to be support for Ashar and Skenes's (1993) theory, which assumes that older students come back to college to enhance their careers. As shown, many of these older students are already participating in the work force and fully comprehend that a

college degree is their gateway to occupational success. These results show that older students understand these issues and are motivated to succeed and persist.

It is worth mentioning that if the more conservative Bonferroni correction had not been employed, then *faculty-student informal interactions, faculty-student formal interactions,* and *overall satisfaction* would also have been significant at the .05 level. Although mentioned with caution, *faculty-student informal interactions, faculty-student formal interactions,* and *overall satisfaction* may warrant further analysis. No statistically significant differences were found for *age* of the student on *educational quality, institutional communication, sense of community, campus life,* and *academic development.*

Discussion—Research Question 5

Research question 5 analyzed student satisfaction scores on the constructs of the theoretical model between the students' first year (Year 1) and the students' second year (Year 2). Overall, on every construct, satisfaction levels were lower for Year 2 than for Year 1. These were statistically significant differences and demonstrated that students' satisfaction levels decrease as they move from their first to second year in college. Furthermore, an analysis of effect sizes concluded that all of these differences were medium to large. These findings support what Wilder (1993) referred to as the sophomore slump.

The means were then ranked per year to see if satisfaction levels per each category changed over the two years. Table 5.1 shows the means and rankings per each year. During Year 1, students were most satisfied with the *education quality* the institution was providing and their own *academic development.* Pascarella et al. (1983)

Table 5.1

Comparison of Satisfaction Means (N = 697)

Year 1 satisfaction		*M*	Year 2 satisfaction		*M*
1	Educational quality	5.78	1	Educational quality	5.41
2	Academic development	5.63	2	Academic development	5.23
3	Intent to re-enroll	5.49	3	Faculty-student informal interaction	5.02
4	Faculty-student formal interaction	5.43	4	Intent to re-enroll	4.99
5	Sense of community	5.42	5	Faculty-student formal interaction	4.99
6	Faculty-student informal interaction	5.42	6	Sense of community	4.98
7	Communication/justice	5.07	7	Overall satisfaction	4.84
8	Campus life	5.02	8	Campus life	4.68
9	Overall satisfaction	5.01	9	Financial attitudes	4.60
10	Financial attitudes	4.97	10	Communication/justice	4.56

found that first year persistence is often based on satisfaction from the academic rather than social environments. The students were least satisfied with *overall satisfaction* of the college experience and *financial attitudes and access*. For Year 2, students were again most satisfied with the *quality of education* the institution was providing as well as their academic development. They were least satisfied with *financial attitudes* and the *ability of the institution to communicate in a fair and just manner*. Astin, Korn, and Green (1987) and Kotler and Fox (1995) found similar results when ranking satisfaction scores. They found students tend to be most satisfied with factors associated with their academic environment and classroom experiences and least satisfied with personal services.

Although significantly lower ratings were discovered during Year 2, when the rankings were compared for each year of the study they were quite similar. Students' perception of the institution communicating fairly and justly during Year 2 ($M = 4.56$) was ranked 10th while in Year 1 it was ranked 7th and had a mean of 5.07. Another worthy observation is that for both years these satisfaction scores are not high. The range of scores (4.5–5.8) represents an actual satisfaction rating of neutral to satisfied, with the

majority of the ratings falling into the *somewhat satisfied* (5.0) category. This shows there is considerable room for improvement with these satisfaction scores.

Discussion of Research Questions 6 and 7

Research questions 6 and 7 tested the path model and identified the direct and indirect effects within the model. Separate models were presented for both Year 1 and Year 2 of the study. The Year 1 model represents the students' first year and is therefore labeled Year 1. The Year 2 model represents the same students in their second year in college and is labeled Year 2.

Discussion of Overall Results of the Models

The results of the path analysis indicated that background variables were less associated with *overall satisfaction* and *intent to re-enroll* then originally hypothesized. The effects of these background variables were mainly indirect, mediated through intervening variables. This was an unexpected outcome that contradicts Pascarella et al.'s (1983) findings that suggest that background characteristics are of "equal or greater importance in their subsequent persistence/withdrawal decisions than their actual experiences of college once enrolled" (p. 93). In fact, these findings are consistent with what Astin (1977, 1993), Bean (1980), and Tinto (1975, 1987) concluded. Astin (1993) studied student satisfaction and noted student satisfaction depends on environmental experiences rather than input characteristics. Tinto's work also supported the theory that what is most important are the interactions (socially and academically) that occur after admission into the college. The results of the current study are significant and unexpected due to the fact that both of these other researchers tested their theories in traditional institutions with traditional students. These theories and remedies for traditional

institutions seem to carry over to commuter institutions and nontraditional students as well. Interestingly, Tinto advocated for different models of student retention to accommodate commuter and nontraditional students. The current study asserts the opposite: a sense of community and integration into the social and academic environments of college is also important for commuter students. These findings are consistent with Johnson (1997), who also studied commuter students, although at a smaller scale and sample. Johnson concluded "It appears that many of the same factors that contribute to the successful retention of traditional campus-based college students are also significant for commuter/nontraditional students" (¶ 30). The current study adds further support to the premise that commuter and nontraditional students may not differ as much as previously posited.

Another important outcome was that both *social variables* and *academic variables* showed significant effects on persistence decisions. Prior research conducted in commuter institutions found *academic variables* to be statistically significant but not *social variables* (Pascarella et al., 1983). The results of the current study showed that both environments (academic and social) are important to commuter students. This finding supports an integrative approach—suggesting a successful combination of both academic and nonacademic factors that can enhance persistence (ACT, Inc., 2004b).

Additionally, low *initial institutional choice/commitment* (student's rank of college choice) showed statistically significant direct and indirect effects on *institutional, social, financial,* and *academic variables*. The *initial institutional choice/commitment* is sometimes linked to selectivity. The current results reveal that less selective institutions

also have students who come with high levels of commitment to succeed and graduate, even if they did not choose the institution as their first choice.

Another important observation was how well the model explained *intent to re-enroll*. This outcome provides additional support for the use of *intent to re-enroll* in student persistence models representing nontraditional students and institutions (Braxton et al., 2000). Table 5.2 shows the total effects for *intent to re-enroll* for the students' first year and the students' second year as well as the effect rank.

Table 5.2

Total Causal Effects on Intent to Re-enroll

Variables	Total effects	Rank
Year 1: The Students' First Year		
Overall satisfaction	.77*	1
Institutional variables	.56*	2
Academic variables	.28*	3
Initial institutional choice/commitment	-.10*	4
Social variables	.04*	5
Student gender	-.03*	6
Financial variables	-.03*	7
Academic preparedness	.03	8
Academic GPA	.01*	9
Enrollment status	-.00	10
Year 2: The Students' Second Year		
Overall satisfaction	.80*	1
Institutional variables	.63*	2
Academic variables	.25*	3
Academic preparedness	.08	4
Initial institutional choice/commitment	-.08*	5
Financial variables	.05	6
Enrollment status	.05*	7
Social variables	-.04	8
Student gender	-.02	9
Academic GPA	.01*	10

* $p < .05$.

Model Comparison

When comparing the two path models, several differences were observed. During the students' first year (Year 1) the only variables that did not reach significance in the model were student *enrollment status* and *academic preparedness* on *intent to re-enroll.* All other relationships, although varying in size, were statistically significant at the .05 level.

During the students' second year, several pathways established during their first year were no longer statistically significant. For Year 1, all of the background variables, with the exception of *enrollment status* had statistically significant effects on both *institutional variables* and *GPA*. For Year 2, the only variable that had a significant effect on *institutional variables* was low *initial institutional choice/commitment* to the institution.

Further differences observed were that during Year 2 *GPA* no longer had statistically significant effects on *financial* and *academic variables*. Additionally, *financial and social variables* no longer had statistically significant effects on *overall satisfaction.* All of these relationships were statistically significant during Year 1.

These results add further support that the relationships between the constructs were established during the students' first year but changed some during their second year of college (Chen & Thomas, 2001). This corroborates prior findings in this study that reveal that the students' first year (Year 1) may be the most opportune time to influence the variables presented in the model.

Discussion of the Individual Variables of the Path Model

The following section discusses (a) contribution of each of the individual variables of the path model, (b) direct effects on each of the individual variables of the path model, and (c) the indirect effects on each of the individual variables of the path model. Path analysis allows the researcher to identify not only direct effects of each independent variable but also the indirect effects. An indirect effect mediates through an intervening variable (Mertler & Vannatta, 2001).

Academic GPA

Contribution to the model. Results of the path model for Year 1 showed that *GPA* had a small, yet statistically significant negative effect on *intent to re-enroll,* indicating that when considered with other variables, students with a low *GPA* were more likely to re-enroll. The academic GPA, on the other hand, had a positive direct effect on *student satisfaction.* Additionally, *GPA* had a small, yet statistically significant negative effect on *financial attitudes* and a direct and positive effect on *academic variables.* During Year 2 *GPA* had a statistically significant effect on *overall satisfaction* but was no longer statistically significant on *intent to re-enroll.* It was hypothesized that *GPA* would contribute statistically significantly more to the model than it actually did. Possible explanations for this could have been the actual placement of the variable in the model or what Astin (1993) experienced: relationships (collinearity) among some of the interactional variables. High collinearity does not cause a problem with the employment of path analysis (Braxton et al., 2000).

Significant direct effects on academic GPA. Factors that influenced *GPA* for Year 1 were low *academic preparedness,* low *initial institutional choice/commitment,* and

student gender (male). These observed relationships were the opposite of what was expected. For Year 2 all four background variables showed significant effects on *GPA (*low *academic preparedness,* low *initial institutional choice/commitment, student gender* [male] and *enrollment status* [full-time]). Furthermore, low *academic preparedness* had the largest negative direct effect on *GPA*, which contradicted the premise that prior knowledge/performance influences later learning (Cambiano, 2000; Levitz & Noel, 1989; Moore & Carpenter, 1985; Yeh, 2004).

Interestingly, Pascarella et al. (1993) found similar results in their model. It is possible that many of the students were categorized as developmental due to either their limited language (ESL) skills or were returning students who have not taken a math or English course in several years. These could be some of the reasons why these students were categorized as developmental (low *academic preparedness*) and nevertheless performed well academically in subsequent technology courses.

Institutional Variables

Contribution to model. Institutional variables made the second highest contribution to *intent to re-enroll* for both the students' first year (Year 1) and the students' second year (Year 2). *Institutional variables* were defined as the degree to which the institution was viewed as providing a quality education (*educational quality*), the institution's ability to communicate in an open and fair way (*institutional communication*), and the degree to which the students perceived the institution as a respectful and caring community (*sense of community*). Furthermore, *institutional variables* had strong and positive consistent direct effects on *financial, social* and *academic variables*. This supports Berger's (2001-2002) theory that colleges are

organizations where patterns of their behavior are statistically significant factors in understanding student persistence.

Significant direct effects on institutional variables. For Year 1, statistically significant direct effects were *academic preparedness*, low *initial institutional choice/commitment,* and *student gender* (male). For Year 2, only low *initial institutional choice/commitment* had a statistically significant effect on *institutional variables* concluding that students for whom the institution was a lower choice *(initial institutional choice/commitment*) were more satisfied with *institutional variables.*

For this particular study, this strengthens the argument that the *institutional variables* (issues pertaining to how the organization is communicating to its students, the quality of education the institution is providing, and the sense of community that can be established between the agents of the institution and its students) are statistically significant concepts in assisting students to decide to re-enroll in the college. These conclusions validate Berger and Braxton's (1998) and Bean's (1980) premise that institutional attributes have a powerful influence on students, their interactions with their college environment, and their persistence decisions.

Financial Variables

Contribution to the model. For Year 1, *financial variables* had a small, yet statistically significant indirect negative effect on *intent to re-enroll* and a small direct negative effect on *student satisfaction.* Financial variables were defined as the level of satisfaction with financial aid attitudes and access. Students with low *financial attitudes* were more likely to say they would re-enroll and have higher *overall satisfaction* levels. For Year 2, *financial attitudes and access* was not a significant contributor to the model

and had no significant effect on *overall student satisfaction* and *intent to re-enroll.* The model provided no support for the Cabrera et al. (1990) ability-to-pay model, which assumes direct and strong influences of financial factors on student persistence decisions. This was not entirely unexpected, as indicated in the literature review. Prior research found mixed results with *financial attitudes* and student persistence. The literature found that student financial issues can be an artifact of the economic climate or government funding issues (Astin, 1993). Moreover, students who attend the target institution receive considerable support and counseling in the area of financial aid. The institution is for-profit and private, so students expect tuition costs to be relatively higher than some of the surrounding state and community colleges.

Statistically significant direct effects on financial variables. For both Year 1 and Year 2, *institutional variables* had a strong and direct effect on *financial attitudes.* Students who were satisfied with the quality of education the institution was providing, felt part of the student community, and thought the institution was communicating fairly and justly were more likely to have positive *financial attitudes.* Furthermore, for Year 1 a low *GPA* showed a small, yet statistically significant direct effect on *financial attitudes.* However for Year 2 *GPA* no longer had a statistically significant direct effect on *financial attitudes.*

Statistically significant indirect effects on financial variables. Factors explaining *financial attitudes and access* for Year 1 were *student gender (male), academic preparedness,* and *low initial institutional choice/commitment* that mediated through *institutional variables* and *GPA.* For Year 2 the only background variable that had a statistically significant indirect effect was low *initial institutional choice/commitment.*

Academic Variables

Contribution to the model. Academic variables contributed significantly to the model for Year 1 and Year 2. *Academic variables* had strong and direct effects on *overall satisfaction* and strong indirect effects on *intent to re-enroll.* This finding was expected and adds to large body of research highlighting the importance of the academic environment for student persistence, particularly in commuter institutions. When students perceive that they are developing academically, they are more satisfied, are more likely to *re-enroll,* and hence, persist (Pascarella et al., 1983; Tinto, 1975, 1987). This finding also confirms Bean and Metzner's (1985) theory that *academic variables* can influence *intent to re-enroll.*

Another important component of the academic environment is the formal academic interactions that transpire between students and faculty members. These findings once again confirm the importance of these relationships in regards to satisfaction and overall persistence (Astin, 1975, 1993; Beal & Noel, 1980; Bean, 1986; Hossler & Bean, 1990; Johnson, 1997). Furthermore, these findings support Tinto's (1997) concerns about the importance of the actions that emerge within the classroom. Classrooms are in most cases the only opportunity for commuter students to interact with their college environment.

Statistically statistically significant direct effects on academic variables. For both Year 1 and Year 2, *institutional variables* had statistically significant and direct effects on *academic variables.* This finding adds further support to the notion that *institutional variables* have a strong influence on integration to the academic environment (Berger & Braxton, 1998; Braxton & Mundy, 2001-2002; Lau, 2003).

Statistically significant indirect effects on academic variables. For Year 1, statistically significant indirect effects on *academic variables* were from low *initial institutional choice/commitment, student gender* (male), and *academic preparedness* mediating their effects through *GPA* and *institutional variables*. For Year 2 the only background variable that had a statistically significant indirect effect was low *initial institutional choice/commitment.*

Social Variables

Contribution to the model. For Year 1, social variables had a small, yet statistically significant positive indirect effect on *intent to re-enroll* through *overall student satisfaction*. As noted earlier, *social variables* did have a statistically significant positive effect on *overall satisfaction*. This contradicts Pascarella et al.'s (1983) finding of negative effects between *social variables* and persistence issues in a commuter institution. As hypothesized, the small effect of *social variables* may be an artifact of insufficient programming and resource allocation. The current study implies that commuter students still need academic and social support to stay in school, even if the students choose not to participate in these services or activities (Bean, 1990). For Year 2, *social variables* were no longer statistically significant, which again could be an artifact of the social bond theory that was discussed in research question one (Chen & Thomas, 2001).

Statistically significant direct effects on social variables. For both Year 1 and Year 2, *institutional variables* had a strong direct effect on *social variables*. Students who were satisfied with the quality of education the institution was providing felt part of the student community and thought the institution was communicating fairly and justly were

more likely to become involved with campus life activities and form positive out of classroom relationships with their professors. This parallels Berger and Braxton's (1998) premise that organizational attributes provide a source for integration into the social environment of the institution.

Statistically significant indirect effects on social variables. For Year 1, variables that had a statistically significant indirect effect on *social variables* were *academic preparedness, student gender* (male) and low *initial institutional choice/commitment* mediated through *institutional variables*. For Year 2 the only background variable that had a statistically significant indirect effect was *low initial institutional choice/ commitment.*

Overall Satisfaction

Contribution to model. For both years of the study, *overall satisfaction* was the most important influence on *intent to re-enroll.* This finding justified the importance of this variable in the model and was consistent with the theory that satisfied students are more likely not only to re-enroll but also to persist in higher education (Bean & Metzner, 1985; Braxton et al., 1995).

Statistically significant direct effects on overall satisfaction. Important factors in influencing overall student satisfaction directly for the students' first year were *institutional variables, academic variables, social variables*, low *financial attitudes*, and *GPA*. These findings were expected and seem important in understanding persistence issues. Furthermore, these results corroborate literature on student satisfaction. Astin (1993) found that involvement in the social and academic environments was directly related to a student's satisfaction. Grossman (1999) found that institutions that treat their

students in a fair and just manner and handle complaints efficiently and effectively can more easily establish trust with their students, which in turn influences satisfaction. For Year 2, *financial attitudes* and *social variables* had no statistically significant effects on *overall student satisfaction.*

Statistically significant indirect effects on satisfaction. In addition to their direct effects both *institutional variables* and *GPA* had statistically significant indirect effects through *social, financial,* and *academic variables* for both years of the study. For Year 1, statistically significant indirect effects on satisfaction were low *initial institutional choice/commitment, student gender* (male), and *academic preparedness* mediating their effects through *GPA* and *institutional variables.* This implies that three out of the four background variables had an effect on *overall student satisfaction,* but that effect was mediated through *institutional variables* and *GPA.* Furthermore, both *student gender* and *initial institutional choice/commitment* showed a negative effect on *overall satisfaction.* Male students and students who chose the institution as their second or third choice were more likely to be satisfied with their overall student experience.

For Year 2 both *enrollment status* (full-time) and *low initial institutional choice/commitment* had an effect on *overall student satisfaction,* but that effect was mediated through *institutional variables* and *GPA.*

Intent to Re-enroll

Statistically significant direct effects on intent to re-enroll. For both the students' first and second year, *overall satisfaction* had a statistically significant and direct effect on *intent to re-enroll.* Other statistically significant direct effects on *intent to re-enroll*

were low *GPA* in the students' first year and *academic preparedness* in the student's second year.

Statistically significant indirect effects on intent to re-enroll. For Year 1, statistically significant indirect effects on *intent to re-enroll* were *financial attitudes, social variables*, and *academic variables*, all mediating their effects through *overall satisfaction. Institutional variables* also had a statistically significant indirect effect on *intent to re-enroll*, mediated through *social, financial,* and *academic variables* as well as *overall satisfaction.* In addition to a direct effect, *GPA* also had a statistically significant indirect effect on *intent to re-enroll* mediated through *financial variables, academic variables*, and *overall satisfaction.* Three out of the four background variables (*academic preparedness, student gender (male)* and *low initial institutional choice/commitment*) had an indirect effect on *intent to re-enroll.*

For Year 2, *academic variables* had a statistically significant indirect effect on *intent to re-enroll,* mediating their effects through *overall satisfaction. Institutional variables* also had a statistically significant indirect effect on *intent to re-enroll*, mediated through *social, financial,* and *academic variables* as well as *overall satisfaction. Academic GPA* had statistically significant indirect effects on *intent to re-enroll* mediating through *financial variables, academic variables* and *overall satisfaction.* Two out of the four background variables (*academic preparedness* and *low initial institutional choice/commitment*) had an indirect effect on *intent to re-enroll.*

In summary, the four model fit indexes (chi-square, comparative fit index [CFI], root mean square error of approximation [RMSEA], confidence intervals of the RMSEA and analysis of the residuals) determined that both the Year 1 and Year 2 models were

reasonable approximations of the data. For Year 1, 59% of the variance was explained for *intent to re-enroll*, with 67% being explained during Year 2. Each of the variables and its effects contributed statistically significantly to better understanding the persistence process for commuter institutions and their students.

Discussion of Research Question 8

Research question 8 tested all 16 variables of the model against graduation status of the student. Based on all of the variables in the path model, the question was, How did each one of the variables contribute to whether the student graduated or not? Similar to the path model, two separate logistic regressions were run for each of the years of the study.

Discussion—The Students' First Year

For Year 1, whether the student had graduated or not was predicted correctly for 78% of the students, and approximately 49% of the variance in the model was explained. *Student gender*, *enrollment status of the student*, and *academic GPA* were all statistically significantly related to whether a student graduated or not. It is worth noting that when the variables were considered separately, *academic preparedness* and *overall satisfaction* were also statistically significant at the .003 level. It is likely that there may have been relationships among the predictor variables, therefore causing *academic preparedness* and *overall satisfaction* to be no longer statistically significant when all of the variables were considered. Astin (1993) indicates it is quite common for interactional/ environmental variables to have relationships with each other.

Females were 1.4 times more likely to graduate than males. This finding is consistent with other results in this study, reiterating that females persist at higher rates

than males. Regardless of the obstacles common in this curricula—chilly climate and lack of critical mass—female students continued to persist (Hall & Sandler, 1984; McGrath-Cohoon, 2001; Whitt et al., 1999). *Enrollment status* of the student also showed a statistically significant relationship with whether the student graduated or not, showing part-time students much less likely to graduate. Students with higher *GPAs* were 7.7 times more likely to graduate than those with lower *GPAs*. This finding is consistent throughout the current study, emphasizing the importance of strong academic performance and persistence (Astin, 1993; Bean, 1990; Chen & Thomas, 2001; Ishitani & DesJardins, 2002-2003; Lenning et al., 1980; Tinto, 1975).

Perhaps of interest to some is the fact that if the more conservative Bonferroni correction had not been employed, then *overall satisfaction* would have been significant at the .05 level. Although mentioned with caution, *overall student satisfaction* may warrant further study. The results of the hierarchical logistical regression confirmed that when controlling for the 5 background variables *(student gender, academic preparedness, enrollment status, initial institutional choice/commitment, employment status)*, the 11 interactional variables were able to add to the prediction of whether a student graduates.

In summary, students who were female, full-time, and performed well academically were more likely to graduate. These results of the logistic regression for a student's first year (Year 1) confirm prior statistically significant outcomes of the current study.

Discussion—The Students' Second Year

For Year 2, 83% of the students were predicted correctly, and approximately 43% of the variance in graduation status was explained. For Year 2, *enrollment status* of the

student and *GPA* were statistically significantly related to whether a student graduated. It is worth noting that when the variables were considered separately, *academic preparedness* was statistically significant at the .003 level. It is likely that during Year 2 there were relationships among some of the variables, which probably caused *academic preparedness* to no longer be statistically significant when all of the variables were considered (Astin, 1993).

Enrollment status of the student showed a statistically significant relationship with whether the student graduated. Part-time students were much less likely to graduate. Additionally, students with higher academic *GPA's* were 9.9 times more likely to graduate once they persisted to Year 2.

A hierarchical logistical regression was conducted for the students' second year (Year 2). The results of the hierarchical logistical regression confirmed that when controlling for the 5 background variables, the 11 interactional variables were able to add to the prediction of whether a student graduates or not for the Year 2 model. Similarly to Year 1, the outcomes corroborated with the prior results of this study. In summary, results from the students' second year (Year 2) confirm that those students who continued to attend the institution as a full-time student and had a higher *GPA* were more likely to graduate.

Several observations can be made from the two models. First, similar to other results in this study, more variables contributed to whether a student graduated or not during the students' first year (Year 1) of the study than during the students' second year (Year 2). This result should be interpreted with caution given the difference in sample sizes for Year 1 ($N = 4571$) and for Year 2 ($N = 697$). Secondly, *GPA* and *enrollment*

status showed statistically significant relationships with whether a student graduates. Consistently throughout this study students who attended the institution full-time and performed well academically, regardless of age or ethnicity, were more likely to graduate.

Limitations of the Findings

Several limitations of the findings of the current study should be stated. The sample size ($N = 4,571$) for the students' first year of college (Year 1) was much higher than the sample size ($N = 697$) for the students' second year of college (Year 2). The Year 2 sample was much smaller due to the fact that students not only had to participate in the Student Satisfaction Inventory (SSI) during the second year of the study but the student also had to provide their social security number. If either of these data was missing, the student had to be dropped from the Year 2 sample. The researcher was also limited to data available in an archived database and student responses from a questionnaire (SSI) that was not written specifically for the current study. Finally, there are limitations when using path analysis. In the path model, persistence was measured by an intent variable. Although intent to re-enroll is commonly used as a proxy for persistence, further research should attempt to measure actual persistence to avoid any collinearity issues. The results of the current study are valid only with these data. Furthermore, causal relationships are never proven, these models only suggest that these relationships may be causal (Braxton, 1988).

Summary of Findings

Each of the eight research questions that was highlighted in this study provided an opportunity to investigate persistence using varying methodologies to better understand

the persistence decisions in which students engage. Although varying in outcomes, each provided powerful insight in understanding persistence decisions. However, the results also allow for some commonalities to be drawn.

First, a student's first year (Year 1) is when many of the constructs in the theoretical model were statistically significant. This provides some support for much of the persistence literature that emphasizes that institutions should "front load" (Noel, 1985) many of their retention efforts. Secondly, students who perform well academically are also more likely to persist, regardless of age or ethnicity. Resources and efforts should be focused toward assisting students to succeed academically. Thirdly, this investigation provided adequate support for the importance of institutional variables for student persistence decisions, particularly the effects of a student's interaction with their social and academic environments. Colleges need to pay particular attention to how they communicate with their students, their commitment to excellence, and how they foster a sense of community among the agents of the institution. The use of organizational theory in persistence research was well supported in this study.

Finally, what was most important were the interactions that occur after admittance. However, background variables should be part of an effective enrollment management program. For the system of institutions used in the current study, background variables had little direct effect on *satisfaction* and *intent to re-enroll.* Nonetheless, resources should be appropriately allocated to both enrollment activities and retention efforts. The old saying in persistence, "it is easier to keep an existing customer than find a new one," is again proven true. Elliot (2002) reminds us "enrollment costs per student are generally higher than retention costs" (p. 271). Evidence of dwindling

resources that institutions are devoting to student affairs and similar functions should be of grave concern (Horn & Berger, 2004). Any area that is devoted to enhancing the student experience and success of our students needs appropriate resources and attention.

Implications for Practice

The following implications for practice are presented: (a) front loading, (b) improving academic performance, (c) improving social environments, (d) building positive faculty-student relationships, (e) improving the college environment for part-time students, and (f) improving gender and ethnic relations.

The first year was the most important in terms of the theoretical model. As Noel (1985) suggested, front-load as many support systems as possible. Placing the best teachers in first year classes and attempting to build a community of learners with entering freshmen, would provide opportunities for students to interact with each other both in the classroom and outside the classroom and could directly impact persistence. However, front loading does not mean all efforts should be focused on the first year and the first year only. The first year is just the beginning of a long-term comprehensive retention management system (ACT, Inc., 2004c).

Throughout the study, *GPA* was an important variable in predicting persistence. This should alert institutions to focus on efforts that assist students to succeed academically: (a) build and provide high quality, highly interactive, and appropriate academic environments; (b) provide opportunities for academic growth; (c) focus efforts on delivering high quality instruction in the classroom.

Overall satisfaction also had statistically significant effects on persistence decisions. However, the results show there was considerable room for improvement with

these satisfaction scores. The majority of satisfaction ratings fell into the "somewhat satisfied" category on the Student Satisfaction Inventory (SSI). The path model revealed that *social* and especially *academic,* and *institutional variables* had statistically significant direct effects on *overall satisfaction.* Engage in activities that will improve satisfaction levels in these areas. Berger suggests (2001-2002) that students should have advocates and the opportunity to participate in organizational decision making. Faculty, staff, students, and administration should understand and assess the organizational environment on campus. Furthermore, for commuter institutions, interactions that occur in the classroom should be of particular importance—provide opportunities for growth and learning with academic and co-curricular programs (Braxton & Mundy, 2001). Improvement in these satisfaction scores should lead to higher persistence rates.

Another statistically significant and common finding throughout the study was the importance of faculty-student relationships, both in and outside of the classroom. Most faculty members do not interact with their students until the later years in a student's academic career. It is imperative that faculty members understand that these relationships need to be established during the first year and carried on throughout the student's academic career. Faculty should be concerned about students' cognitive and social development. They should be devoting a large portion of their time to their students and other efforts to assist students to succeed. Faculty members have the ability to greatly influence students and should be utilizing that influence wisely. Systematic changes at the institutional level should take place that would provide environments and incentives that allow student-faculty relationships to be fostered (Milem et al., 2000).

The findings of this study demonstrated that *social variables* significantly contributed to the model/and persistence decisions. It is a misconception that commuter students are not interested in the social environment of college. Interestingly enough, residential institutions looking to enhance retention rates have been successful through facilitating additional social opportunities. Sufficient resources should be devoted to this area. Providing opportunities for student involvement and input into decision making (such as student government or a student mentor program) appears to positively impact persistence. College should also be an enjoyable experience (Elliot, 2002). Institutions can look to implement appropriate social activities to make the students' experience more enjoyable.

Enrollment status also played an important part in this study. The critical issue for part-time students is that college is always secondary in their life. Unfortunately, the increasing costs of higher education force many students who would like to attend full-time to attend part-time. This is mainly due to due the fact that many students have to work to afford college. Institutions should look to provide employment opportunities on campus. Additionally, institutions can provide flexible scheduling options and support services to assist students in balancing their lives. Institutions can offer more opportunities for students to connect with their peers and faculty. Part-time students often feel detached and isolated from the institution. By connecting them, it may be possible to increase their commitment to the institution, their peers, and to persistence.

More attention and resources need to be dedicated toward enrolling and retaining female students, especially to the fields of science, mathematics, and engineering. This institution in particular is lacking a female peer group, role models, and faculty members

in these technical areas. Institutions should evaluate how their departments are staffed and create environments of respect and tolerance that allow these subpopulations (gender and ethnic minorities) to feel supported (ACT, Inc., 2004b).

Revised Theoretical Model

Based on the results of this study, a revised theoretical model is presented (see Figure 5.1). The revised theoretical model presents four sets of explanatory variables: (a) background attributes (*SES, student gender, high school GPA, family support, enrollment status, initial institutional choice/commitment*); (b) institutional variables (*educational quality, communication/justice, sense of community*); (c) interactional variables (*social variables, peer group, academic variables*); (d) short-term outcomes (*intent to re-enroll, GPA, satisfaction*); and persistence decisions.

Recommendations for Future Research

The revised theoretical model (Figure 5.1) presented in this chapter should be tested further. Differences between the theoretical model presented in chapter 1 and the revised theoretical model presented here are the inclusion of a variable titled peer group, the addition of certain student background characteristics, and repositioning some of the variables within the model based on the findings of the current study. A peer group variable could be a potentially strong variable in the revised theoretical model. Astin (1975, 1977, 1993) states 18- to 22-year olds attending community colleges and other commuter institutions drop out of college at much higher rates than their expected background characteristics. Astin argues that one of the reasons for these lower persistence rates is the lack of a peer group. As student populations become more diverse with various needs, Astin argues that it creates a "hodgepodge" (p. 416) of students.

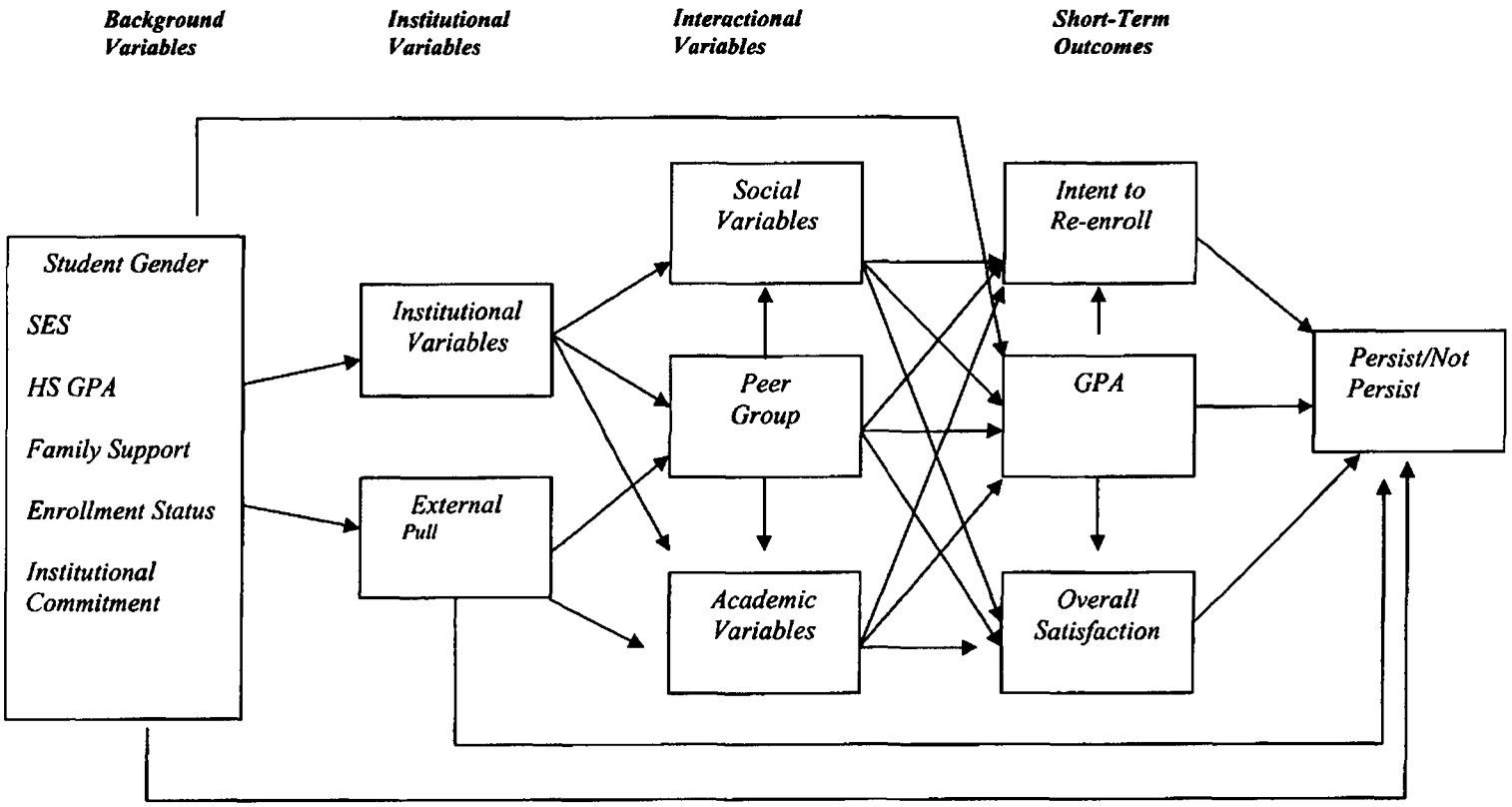

Figure 5.1. Revised theoretical model.

Efforts to build a peer group with such diverse student populations will be one of the greatest challenges to institutions. Bean (1985) revised his 1980 model and suggested that students' peers are the most important "agents" of socialization, even more so than informal faculty contact. Additionally, the classroom plays a vital role in persistence decisions for commuter institutions. Further investigation of the interactions that take place in the classroom is needed, particularly for commuter institutions. This is well supported by Tinto (2000) and the current study. Lastly, statistically significant differences were found for *age, student ethnicity, gender* and persistence. Further evaluation for the subpopulations in terms of the differences in *age, student ethnicity, and gender* with regard to the constructs represented in the suggested model on the identified themes established from the current study is needed.

Secondly, institutions should consider establishing an office of institutional research for the purpose of collecting, analyzing, and disseminating quantitative student persistence data. If an office of institutional research is already established, it should evaluate the data that is being collected and how it is being analyzed. It is equally important that the data be shared with deans, department leaders, and faculty members so that all stakeholders can participate in enhancing the student experience. This study showed there is a need for additional quantitative research in this line of inquiry. For example, methodologically, the current study could be stronger if the same student cohort were followed over a 6-year period. The Year 2 sample was delimited to only those students who volunteered to participate in the Student Satisfaction Inventory (SSI) for a second year, and only those students who gave identifying information. It is assumed that several students were not represented in the Year 2 sample because they failed to give

their identifying information for the second year. Institutions need to pay more attention to how and what they collect data on. For this study available data were limited to an archived database and responses to the Student Satisfaction Inventory (SSI). Collecting important student background characteristics (such as SES, high school GPA, family support) as well as designing a questionnaire specifically for retention purposes should be considered. For example, ACT (2004b) noted the importance of high school GPA and SES as important predictors of academic performance for a students' first year. Neither of these background variables was currently being collected by the target institution. These are relatively inexpensive and easy adjustments to make.

Finally, Berger (2001-2002) states, "there is a growing recognition in recent years that our understanding of how colleges work is enhanced when different theories or models of organizational behavior are integrated into a coherent whole rather than viewing each theoretical perspective as right or wrong" (p. 4). Further investigations of student persistence should follow Berger's suggestion.

Persistence literature takes us back to the beginning of the 20th century. The importance and need to continue to explore this phenomenon should never stop. Every persistence study brings us a little closer to understanding more about the complex interactions that occur between our institutions and our students.

Conclusion

This study reiterates the importance of quality in higher education. If persistence rates are to change for the better, we would all be better served by ensuring that quality is apparent in every facet of our institutions—high quality academic environments, high quality classrooms, and high quality social programming. With devotion to quality we

have our greatest chance to improve persistence rates for all of our students now and our students of the future. Institutions in general are struggling to meet the needs of our ever-changing diverse student populations. Our student populations are and will continue to be diverse—these issues go beyond gender, age, ethnicity, and enrollment status to on-line students, accelerated students, and distant/weekend students. Are we trying to do too much, and are we losing quality trying to be everything to everybody?

The end result is that if there is an institutional commitment to quality on campus, it is that commitment that will guide us and enable us to best serve our students in preparing them for their future.

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APPENDICES

A: Student Satisfaction Inventory.

B: Conceptual Schema for Dropout from College.

C: Conceptual Model for Research on Student-Faculty Informal Contact.

D: Path Model of Student Attrition.

E: Suggested Reconceptualization of Tinto's Model.

F: Human Research Committee Letter.

APPENDIX A

STUDENT SATISFACTION INVENTORY

Noel-Levitz

STUDENT SATISFACTION INVENTORY™

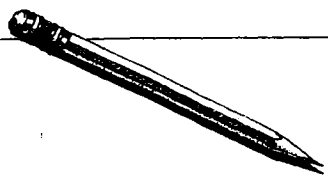
Dear Student,

Your institution is interested in systematically listening to its students. Therefore, your thoughtful and honest responses to this inventory are very important.

You are part of a sample of students carefully selected to share feedback about your college experiences thus far. Your responses will give your campus leadership insights about the aspects of college that are important to you as well as how satisfied you are with them.

To preserve confidentiality, your name is not requested.

— Thank you for your participation.



Instructions:

- Use a No. 2 pencil only. Please do not use ink or ballpoint pen.
- Erase changes completely and cleanly.
- Completely darken the oval that corresponds to your response.

Each item below describes an expectation about your experiences on this campus. On the *left*, tell us how <u>important</u> it is for your institution to meet this expectation. On the *right* tell us how <u>satisfied</u> you are that your institution has met this expectation.

Importance to me . . .			My level of satisfaction . . .
1 - not important at all 2 - not very important 3 - somewhat unimportant 4 - neutral 5 - somewhat important 6 - important 7 - very important does not apply			not available/not used satisfied - 6 somewhat satisfied - 5 neutral - 4 somewhat dissatisfied - 3 not very satisfied - 2 not satisfied at all - 1
①②③④⑤⑥⑦	1.	Most students feel a sense of belonging here.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	2.	The campus staff are caring and helpful.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	3.	Faculty care about me as an individual.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	4.	Admissions staff are knowledgeable.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	5.	Financial aid counselors are helpful.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	6.	My academic advisor is approachable.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	7.	The campus is safe and secure for all students.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	8.	The content of the courses within my major is valuable.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	9.	A variety of intramural activities are offered.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	10.	Administrators are approachable to students.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	11.	Billing policies are reasonable.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	12.	Financial aid awards are announced to students in time to be helpful in college planning.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	13.	Library staff are helpful and approachable.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	14.	My academic advisor is concerned about my success as an individual.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	15.	The staff in the health services area are competent.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	16.	The instruction in my major field is excellent.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	17.	Adequate financial aid is available for most students.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	18.	Library resources and services are adequate.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	19.	My academic advisor helps me set goals to work toward.	①②③④⑤⑥⑦
①②③④⑤⑥⑦	20.	The business office is open during hours which are convenient for most students.	①②③④⑤⑥⑦

PLEASE DO NOT MARK IN THIS AREA

1826760

Importance to me . . .								. . . My level of satisfaction							
1 - not important at all								not available/not used							
2 - not very important															
3 - somewhat unimportant															
4 - neutral															
5 - somewhat important															
6 - important															
7 - very important															
does not apply															
1	2	3	4	5	6	7	21. The amount of student parking space on campus is adequate.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	22. Counseling staff care about students as individuals.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	23. Living conditions in the residence halls are comfortable (adequate space, lighting, heat, air conditioning, telephones, etc.).	1	2	3	4	5	6	7
1	2	3	4	5	6	7	24. The intercollegiate athletic programs contribute to a strong sense of school spirit.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	25. Faculty are fair and unbiased in their treatment of individual students.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	26. Computer labs are adequate and accessible.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	27. The personnel involved in registration are helpful.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	28. Parking lots are well-lighted and secure.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	29. It is an enjoyable experience to be a student on this campus.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	30. Residence hall staff are concerned about me as an individual.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	31. Males and females have equal opportunities to participate in intercollegiate athletics.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	32. Tutoring services are readily available.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	33. My academic advisor is knowledgeable about requirements in my major.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	34. I am able to register for classes I need with few conflicts.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	35. The assessment and course placement procedures are reasonable.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	36. Security staff respond quickly in emergencies.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	37. I feel a sense of pride about my campus.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	38. There is an adequate selection of food available in the cafeteria.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	39. I am able to experience intellectual growth here.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	40. Residence hall regulations are reasonable.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	41. There is a commitment to academic excellence on this campus.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	42. There are a sufficient number of weekend activities for students.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	43. Admissions counselors respond to prospective students' unique needs and requests.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	44. Academic support services adequately meet the needs of students.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	45. Students are made to feel welcome on this campus.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	46. I can easily get involved in campus organizations.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	47. Faculty provide timely feedback about student progress in a course.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	48. Admissions counselors accurately portray the campus in their recruiting practices.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	49. There are adequate services to help me decide upon a career.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	50. Class change (drop/add) policies are reasonable.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	51. This institution has a good reputation within the community.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	52. The student center is a comfortable place for students to spend their leisure time.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	53. Faculty take into consideration student differences as they teach a course.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	54. Bookstore staff are helpful.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	55. Major requirements are clear and reasonable.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	56. The student handbook provides helpful information about campus life.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	57. I seldom get the "run-around" when seeking information on this campus.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	58. The quality of instruction I receive in most of my classes is excellent.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	59. This institution shows concern for students as individuals.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	60. I generally know what's happening on campus.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	61. Adjunct faculty are competent as classroom instructors.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	62. There is a strong commitment to racial harmony on this campus.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	63. Student disciplinary procedures are fair.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	64. New student orientation services help students adjust to college.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	65. Faculty are usually available after class and during office hours.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	66. Tuition paid is a worthwhile investment.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	67. Freedom of expression is protected on campus.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	68. Nearly all of the faculty are knowledgeable in their field.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	69. There is a good variety of courses provided on this campus.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	70. Graduate teaching assistants are competent as classroom instructors.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	71. Channels for expressing student complaints are readily available.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	72. On the whole, the campus is well-maintained.	1	2	3	4	5	6	7
1	2	3	4	5	6	7	73. Student activities fees are put to good use.	1	2	3	4	5	6	7

Your institution may choose to provide you with additional questions on a separate sheet. The section below numbered 74 - 83 is provided as a response area for those additional questions. Continue on to item 84 when you have completed this section.

Importance to me . . .			. . . My level of satisfaction
1 - not important at all 2 - not very important 3 - somewhat unimportant 4 - neutral 5 - somewhat important 6 - important 7 - very important does not apply			not available/not used satisfied - 7 satisfied - 6 somewhat satisfied - 5 neutral - 4 somewhat dissatisfied - 3 not very satisfied - 2 not satisfied at all - 1
		(If items 74-83 not available, skip to item 84.)	
① ② ③ ④ ⑤ ⑥ ⑦	74.		74. ① ② ③ ④ ⑤ ⑥ ⑦
① ② ③ ④ ⑤ ⑥ ⑦	75.		75. ① ② ③ ④ ⑤ ⑥ ⑦
① ② ③ ④ ⑤ ⑥ ⑦	76.		76. ① ② ③ ④ ⑤ ⑥ ⑦
① ② ③ ④ ⑤ ⑥ ⑦	77.		77. ① ② ③ ④ ⑤ ⑥ ⑦
① ② ③ ④ ⑤ ⑥ ⑦	78.		78. ① ② ③ ④ ⑤ ⑥ ⑦
① ② ③ ④ ⑤ ⑥ ⑦	79.		79. ① ② ③ ④ ⑤ ⑥ ⑦
① ② ③ ④ ⑤ ⑥ ⑦	80.		80. ① ② ③ ④ ⑤ ⑥ ⑦
① ② ③ ④ ⑤ ⑥ ⑦	81.		81. ① ② ③ ④ ⑤ ⑥ ⑦
① ② ③ ④ ⑤ ⑥ ⑦	82.		82. ① ② ③ ④ ⑤ ⑥ ⑦
① ② ③ ④ ⑤ ⑥ ⑦	83.		83. ① ② ③ ④ ⑤ ⑥ ⑦

How satisfied are you that this campus demonstrates a commitment to meeting the needs of:

84.	Part-time students?	84. ① ② ③ ④ ⑤ ⑥ ⑦
85.	Evening students?	85. ① ② ③ ④ ⑤ ⑥ ⑦
86.	Older, returning learners?	86. ① ② ③ ④ ⑤ ⑥ ⑦
87.	Under-represented populations?	87. ① ② ③ ④ ⑤ ⑥ ⑦
88.	Commuters?	88. ① ② ③ ④ ⑤ ⑥ ⑦
89.	Students with disabilities?	89. ① ② ③ ④ ⑤ ⑥ ⑦

How important were each of the following factors in your decision to enroll here?

① ② ③ ④ ⑤ ⑥ ⑦	90.	Cost
① ② ③ ④ ⑤ ⑥ ⑦	91.	Financial aid
① ② ③ ④ ⑤ ⑥ ⑦	92.	Academic reputation
① ② ③ ④ ⑤ ⑥ ⑦	93.	Size of institution
① ② ③ ④ ⑤ ⑥ ⑦	94.	Opportunity to play sports
① ② ③ ④ ⑤ ⑥ ⑦	95.	Recommendations from family/friends
① ② ③ ④ ⑤ ⑥ ⑦	96.	Geographic setting
① ② ③ ④ ⑤ ⑥ ⑦	97.	Campus appearance
① ② ③ ④ ⑤ ⑥ ⑦	98.	Personalized attention prior to enrollment

Choose the one response that best applies to you and darken the corresponding oval for each of the questions below.

99. So far, how has your college experience met your expectations?
① Much worse than I expected
② Quite a bit worse than I expected
③ Worse than I expected
④ About what I expected
⑤ Better than I expected
⑥ Quite a bit better than I expected
⑦ Much better than I expected

100. Rate your overall satisfaction with your experience here thus far.
① Not satisfied at all
② Not very satisfied
③ Somewhat dissatisfied
④ Neutral
⑤ Somewhat satisfied
⑥ Satisfied
⑦ Very satisfied

101. All in all, if you had it to do over again, would you enroll here?
① Definitely not
② Probably not
③ Maybe not
④ I don't know
⑤ Maybe yes
⑥ Probably yes
⑦ Definitely yes

CONTINUE TO THE NEXT PAGE

Choose the one response that best describes you and darken the corresponding oval for each of the items below.

102. Gender:
① Female
② Male

103. Age:
① 18 and under
② 19 to 24
③ 25 to 34
④ 35 to 44
⑤ 45 and over

104. Ethnicity/Race:
① African-American
② American Indian or Alaskan Native
③ Asian or Pacific Islander
④ Caucasian/White
⑤ Hispanic
⑥ Other
⑦ Prefer not to respond

105. Current Enrollment Status:
① Day
② Evening
③ Weekend

106. Current Class Load:
① Full-time
② Part-time

107. Class Level:
① Freshman
② Sophomore
③ Junior
④ Senior
⑤ Special Student
⑥ Graduate/Professional
⑦ Other

108. Current GPA:
① No credits earned
② 1.99 or below
③ 2.0 - 2.49
④ 2.5 - 2.99
⑤ 3.0 - 3.49
⑥ 3.5 or above

109. Educational Goal:
① Associate degree
② Bachelor's degree
③ Master's degree
④ Doctorate or professional degree
⑤ Certification (initial or renewal)
⑥ Self-improvement/pleasure
⑦ Job-related training
⑧ Other

110. Employment:
① Full-time off campus
② Part-time off campus
③ Full-time on campus
④ Part-time on campus
⑤ Not employed

111. Current Residence:
① Residence hall
② Fraternity / Sorority
③ Own house
④ Rent room or apartment off campus
⑤ Parent's home
⑥ Other

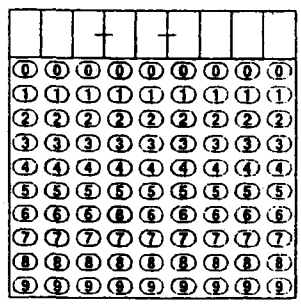
112. Residence Classification:
① In-state
② Out-of-state
③ International (not U.S. citizen)

113. Disabilities:
Physical disability or a diagnosed learning disability?
① Yes
② No

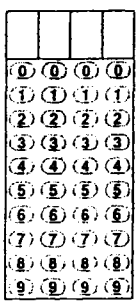
114. When I entered this institution, it was my:
① 1st choice
② 2nd choice
③ 3rd choice or lower

Your Social Security Number is requested for research purposes and **will not** appear on any report.

Social Security Number:
Write your Social Security number in the nine spaces of the box provided. Completely darken the corresponding oval.



115. Major:
Fill in major code from list provided by your institution.



116. Item requested by your institution:
①
②
③
④
⑤
⑥

Thank you for taking the time to complete this inventory.
Please do not fold.

PLEASE DO NOT MARK IN THIS AREA

1826760

Mark Reflex® forms by NCS Pearson MM100850-5 654321 Printed in U.S.A.

APPENDIX B

CONCEPTUAL SCHEMA FOR DROPOUT FROM COLLEGE

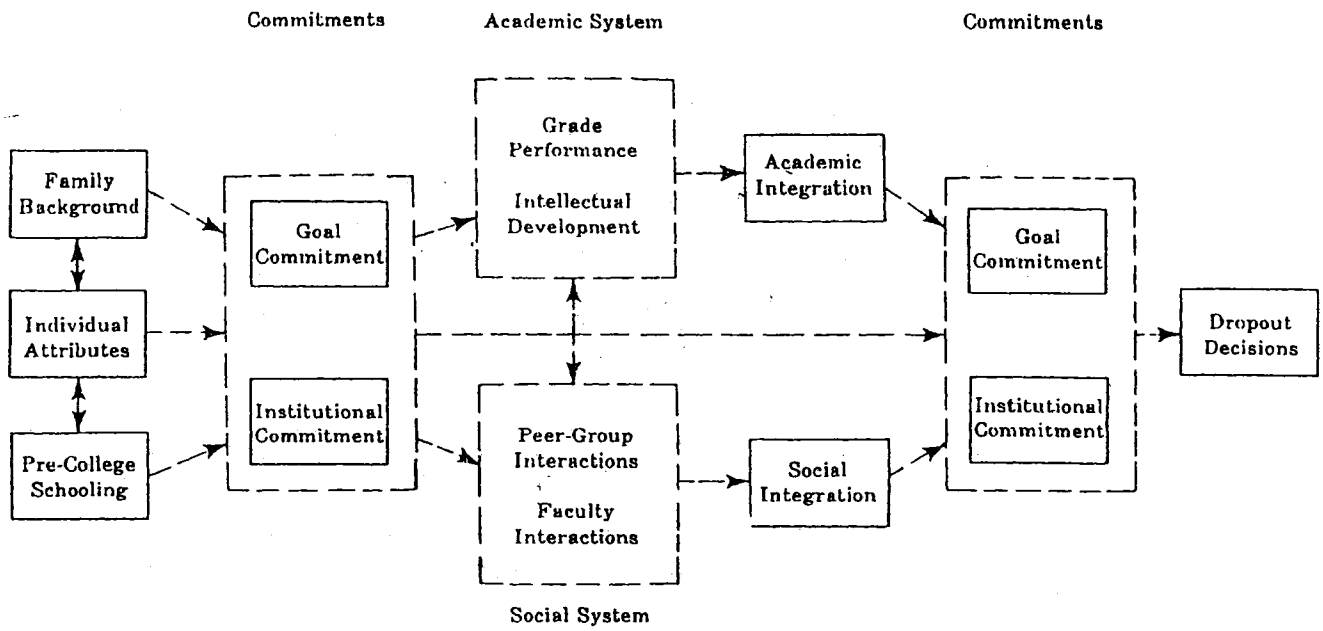


Figure 1
A conceptual Schema for Dropout from College

APPENDIX C

CONCEPTUAL MODEL FOR RESEARCH ON STUDENT-FACULTY INFORMAL CONTACT

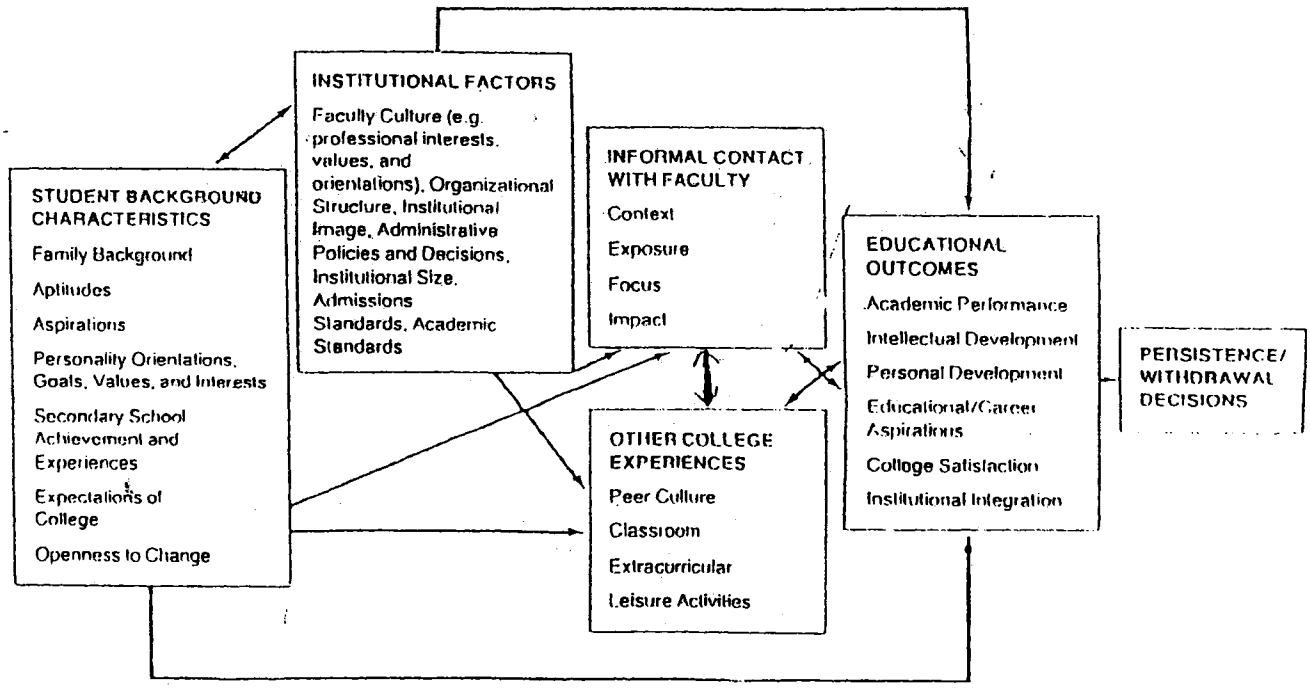


FIGURE 1. Conceptual model for research on student-faculty informal contact.

APPENDIX D

PATH MODEL OF STUDENT ATTRITION

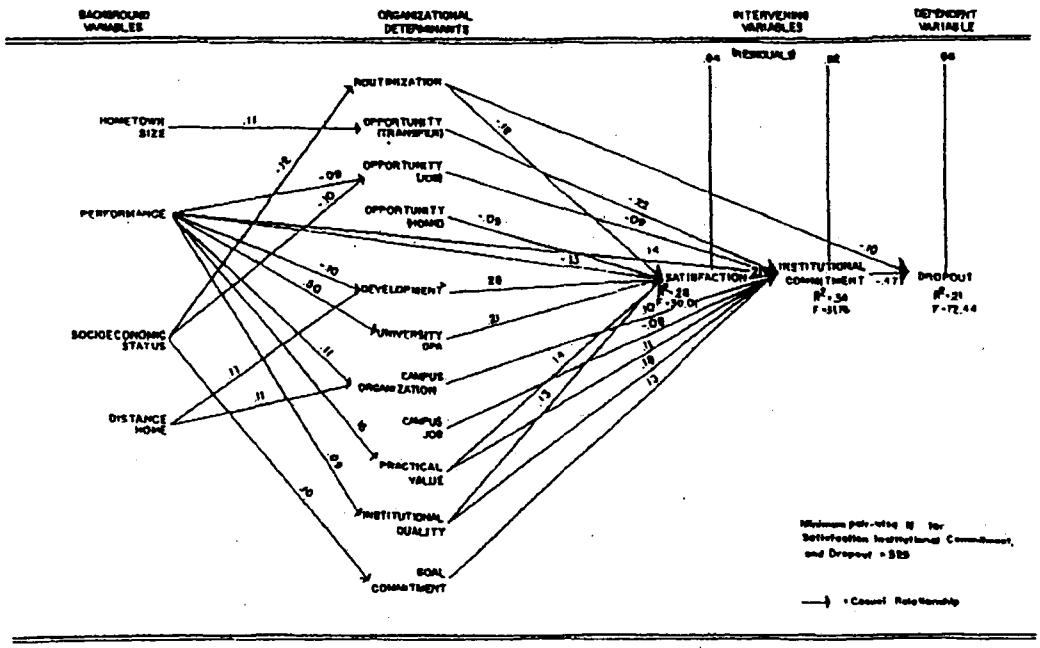


FIGURE 2. Path Model of Student Attrition for Women.

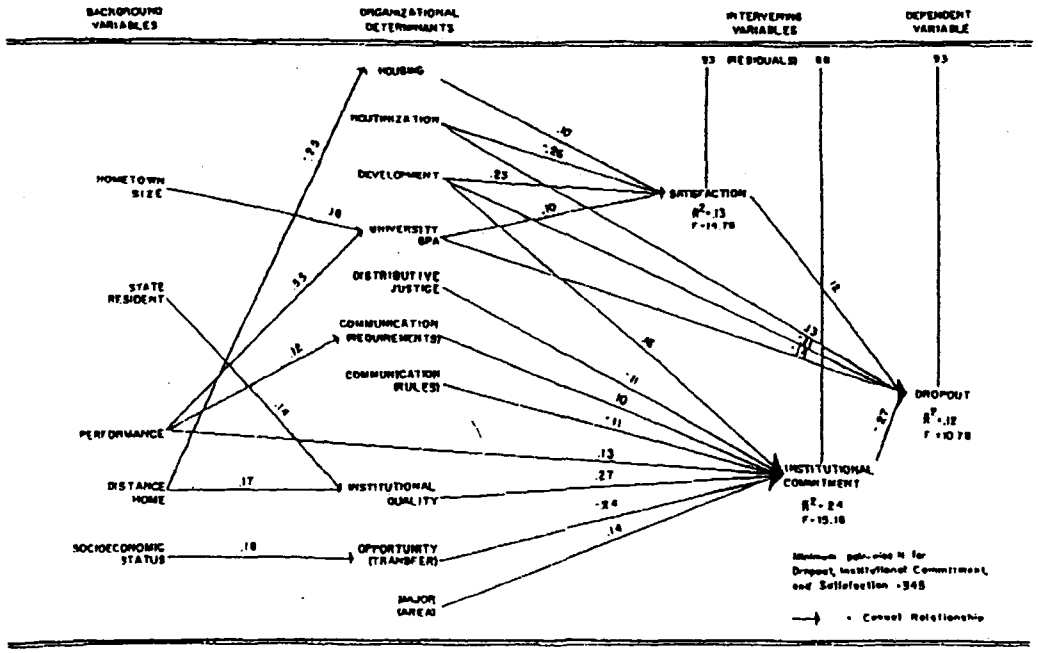


FIGURE 3. Path Model of Student Attrition for Men.

APPENDIX E

SUGGESTED RECONCEPTUALIZATION OF TINTO'S MODEL

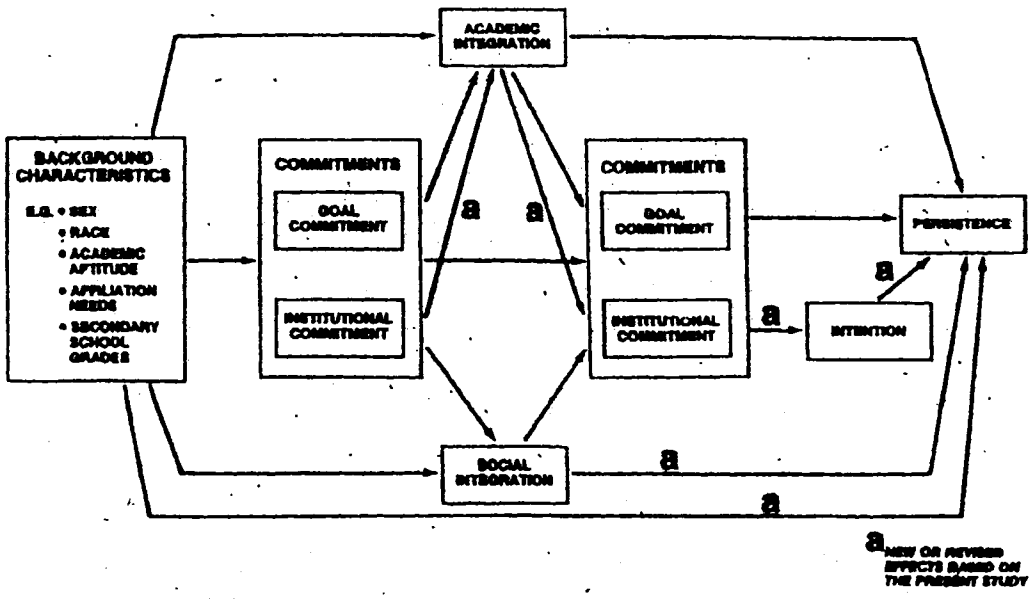


Figure 4: Suggested Reconceptualization of Tinto's Model

APPENDIX F

HUMAN RESEARCH COMMITTEE LETTER

Colorado State University

Office of Regulatory Compliance
Office of Vice President for Research
and Information Technology
Fort Collins, CO 80523-2011
(970) 491-1553
FAX: (970) 491-2293

MEMORANDUM

TO: Gene Gloeckner, School of Education, 1588

FROM: Janell A. Meldrem, Administrator for the Human Research Committee

SUBJECT: **PROJECT APPROVAL**
Title: Student Persistence: A Path Analytical Evaluation
Protocol No.:04-069H
Funding Agency: n/a

DATE: March 18, 2004

I am pleased to inform you that the above-referenced project was approved by the Human Research Committee on March 16, 2004 for the period March 16, 2004 to February 26, 2005. Because of the nature of this research, it will not be necessary to obtain a signed consent form. Consent is waived under § _ _.116 (d) as secondary data analysis. **Approval is for 3500 records.**

A status report of this project will be required within a 12-month period from the date of approval. Renewal is the Principal Investigator's responsibility, but as a courtesy, you will be sent a reminder approximately two months before the protocol expires. The Principal Investigator will report on the number of subjects who have participated this year and project-to-date, about problems encountered, and provide a verifying copy of the consent form or cover letter used. The necessary form (H-101) is available from the Regulatory Compliance web page (see below). Should the protocol not be renewed before expiration, all activities must cease until the protocol has been re-reviewed.

It is the responsibility of the investigator to immediately inform the Committee of any serious complications, unexpected risks, or injuries resulting from this research. It is also the investigator's responsibility to notify the Committee of any changes in experimental design, participant population, or consent procedures or documents. This can be done with a memo which completely describes the changes and their consequences (new consent form or cover letter, or altered survey instrument, for example). Students serving as Co-Principal Investigators may not alter projects without first obtaining PI approval. The PI is ultimately responsible for the conduct of the project. Upon completion of the project, an H-101 form should be submitted as a close-out report.

This approval is issued under Colorado State University's OHRP Federal Wide Assurance 00000647 issued July 1, 2001. If approval did not accompany a proposal when it was submitted to a sponsor, it is the researcher's responsibility to provide the sponsor with the approval notice.

Please direct any questions about the Committee's action on this project to me for routing to the Committee.

Additional information is available from the Regulatory Compliance web site at www.research.colostate.edu/rcoweb

xc: Lynn Marie Burks

DeVry University

February 11, 2004

DuPage Campus
1221 North Swift Road
Addison
Illinois 60101-6106
630-953-1300
www.dpg.devry.edu

Tinley Park Campus
18624 West Creek Drive
Tinley Park
Illinois 60477-6243
708-342-3300
www.tp.devry.edu

Dear CSU Human Research Committee Members,

This letter is written to support Ms. Lynn Marie Burks and her proposal for her Ph.D. dissertation research on "Student Persistence: A Path Analytical Evaluation."

In Ms. Burks proposed research, she will use DeVry data from two student archive databases. For student background data, Ms. Burks will use information from the student records database. Information used from the student records database include general background information such as gender, student quality rating, enrollment status, credit hours earned, and GPA. For student satisfaction data, Ms. Burks will use information from the Student Satisfaction Inventory archive database. The satisfaction database includes information on our student's expectations and levels of satisfaction with the institution. Examples include student's satisfaction with campus life, financial aid and academic development. The inventories are administered to the students voluntarily every fall term.

For Ms. Burks' data collection and analysis, all students' identifying information will be removed. The research focuses on several different types of students. For example, comparing satisfaction rates of part-time students versus full-time students. The research will not be related to any individual student's academic or personal status.

DeVry University currently does not have a Human Research Committee since the university fosters student learning through high-quality, career-oriented academic programs that do not require research as a main emphasis.

Ms. Burks has been faculty member at the DuPage campus for many years. We know the quality of her work and expect her to make judicious use of the data we are allowing her to access.

Sincerely,

Susan Lerner Friedberg, Ph.D.
President, DuPage & Tinley Park Campuses
DeVry University

cc: Dr. Gene Gloeckner, CSU Ph.D. Advisor

DeVry University

February 16, 2004

Dear CSU Human Research Committee Members,

This letter is written to support Ms. Lynn Marie Burks and her proposal for her Ph.D. dissertation research on "Student Persistence: A Path Analytical Evaluation."

In Ms. Burks' proposed research, she will use DeVry data from two student archive databases. For student background data, Ms. Burks will use information from the student records database. Information used from the student records database include general background information such as gender, student quality rating, enrollment status, credit hours earned, and GPA. For student satisfaction data, Ms. Burks will use information from the Student Satisfaction Inventory archive database. The satisfaction database includes information on our student's expectations and levels of satisfaction with the institution. Examples include student's satisfaction with campus life, financial aid and academic development. The inventories are administered to the students voluntarily every fall term.

For Ms. Burks' data collection and analysis, all student-identifying information will be removed. The research focuses on different types of students. For example, comparing satisfaction rates of commuter students versus students that live in student housing. The research will not be related to any individual student's academic or personal status.

DeVry University currently does not have a Human Research Committee since the university fosters student learning through high-quality, career-oriented academic programs, which does not require research as a main emphasis.

Sincerely,

Sherril Hoel, Ph.D.
Dean Faculty and Academic Administration

CC: Dr. Gene Gloeckner, CSU Ph.D. Advisor