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African-American Freshmen Student Persistence Factors In Comparison To White Freshmen Student Persistence Factors At Indiana State University

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AFRICAN-AMERICAN FRESHMEN STUDENT PERSISTENCE FACTORS IN COMPARISON TO WHITE FRESHMEN STUDENT PERSISTENCE FACTORS AT INDIANA STATE UNIVERSITY

A Dissertation

Presented to

The School of Graduate Studies

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In Partial Fulfillment

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Doctor of Philosophy

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by

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APPROVAL SHEET

The dissertation of Gwendolyn Lee-Thomas, Contribution to the School of Graduate Studies, Indiana State University, Series III, Number 751, under the title *African-American Freshmen Student Persistence Factors in Comparison to White Freshmen Student Persistence Factors at Indiana State University* is approved as partial fulfillment of the requirements for the Doctor of Philosophy Degree.

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ABSTRACT

The 1990 national census report revealed that Indiana ranked 47th in the nation in regard to individuals over the age of 25 with bachelor degrees. Forty-nine percent of the 1995-96 Indiana high school graduates matriculated into Indiana higher education institutions—56 percent in-state and out-of-state (Indiana Commission for Higher Education Report, 1998). However, the African-American student persistence rate is 24 percent, regarding those who attain a bachelor degree within four years compared to 51 percent for all students. However, if extended to six years, the percentage increases to 42.2 percent compared to 57.5 percent for all students.

This study determined certain retention factors that can be used as predictors that impacted persistence for African-American students and which were not the same predictors that impacted persistence for White students at Indiana State University.

The subjects in this study included all freshmen students who completed the 1996 and 1997 Student Information Questionnaires during the preceding summers of fall 1996 and 1997, respectively.

The logistic regression process was used to identify retention factors that were significant for each cohort and ethnic group by eliminating those variables that did not meet the .05 level of significance. This process resulted in a persistence equation with an odds ratio which determined the odds of each group's persistence based on the significant variable.

The predictor variables that impacted persistence for all students in both the 1996 and 1997 cohorts were also the predictor variables that impacted persistence for White

students in both cohorts. The predictor variables that impacted persistence for African-American students in the 1996 and 1997 cohorts were different from those variables that impacted persistence for White students and students overall.

The logistic regression process tested for model fit to the data and correctly predicted 72% to 99% of the overall cases.

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Dr. Samuel F. Hulbert, yes, it is done.

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Chapter 1

INTRODUCTION

As the 21st century approaches, one of the most compelling issues for the state of Indiana is an educated population. A recent report from the 1990 national census revealed that when considering individuals over the age of 25 with bachelor degrees, Indiana ranked 47th in the nation. Of the students who graduated from high school during the 1996-97 academic year, 49 percent matriculated into Indiana higher education institutions—56 percent in-state and out-of-state combined (Indiana Commission for Higher Education Report, 1998). Therefore, it is becoming increasingly imperative for institutions of higher education in Indiana to seek practical and legitimate avenues that will facilitate a positive change in this national rank. A major concern in facilitating this change in national rank is a comprehensive understanding of persistence of all students, and more specifically, African-American students. This understanding of persistence is detrimental to gathering data that explain student degree attainment. The study of persistence has occurred over the past 25 years by researchers such as Vincent Tinto (1975, 1987, 1993), Alexander Astin (1975, 1993), E. T. Pascarella (1985a, 1985c), E. T. Pascarella and P. T. Terenzini (1991), and J. P. Bean (1980, 1982, 1985, 1990). These researchers have found that the study of persistence must include multiple dimensions that include pre-college preparation, commitment and intentions, and the social and academic interactions and experiences of the student within the institution. Within these

three main dimensions aggregate studies have resulted in an identification of persistence factors. In the pre-college dimension, persistence factors include family background, prior schooling, skills and abilities, and financial preparation. In the commitment and intentions dimension, the retention factors include college choice, high school habitus, and post-secondary aspirations. In the academic and social integration dimension, the factors include classroom expectations, academic performance, out-of-class expectations regarding the quality and the type of social activities and organizations. These factors within each of the three dimensions greatly influence whether students remain or leave, stop-out, or are dismissed from an institution of higher education. More specifically, Tinto's (1975, 1987, 1993) multi-dimensional persistence model has formed the basis for many studies regarding persistence, and was inclusive of traditional and non-traditional students, students of color, and both two and four-year private and public institutions.

With the changing racial demographics of students matriculating into institutions of higher education, more recent research have elected to look pensively at the dimensions of persistence based on race. Rendon and Hope (1996) have contended that the future of minority students—new immigrants, native-born ethnic and racial minorities, low income, and language minorities—appears to be in jeopardy, and that the nation's destiny is being threatened by a significant educational gap between white and minority students. Blandin (1994) contended that "because of immigration and differential fertility rates, African-Americans and Hispanics are becoming an ever-larger part of the American population. At the same time, the population as a whole is aging" (p. 23). In addition, Blandin implied that the U.S. economy and educational systems are not working as well for minority Americans as they are for members of the majority. Society as a whole, and education in particular, must work harder to ensure quality

education for all students in order for America to prosper in the 21st century. It is, therefore, imperative that research regarding the factors that impact degree attainment for minority students become a catalyst for studying policy change in an effort to close this educational gap.

In addition, a diverse student body that is maintained throughout the higher education process also fosters what Black-Branch and Lamont (1996) referred to as cultural reciprocity which is a means of exploring the impacts of cross-cultural instruction on professorial self-reflection. Self-reflection through cultural reciprocity is the "discriminatory ability required to sort, accept, and gauge the rationality and utility of evolved thoughts . . . best nurtured in an environment rich with a diversity of cultures, personal histories, and realms of experience" (p. 3). Black-Branch and Lemont (1996) contended that this also allowed for the empowering of students of diverse cultures, and eliminates the possibility that professors function as all-knowing, silent interrogators.

However, as the persistence factors and their impact on the African-American student body at Indiana State University were examined, it was necessary to recognize that any recommendations or conclusions that facilitate African-American student participation must serve as a means to an end, which is graduation.

Statement of the Problem

Of the minority groups in the state of Indiana, the largest minority student population consists of African-Americans, who constitute seven percent of the students in Indiana public higher education institutions. It is, however, their persistence rate of 24 percent that remains the least impressive statistic in regard to those who attain a bachelor degree within four years compared to 51 percent for all students. Concomitantly, when

success was based on current enrollment and graduation within six years, the percentage of African-American students who graduated or continued to persist resulted in a marked increase of 42.2 percent compared to 57.5 percent for all students. This implied that African-American students graduate at a much slower and lower rate than all students combined (Indiana Commission for Higher Education Report, 1998).

Rowley, Lujan, and Dolence (1998) in their work Strategic Choices for the Academy: How Demand for Lifelong Learning Will Re-Create Higher Education cited Harold Hodgkinson (1992) that by the year 2010, 30 to 40 percent of jobs will require a college education. Since African-Americans are graduating at a disproportionately lower rate than other groups of students overall, specifically White students, it is conceivable that their socioeconomic position will remain disproportionately less as well.

Education has been deemed the vehicle to economic success and an influence on socialization effectiveness. Alger (1997) related that "the ultimate product of universities is education in the broader sense, including preparation for life in the working world" (p. 21). Therefore, Alger (1997) recommended that a broad-sense education is best facilitated by a culturally diverse student body. As Indiana's citizenry becomes more diverse, ethnically and culturally, concentration on strategies regarding successful education for all students is imperative. For these reasons, it is necessary to understand the persistence of African-American students in higher education.

Current research from the Indiana Commission for Higher Education (1998) revealed that African-American students are more likely than White students to have high aspirations of attending higher education institutions and attaining a master degree. Research specific to Indiana State University indicated that African-American students are also more likely to be residents of Indiana, have an overall family income of less than

$11,040, and not qualify for a merit scholarship. Furthermore, African-American students are less likely than White students to have enrolled in college preparatory or advanced placement classes or attended college preparatory high schools. Since these are factors that researchers have proven directly and indirectly impact persistence and graduation, it is important to identify any differences between African-American and White students that may cause African-Americans to persist less well than White students.

Research that distinguishes between the needs of African-American and White students is essential to the specification of differences for various groups in the development of policies (Bateman and Kennedy, 1997) which in essence should be related to the university's mission (Alger, 1997). Specification of differences is equally important for policy development when student groups do not differ because standardized policies are less costly than differentiated ones (Litten, 1982). Therefore, as a result of this research, specific recommendations are suggested to decision-makers at Indiana State University regarding the factors that impacted the persistence of African-American students of the 1996 and 1997 cohorts.

Purpose of the Study

In light of the literature research regarding persistence factors in general, and for African-American students, specifically, this study looked at the persistence of African-American students in comparison to White students by comparing persistence factors of the Fall 1996 freshmen cohort and the Fall 1997 freshmen cohort. This comparison yielded results that allowed identification of freshmen persistence predictors at Indiana State University, identification of persistence factors that affect African-American and

White students, and a quantitative basis upon which recommendations for policy development can be established in regard to increasing African-American freshmen student persistence.

The impetus behind this research was based on Andrew Hacker's (1992) comment that "*action* [italics added] must mean more than *opportunity* [italics added]" (p. 136) when considering the education of African-American students in higher education. Hacker (1992) contended that approximately 80 percent of college-bound African-Americans go to integrated schools where they make up 7.4 percent of the student body. However, we see that their graduation figures tend to be proportionately half of that of all students. Difficulties that African-American students face range from unknown deficiencies in pre-college preparation to being the only individual of his/her ethnicity in a classroom. An environment in which the student is the only one is often viewed as hostile resulting in a sense of isolation (Boykin,1986). Access for African-Americans cannot be limited to entry into the institution; it must also include success. There must be a systematic structure that displays a culture and climate of belonging for the students as well as academic and social support services that could signify the students' worth to the institution. Finally, the results of this research allowed for specific recommendations to decision-makers at Indiana State University regarding the factors that significantly impacted the persistence of African-American students.

Research Questions

This study was designed to identify the dimensions of persistence factors that impacted persistence for African-American freshmen students in comparison to White freshmen students at Indiana State University after their first year. In particular, data

were examined to see if there were differences between African-American and White student persistence factors in two cohort groups, 1996-97 and 1997-98. This study provided answers to the following questions. Which of the chosen factors have the most influence on persistence for first-year students at Indiana State University? Are there differences between persistence factors that impact African-American and White students? What factors have the most influence for African-American students? What factors have the most influence for White students? Based on the analysis of factors, what strategies or recommendations for policy development should be implemented or studied?

The following null hypotheses were constructed from the above questions:

H_1: There is no significant difference among the factors that influence persistence for first year students at Indiana State University.

H_2: There is no significant difference among the factors that influence persistence for African-American students in comparison to White students at Indiana State University.

H_3: There is no significant difference among factors that influence persistence for African-American students at Indiana State University.

H_4: There is no significant difference among factors that influence persistence for White students at Indiana State University.

Significance of the Study

This study was undertaken to determine if the persistence factors within the pre-college, commitment and intention, and academic and social dimensions for African-American students differed from those for White students after their first year at Indiana

State University. The persistence factors used in this study have been proven to be predictors of persistence and graduation. An analysis of these factors can become the basis for university-based prevention strategies that supports persistence and graduation of African-American students effectively.

Sources of Data

The subjects in this study were two entering freshmen cohort groups who completed the Student Information Questionnaire (SIQ) in the Fall semesters of 1996 and 1997, and who did and did not return to Indiana State University during the Fall semesters of 1997 and 1998, respectively. The 1996 SIQ was developed in 1986 and has proven reliability by yielding similar results in student responses over the ten years it has been administered by the Office of Institutional Research and Testing at Indiana State University. The 1997 SIQ, an expansion of the 1986-96 SIQ, was developed by a sub-committee of the enrollment planning team at Indiana State University and has been used over the past two years. The 1997 SIQ was designed to provide a freshman profile and identify freshman characteristics that contribute to student persistence at Indiana State University. Although the purpose of the SIQ was designed to gather information rather than test performance, the responses from the survey have yielded similar results as those found on the 1986-96 SIQ.

Definition of Terms

Cohort – A group of students who start their college experience in the same semester.

Persistence – The duration of time students remain in college.

Retention – The institution's ability to maintain student enrollment through graduation.

Limitations

Findings in this study were limited by the following factors:

1. The study examined only two cohort groups over a two-year period.
2. This study did not control for demographics (age, gender, geographical location) or level of course of study (advanced placement courses, conditional admission, etc.).
3. Data used in this study were collected from student self-reports and may or may not reflect actual experiences.

Delimitations

1. All 1996 and 1997 incoming freshmen at Indiana State University who completed the SIQ during the summer orientation were included in this study.

Chapter Summary

As students of different ethnic origins become citizens of the state of Indiana, it is imperative that opportunities and support systems for a quality education exist for all students. African-Americans have been a US minority group with a history of inequality and inequity by the systematic structure of institutions, including higher education for hundreds of years. Past research has indicated that there is a need to study the differences in experiences and expectations of different ethnic groups. First, these studies are necessary so that funding for standardized or different programs can be effectively allocated, the educational gap between ethnic groups can be minimized, an increase in the quality of education for all students can be realized, and policy that facilitates a quality education for all students can be developed. Second, an increase in quality education for

all students must also be viewed through socialization practices within the campus culture as well as within the academic culture of the classroom experiences. While cross-culturally responsive socialization opportunities should be expected, there should also be an expectation of cross-cultural responsiveness among and between the professors and students in the classroom. Third, increased retention of African-American students will also facilitate the realities of life in the world of work that are best experienced with face-to-face interactions with people of different backgrounds.

Identifying and understanding the persistence factors that impacted the persistence of African-American students were essential to their graduation rates. It is also necessary to understand the persistence factors and how they impacted White students differently from African-American students. Although persistence factors for all students have been identified in past research, these persistence factors and their impact on African-Americans in comparison to their impact on persistence for White students at Indiana State University have not been identified. If these differences can be identified, then there can be intervention methods that facilitate an increase in graduation rates for both White and African-American students.

Chapter 2

REVIEW OF RELATED LITERATURE AND RESEARCH

This review of literature addresses each of the factors within the three dimensions in the study of persistence. The first dimension refers to pre-college and includes factors of family background, prior schooling, skills and abilities, and financial preparation. The second dimension refers to commitment and intentions and includes factors of college-choice, high school habitus, and post-secondary aspirations. The third dimension refers to academic and social integration and includes factors of classroom and social organization expectations.

Pre-College Factors

Student background characteristics include what Tinto (1975, 1987, 1993) has identified as family background (i.e., family income and parental education), prior schooling (i.e., high school academic preparation such as advanced placement and college preparatory curricula), skills and abilities (i.e., high school GPA and SAT scores), and financial preparation (i.e., whether or not parents and or students made arrangements to pay for college via scholarships, financial aid, etc.).

Family Background

The research regarding family background support the view that higher socioeconomic status tends to result in better educational opportunities. Beyond

socioeconomic status, Hossler and Stage's (1992) model of predisposition found that parental encouragement and parents' level of education are the most powerful predictors of educational plans. Bateman and Kennedy (1997) challenged Hossler and Stage's assumption of the traditional family structure and addressed in their research a comparison of academic success for African-American males from single-parent and two-parent families. For African-American males in female-headed families, Bateman and Kennedy's (1997) research results ranked the mother's education, school grades, and the father's education in order of importance. However, for those African-American males in two-parent families, the research results ranked mother and father's education, family income, and lastly, school grades in order of importance. Pascarella and Terenzini (1991) , and Noell (1991) and found that when considering parental education, prior research has revealed that the mother's education predicts persistence better than the father's education.

Prior Schooling

Prior schooling includes the high school academic preparation a student received, such as advanced placement classes, college preparatory classes, or completion of the curriculum minimum. Horvat (1996) presented an in-depth ethnographic study of three African-American female students, all of whom were hard-working with roughly an A-average, and SAT scores averaging 950, which were above the national norm of 740 for African-American students. Also, all three students had taken at least one honors or advanced placement course in the two years prior to the study and were all well-liked by their teachers and classmates. Horvat's work revealed the significance of the high school curriculum, organizational habitus, and counselor's position within the high school. It was found that, in addition to advanced placement classes, if the student was

not in a college preparatory high school or had a college preparatory track that was integral to the high school, then that student, regardless of skills and abilities, would less likely attend or persist in college.

Skills and Abilities

Skills and abilities usually refer to the grade point average (GPA), and Scholastic Aptitude Test (SAT) and American College Test (ACT) scores upon graduation from high school. As the predictability of skills and abilities were studied, research indicated that there were polemic views regarding validity of standardized tests for African-American students. Fleming and Garcia (1998) found in their study that standardized test scores predicted academic performance better for African-American students who attended Black colleges, with the same consistency and level of prediction usually found for White students. Fleming and Garcia (1998) also found that although the correlation between standardized tests and predicted academic performance was generally better for White students than African-American students, this was only evident in the senior year of college.

Hacker (1992) purported that, although the SAT has become the closest thing we have to a national IQ test, at best, it rates a narrow range of academic-oriented skills. He also implied that the sponsors of the SAT have known for many years that their test fails to identify how people will do in later life and that a follow up study from Yale University graduates revealed no significant relation between original scores and standing within occupations. More importantly, the SAT does have a class bias, since "much of the verbal portion alludes to information or experiences with which middle-class children are more likely to be familiar" (p. 144). Since African-Americans spend more of their lives in segregated settings, the outcome of this isolation is that they have less sustained

exposure to the modern world and those contacts are not developed to the fullest extent (Hacker, 1992, p. 145).

Although this report does not speak expressly to gender difference, Fleming and Garcia (1998) found that African-American female students produced better correlations between SAT scores and academic success than White female students in their freshmen year of college. Also, this study found that the coefficient predictor validity for African-American males was more variable than coefficient predictor validity for white students. As a result, this study suggested that "overall trends in favor of white students mask sometimes dramatic differences by sex that suggest differential adjustment issues" (p. 491). Therefore, it appears that sex and race are greater determinants of predictive validity than mean SAT scores regarding student success in higher education.

Financial Preparation

Financial preparation refers to students' and parents' commitment to higher education through saving and applying for financial aid such as loans, grants, and scholarships (Tinto, 1975, 1987, 1993), Astin (1975, 1993), and (J.P. Bean, 1980, 1982, 1985, 1990). Also, it has been found throughout the research that financial preparation is a series of complex issues that must be observed through multiple lenses. Understanding these complexities requires that financial preparation and ability to afford college, must be broken down by socioeconomic status (McPherson and Schapiro, 1998). McPherson and Shapiro's (1998) work recognized that college affordability for lower class students has become the biggest challenge for higher education with a decrease in grants. However, St. John (1998) scrutinized McPherson and Schapiro's (1998) work by suggesting that unless we also understand the significance of affordability for middle-

class students (although college affordability has not deterred enrollment) via expansion of loans, understanding the multiple levels of complexity cannot be realized.

Beyond initial affordability, Tinto (1993) cited works by Stampen and Cabrera (1986) that financial aid for low-income students "appears to eliminate financial reasons for dropping out of college" (p. 34). Also, Cabrera, Nora, and Castaneda (1992) suggested that work-study allows students to engage in other university-related social activities which are directly related to persistence. Tinto (1993) recognized Murdock's (1987) meta-analysis of over fifty studies of persistence which found that financial aid had a "less than small" effect on persistence (p. 68). However, Stampen and Cabrera (1986) contended that financial aid is part of the overall impact of student persistence.

More specifically, Hauptman and Smith (1994) found that in light of the anomaly of African-Americans being much more likely to come from low socioeconomic circumstances, financial preparedness played a significant role in student enrollment and persistence in higher education. Additionally, although African-Americans from equivalent preparedness groups of the high school class of 1980 enrolled at four-year institutions at higher rates than whites, the persistence rates of African-Americans were significantly lower (Hauptman and Smith, 1994). Therefore, accepting financial preparedness as a persistence factor indicates that African-American students may be less prepared financially. However, grants, scholarship, work-study and other federally funded programs can minimize the impact this factor can have on African-American student attrition (Hauptman and Smith, 1994).

Commitment and Intentions

College Choice

Horvat (1996) and Pascarella, Bohr, Nora, and Terenzini (1996) have provided additional insight into how high schools play an integral role in college choice that influences the student's mentality of commitment to higher education. Several studies have revealed the nexus between college choice and persistence. Horvat's (1996) in-depth ethnographic study of three African-American students from three different high schools revealed that although the family served as a major influence on college choice, the organizational habitus of the high school had an equal, and in some cases, greater influence on a student's perception of higher education based on three influences. The three influences included whether or not college was a given or a choice, whether the student would apply to a public or private institution, and the distance between home and the chosen college or university. Horvat (1996) also found that these varying influences tended to fall along racial and socioeconomic lines. Horvat (1996) stated that "it seems that in some cases race serves as a proxy for class in determining the future the students envision for themselves and how they proceed through the process of planning their lives after high school" (p. 25). Today, when race, socioeconomic status, and high school habitus are considered together, the study revealed that students who attended college preparatory high schools—where matriculation into higher education was a given or was "hard-wired" into the curriculum and quality of counseling—were usually White and of middle-class or upper-middle class status. Students who were in high schools that either provided college preparatory tracks or the minimum curriculum for graduation were usually comprised of African-Americans who were bused into the neighborhood or were lower-middle class local students.

Regarding the nexus between college choice and persistence, Pascarella, Bohr, Nora, and Terenzini (1996) have contended that students make educational decisions in three stages. First, a college aspiration is formed. Students develop the predisposition or intention to continue their education beyond the secondary level. The second stage, search and application, occurs when students begin to acquire information regarding college attributes that are particularly important to them in deciding which colleges to attend. The third stage, selection and attendance, occurs when students compare and evaluate their preferred alternatives in terms of the college attributes most important to them (Paulsen, 1990). The results of this study revealed that students make their choices based on the human capital theory that requires weighing the benefits (academic, social, financial) and costs (financial) of attendance at the chosen college.

High School Habitus

In support of Horvat's (1996) work, Gray-Little and Carels (1997) studied racial dissonance, self-esteem, and achievement and found that school racial composition had a small but statistically significant association with self-esteem. Although the impact of racial composition is more complex, "racially balanced schools appear to be associated with the best self-esteem outcomes for both Black and White students" (p. 124). Gray-Little and Carels (1997) utilized the contact hypothesis, used as an argument against school segregation, and recognized the work of Gerard (1983) and Stephan (1978) which suggested that isolation of African-American students must be "viewed as stigmatizing and inherently deleterious to their educational and mental development" (p. 110). Also, awareness of the higher status group, coupled with forced association with a lower status group was assumed to lower self-esteem, motivation, and achievement (Ausubel & Ausubel, 1963)" (p. 110). With these experiences, or lack of racially balanced

experiences in high schools, African-American students may or may not develop a healthy commitment to higher education that may be viewed as an extension of the high school experience. The work of Jensen, White, and Galliher (1982) contradicted these findings as a result of their research on racial composition and its impact on White students. Their research investigated four different samples comparing Anglos, African-Americans, and Hispanics on self-esteem, and found that there was no association between self-esteem and ethnic composition (the percentage of one's ethnic group in the school population). Yet, when racial composition and its impact on African-Americans was studied, Duncan's (1994) longitudinal study found that racial composition was associated with school completion but only for African-Americans. Gray-Little and Carels (1997) indicated that their work substantiates Miller and Carlson's (1982) earlier work that elements that make a supportive and stimulating school environment are beneficial for all students.

Post-secondary Aspirations

According to the Indiana Commission for Higher Education's report, African-American Participation in Indiana Public Postsecondary Education (February 1998), the behavior of African-American students in the college choice process was no different than all students in the state of Indiana. Although the number of students who participated in each stage of the process decreased, African-American students remained two to ten percentage points higher in each stage when compared to all students (see Table 1).

High school structures served as a template for the students' view of higher education as an investment and shed light on the nexus between college choice and persistence (Horvat, 1996 and Pascarella, Bohr, Nora, and Terenzini, 1996). It is

therefore necessary to exercise extreme caution when considering the profile of the students who attend Indiana State University and examine how this relates to their post-secondary aspirations in general (Tinto, 1993). Furthermore, the profile also revealed the students' "likelihood" of developing effective academic and social interactions leading to adequate satisfaction thereby facilitating chances of persistence (Tinto, 1975, 1987, 1993; Hurtado, 1995; Pascarella and Terenzini, 1991; Astin, 1993; & Bean, 1985).

Academic and Social Integration

Tinto (1987, 1993) has contended that academic and social interactions as well as commitment to higher education are two-way considerations which include what the student does or does not bring to the institution and what the institution does or does not do to facilitate or enhance the students' perception, expectation, and preparation. Tinto (1993) recognized Pace's (1980, 1984) work regarding the linkage between involvement and learning which found that it matters less where a student goes to college than what that student does once he or she gets there. Tinto further contended that for African-American students in predominantly white institutions, non-cognitive components of academic integration are more important to persistence than they are for White students. Tracey and Sedlacek (1987) have suggested, "Having the requisite skills for persistence is one thing, being able to apply them in perhaps strange, unfriendly settings is another" (p. 73). Aggregate studies regarding academic and social integration among African-American students in comparison to White students found that departure among both groups as well as Hispanic students reflect both issues of social contact/congruence and academic performance (Tinto, 1975, 1983; Hurtado, Carter, Spuler, Dale, and Pipkin, 1994; Attinasi, 1989; & Astin 1993). However, persistence

among non-White students tend to be a reflection of academic difficulties rather than social ones. It is therefore important to note that since a disproportionate number of non-White students come from inferior high schools in low income areas, it is necessary to facilitate their acculturation into the academic component of the institution via relations with faculty, staff, and administration.

Social Integration

Loo and Rolison (1986) and Attinasi (1989) found that students of color face particularly severe problems in gaining access to the mainstream social life in largely white institutions and therefore have relatively fewer options as to the types of communities in which to establish membership than do White students. More specifically, Pascarella (1985a, 1985c) found as a result of a nine-year study with 350 four-year colleges, that African-American student social integration is influenced more by formal forms of association (e.g., serving on a university or department committee) than is the case for White students in general. This was supported by Tinto (1987, 1993) in that the degree of involvement in university-related activities may be more important for effective social interactions among African-American students than other groups. Therefore, since much of the university's programming for students of color was usually marginal to the central structure of the university, participation in formal committees verified the student's inclusivity into the mainstream of the institution (Tinto, 1993). Without this degree and type of involvement, students of color are less likely to see themselves as a central part of the institution and as a result form enclaves that are marginal to the mainstream, ultimately creating incongruence and isolation (Tinto, 1987; Murguia, Padilla, & Pavel, 1991).

Table 1

African-American Aspiration for Postsecondary Education Ninth Grade Survey (1997)

	African American Student Responding		All Students Responding	
	Number	Percent	Number	Percent
Survey (African American respondents = 6.1% of total	3,829	100%	62,858	100%
A. Highest level of schooling I expect to achieve (mark one)				
Four-year degree or higher	2,394	62.52%	38,579	61.37%
Two-year degree	425	11.10	5,664	9.01
Undecided or other	378	9.87	9,946	15.82
High school diploma	322	8.41	4,712	7.50
Diploma plus training of less than 2 yrs.	261	6.82	3,445	5.48
Might leave high school before graduating	49	1.28	512	0.81
B. What I would like to do the first year after high school graduation (mark all that apply)				
Continue my education at a college, University or vocatioal/technical school	2,920	76.26	45,930	73.07
Apprenticeship (on the job training Leading to license in a skilled occupation)	841	21.96	9,755	15.52
Training provided by an employer	324	8.46	4,603	7.32
Military Training	313	8.17	6,694	10.65
Employment that does not require more training	296	7.73	6,548	10.42

Academic Integration

Academic integration also impacts persistence. Tinto (1975, 1987, 1993), Kim and Sedlacek (1996), and Cooper (1997) contended that the classroom plays an integral part in regard to whether or not the students believe or feel that they belong in the institution and are wanted by the institution. Aggregate research revealed that teachers

tended to have lower expectations for African-American students or fail to understand the cultural differences that may foster certain apprehensions that students experience in the classroom (Boykin, 1986). Boykin (1986) additionally suggested that when students view the environment as hostile, teachers are also viewed as oppressors. Although many teachers seek to understand all of their students, African-American students are usually viewed as a monolithic group thereby fostering non-recognition of their variations within the African-American community itself (Cooper, 1997).

In light of gender differences among and between African-American and White students, studies have purported that African-American males and females differ in their reasons for attending college, staying in college, choosing a major, and interacting within the college/university community of predominantly white institutions despite racial tensions, alienation, and isolation (Kim & Sedlacek, 1996). Drew and Work (1998) indicated in their work on gender-based differences in perception of experiences in higher education that female students had more formal interactions with faculty, while male students had more informal and research interactions with faculty. On a different note regarding indicators of African-American male retention, Ford, Kokjie, and Lewis (1996) found that emotional intelligence (EQ), bi-cultural identity, locus of control, and social support were significant indicators.

Although aggregate studies revealed that academic and social integration are detrimental to understanding student persistence, Tinto (1987, 1993) has reminded us that a student does not necessarily have to experience incongruence and isolation in both areas. In fact, a student can become satisfactorily integrated academically and still depart because of marginalization outside the mainstream of the institution. The impact of

these two areas is not necessarily symmetrical and the degree of asymmetry appears to vary from institution to institution.

Chapter Summary

A review of the literature revealed several indices regarding student persistence, and more specifically, minority and/or African-American persistence. Regardless of the persistence factor or dimension covered in the literature, any factor that was directly or indirectly related to socioeconomic status had an adverse effect on college success for African-Americans. First, throughout the literature, African-American students were more likely than White students to come from low socioeconomic backgrounds, have high aspirations regarding higher education, have lower SAT scores, and similar grade point averages. As a result of these indices, African-American students were likely to be less prepared financially and academically. The literature also indicates that academic aspirations and success were influenced by family background where the greatest impact was usually the mother's level of education.

Second, with regard to college choice and the nexus to persistence and degree attainment, it was found that students from college preparatory high schools and high schools that provided advanced placement classes tended to provide universities with students who were more committed to attaining a degree. However, since most of these types of schools have middle to upper middle class White students enrolled, the benefit to low-income and African-American students was not realized.

Third, social and academic integration and expectations for African-American students appeared to be different from White students by race and gender. The literature revealed that when looking at race, African-American students were more successful

when they were part of formal forms of university integration (i.e., university committees). Also, since much of the social activities for African-Americans were tangential to the university, the impact of this form of integration and its relation to persistence, became even clearer. In light of academic integration, the literature revealed that minority experiences are relevant along the lines of gender rather than race. African-American females are more likely to experience less isolation and alienation in the classroom than African-American males.

A review of the literature demonstrated that universities must be willing to look at these differences, regardless of how slight, and develop strategies that will change the low persistence rates of African-Americans at Indiana State University in comparison to White students. Often times, programs and opportunities for targeted groups are challenged and viewed as discriminatory (Hauptman and Smith, 1994 & Alger, 1998). However, not developing programs and academic opportunities that increase persistence and graduation of African-American students, in and of itself, is discrimination.

Chapter 3

METHODOLOGY

This study was designed to identify the dimensions of persistence factors that impacted persistence of African-American freshmen students in comparison to White freshmen students at Indiana State University after their first year. These dimensions of variables determined the predictability of African-American students and White students persisting at Indiana State University after their first year. Through investigation of this problem, the following research questions were raised in an attempt to produce a predictive value for each variable chosen.

The following questions will be tested:

1) Which of the chosen factors have the most influence on persistence for first-year students at Indiana State University?
2) Are there differences between persistence factors that impact African-American and White students?
3) What factors have the most influence for African-American students?
4) What factors have the most influence for White students?
5) Based on the analysis of factors, what strategies for policy development should be implemented or studied?

The following procedures were taken to complete this research. A request was submitted to the assistant vice president of institutional research and testing at ISU,

requesting a disk that included student data. A set of criteria was set for the purpose of student selection. The student data records were based on the selected criteria and served as variables from the questions on the 1996 and 1997 Student Information Questionnaires. Only those incoming students who completed the Student Information Questionnaire were selected for the study.

The requested data included personal information, high school data, and family background, all of which derived from the Student Information Questionnaire. The variables included SATM, SATV, ACTM, ACTV, ethnicity, mother's formal schooling, father's formal schooling, mother's customary occupation, father's customary occupation, total family income, length of time parents saved for college, high school grades, PSAT/National Merit Scholarship status, greatest single source of income, HSGPA, kind of high school graduated, adequate high school education, enrolled hours, when the student decided to attend college, highest degree expected to attain, satisfied with college choice, importance of quality of student activities, importance of student/faculty ratio, importance of social organizations at ISU, importance of social activities at ISU, expect to meet professor outside of class, expect to participate in fraternity or sorority activities, and expect to join a fraternity or sorority. Data were analyzed using logistic regression on the SPSS system of a personal computer. The process of logistic regression is described later in this chapter.

The Sample

The freshmen student population at Indiana State University was selected according to the following criteria:

1) Sudent Information Questionnaire responses were obtained from the Office of Institutional Research and Testing at Indiana State University.

2) Any incoming freshman student who filled out the Student Information Questionnaire during summer orientation prior to the fall semester of entry was included in this study.

3) Freshman students who entered during the fall or spring semesters and did not complete a Student Information Questionnaire were not considered for this study.

4) Data was compiled from the SIQ for each incoming freshman student and included variables such as the pre-college dimension persistence factors of high school grade point average, SAT scores, parents' education, income, and occupation level; the commitment and intentions dimension persistence factors of college choice satisfaction and high school type; and academic and social interaction dimension persistence factors of faculty/student ratio expectation, social activities and organization expectation, and enrolled hours.

5) The period indicated was from Fall semester of 1996 to Fall semester 1997 and Fall semester 1997 to Fall semester 1998.

Indiana State University is a medium-sized doctoral granting higher education institution located in a metropolitan city in the mid-west with an enrollment of approximately 10,500 students.

Analysis

From the previously stated hypotheses, variables were categorized in the following dimensional blocks: pre-college factors (HSGPA, SATM, SATV, ACTM, ACTV, ethnicity, mother's education level, father's education level, mother's occupation, father's occupation, family's income, concern for college finances, high school grades, and national merit scholarship); commitment and intentions factors (kind of high school, adequate high school education, decided to attend college, highest degree expected to attain, and satisfaction with college choice); academic and social integration factors (quality of student activities, student/faculty ratio, social organization participation, importance of social activities, fraternity and sorority participation, and meeting with professor outside of class).

A statistical procedure was administered in order to ascertain if the introduction or deletion of dimensional sets of data improved the overall model and to determine if there was significance between the variables of African-American and White student persisters and non-persisters at Indiana State University. Logistic regression was selected as the statistical method in order to formulate a logistical function relative to each of the null hypotheses.

Data collected in this study were analyzed through the use of logistic regression on the SPSS software of a personal computer. A combination of several statistics was analyzed according to specifications of logistic regression. These factors were combined to generate a logistic function equation.

Effects and likelihood were studied for their significance according to standards of statistical usage. The resulting regression function can be used for predicting the odds, probability, or likelihood of retention or attrition of students after their first year of

matriculation into Indiana State University. The process of logistic regression is described below.

Logistic Regression

"Logistical regression is a mathematical modeling approach that can be used to describe the relationship of several independent variables to a dichotomous dependent variable" (Kleinbaum, 1994, p. 5). Logistic regression allows prediction of a discrete outcome from a set of variables that may be continuous, discrete, dichotomous, or a mix.

There are several statistical procedures that have been used in the past with these types of data. Two of the statistical procedures include discriminant analysis and various forms of regression such as multiple regression. The logistic regression statistical methodology has become very popular in recent years because it is related to, and answers the same questions as discriminant function analysis, the logit form of multiway frequency analysis with a discrete dependent variable, and multiple regression analysis with a dichotomous dependent variable.

Dillion (1994) defined discriminant analysis as having an effect similar to that of a linear combination, or weighted sum. She further stated that "linear combinations can be used as a method to contrast groups, and are used to provide a weighted factor for each variable to indicate the contributing value of the studied component" (p. 34). Although this statistical procedure could provide appropriate statistics for this study, there are two flaws with this methodology that make it less desirable than logistic regression. The difficulty that Norusis (1997) recognized was that discriminant analysis does not allow for dependent variables that have only two values—an event occurring or not occurring. Although discriminant analysis allows direct prediction of group membership, it does not

allow for "the assumption of multivariate normality of the independent variables and equal variance-covariance matrices in the two groups"(p. 37) which are required for prediction to be optimal. Logistic regression provides those things that discriminant analysis does not and requires fewer assumptions. Furthermore, Kleinbaum (1994) explained that discriminant analysis is essentially a least squares approach and requires restrictive normality assumptions on the independent variables in order to make statistical inferences about the parameters in the model. This poses a problem when the independent variables are dichotomous or categorical in nature, because discrminant analysis "tends to give biased results, usually giving estimated odds ratios that are too high" (p. 105). In other words, the "discriminant analysis function sometimes overestimates the size of the association with dichotomous predictors" (Tabachnick and Fidell, 1996, p. 579).

The second multivariate statistical technique that is often used with this type of data is multiple regression. Norusis (1997) stated that "when the dependent variable can have only two values, the assumptions necessary for hypothesis testing in regression analysis are necessarily violated" (p. 37). As a result, multiple regression has two flaws with this type of data testing. First, multiple regression assumes that the distribution of errors is normal, and second, predicted values cannot be interpreted as probabilities and are not constrained to fall between 0 and 1. Tabachnick and Fidell (1996) recognized that logistic regression can not produce negative predicted probabilities.

In addition to the reasons cited above, logistic regression was the most appropriate statistical procedure because:

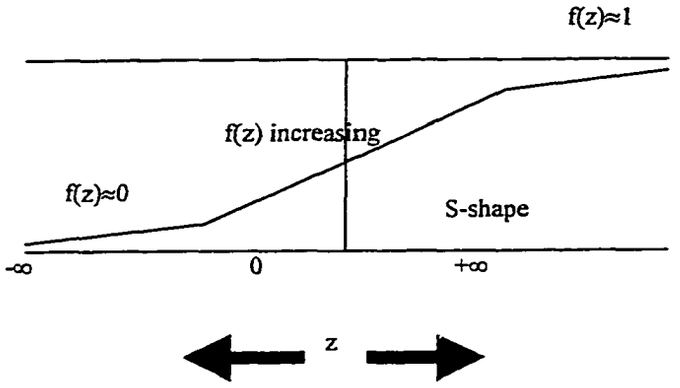
a. Logistic regression can emphasize the probability of a particular outcome for each case for two or more outcomes that may or may not have order.

b. Logistic regression is especially useful when the distribution of responses in the dependent variable is expected to be nonlinear with one or more of the independent variables.

Dey and Astin (1993) revealed that when considering various forms of multivariate regression models, there are theoretical advantages offered by logistic regression, even though there is little practical difference between the results obtained with logistic regression and more traditional linear regression. However, logistic regression is more flexible and the predictors do not have to be normally distributed, linearly related, or of equal variance within each group (Tabachnick and Fidell, 1996). Although there are times when discriminant analysis and multiple regression may be more powerful, it requires that the limitations mentioned above be satisfied. Since this was not the case with these data, the logistic regression model was preferred over discriminant analysis, multiple regression, and other forms of regression for the reasons stated above.

Logistic regression's recent popularity derives from the elongated S-shaped picture which starts with $z = -\infty$ and moves to the right, as shown in figure 1. As z increases, the value of $f(z)$ hovers close to zero for a while, then starts to increase dramatically toward 1, leveling off around 1 toward $+\infty$ which results in the elongated S-shape picture. The S-shape of $f(z)$ indicates that the effect of z (where the values are between – 5 and + 5) is minimal for low z's until some threshold is reached. The risk then rises rapidly over a certain range of intermediate z values and then remains extremely high around 1 once z gets large enough. (Kleinbaum, 1994).

Figure 1. Logistic Regression



To obtained the logistic model from the logistic function, z is written as the linear sum α plus β_1 times X_1 plus β_2 times X_2, and so on to β_i, where the X's are independent variables of interest and α and the β_i are constant terms representing unknown parameters. In essence, z is an index that combines the X's.

$$z = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k$$

Kleinbaum (1994) conveyed that the model is defined as logistic if the expression for the probability is being retained, given the X's, is 1 over 1 plus e to minus the quantity α plus the sum from I equals 1 to k if B_i times X_i.

$$P(D=1 \mid X_1, X_2, \ldots . X_k) = \frac{1}{1 + e^{-(\alpha + \Sigma \beta i Xi)}}$$

Unknown Parameters

Logistic regression required assessment at three levels of model testing: First, there was a sequential stepwise approach that allowed for the incrementalization of

dimensional sets of variables. The impact of introducing additional variables into the model tested for significant changes in the model using the backward elimination process. The process tested the significance of each variable's contribution to the model by the log-likelihood-ratio test and the –2 log-likelihood (–2LL). The backward elimination process placed all variables pertaining to a specific block into the logistic equation and tested the variables' coefficients for significance using the log-likelihood ratio (log LR) test (also known as the X^2/df ratio). The likelihood-ratio test involved estimating the model with each variable eliminated and then looking at the log-likelihood when each variable was deleted. Norusis (1997) conveyed that the likelihood-ratio, therefore, tests for the null hypothesis, that the coefficients of the terms removed are 0. This null hypothesis testing via the likelihood-ratio is obtained by dividing the likelihood for the reduced model by the likelihood for the full model. The full model contained all variables before elimination of non-significant variables and the reduced model contained variables after elimination of non-significant variables. The purpose of comparing the full and reduced models was necessary because if the log-likelihood does not change with the elimination of a selected variable then the null hypothesis is satisfied. Hence, no difference in the log-likelihood indicates no difference in the variables whether included or removed from the model. After testing the model and coefficients for significance, specifically the log LR, the process removed variables that the likelihood-ratio indicated did not meet the cut-off significance level of .05. Once the variable is removed the likelihood-ratio re-tested the model coefficients for significance and continued to do so until either no other variable met the criteria for removal or the model was previously tested.

Norusis (1997) suggested that understanding how well the model classifies the observed data is one way of determining how well the logistic model performs. Another way is to determine how likely the sample results actually are, given the parameter estimates. The probability of the observed results, given the parameter estimates, is known as likelihood. Since the likelihood is a small number less than 1, Norusis (1997) suggested that it is customary to multiply it by –2 therefore becoming known as –2LL. A good model is one where the observed results have a high likelihood. This then becomes a small value of –2LL. Norusis (1997) stated that "if a model fits perfectly, the likelihood is 1, and –2 times the log-likelihood is zero" (p. 47). Therefore, as variables are entered and deleted from the model using the LR mentioned above, then the –2LL should move closer to 0 to indicate the model fit. The difference between the –2LL for the constant-only model and the –2LL for the current model results in the model chi-square. Norusis (1997) noted that "if the constant is not included in the model, the likelihood for the model without any variables is used for comparison" (p. 48). The model chi-square tests the null hypothesis that the coefficients for all the variables in the current model, except the constant if included, are 0. This statistic is comparable to the overall F-test. The model chi-square significance of .05 provided insight into the model fit for the data.

Second, assessment of the goodness-of-fit statistics in this study was the proportion of cases correctly predicted by the model (PCP) identified as the classification table. Since there are numerous possible comparisons among models there are also several tests to evaluate goodness-of-fit. Tabachnick and Fidell (1996) relayed that there is no single test that is universally preferred. Goodness-of-fit is a form of model diagnosis that allows you to check whether the model assumptions are satisfied. The two

statistics used in this research for model diagnosis were the classification table statistic and the goodness-of-fit chi-square significance statistic—also known as the Hosmer-Lemeshow goodness-of-fit test. First, the classification table provided the proportion of correctly predicted cases that tested whether the model was adequate for the data. The preference was to see the classification table correctly predict those students who would be retained given the data parameters. In this study, correct classification indicated that the model is adequate for the data being tested. There was, however, a limitation to the classification table if the number of subjects was too small. A small *n* can indicate an inadequate model and must be kept in mind when analyzing results. Second, the goodness-of-fit chi-square statistic provided analysis of the model based on the prediction of students that would persist. With this Hosmer-Lemshow goodness-of-fit test, cases are divided into 10 approximately equal groups, based on the values for the predicted probability of persistence. The groups are not exactly equal since cases with the same combination of values for the independent variables are kept in the same group (Norusis, 1997). For each group, the observed and predicted number of students who persisted and the observed and predicted number of those who did not persist were provided.

For example:

Hosmer-Lemeshow Goodness-of-fit Test

	RETAINED = 0		RETAINED = 1		
Group	Observed	Expected	Observed	Expected	Total
1	42.000	43.720	36.000	34.280	78.000
2	37.000	34.237	41.000	43.763	78.000
3	28.000	28.590	50.000	49.410	78.000
4	24.000	24.396	54.000	53.604	78.000
5	23.000	20.781	55.000	57.219	78.000
6	19.000	17.586	59.000	60.414	78.000
7	10.000	14.744	68.000	63.256	78.000

Hosmer-Lemeshow Goodness-of-fit Test (Continued)

	RETAINED = 0		RETAINED = 1		
8	14.000	11.831	64.000	66.169	78.000
9	10.000	9.241	68.000	68.759	78.000
10	4.000	5.875	69.000	67.125	73.000
		Chi-Square	df	Significance	
Goodness-of-fit test		4.1220	8	.8460	

Norusis (1997) stated that "to calculate the Hosmer and Lemeshow goodness-of-fit chi-square statistic, you compute the difference between the observed and predicted number of cases in each of the cells" (p. 64). The chi-square value is the sum of the quantity over all of the cells. In this example, the chi-square value is 4.12 with 8 degrees of freedom (the degrees of freedom are calculated based on the number of groups minus two). The observed significance level for the chi-square value is .84, so you do not reject the null hypothesis. In other words, since the chi-square value is above the .05 level of significance, which is necessary to meet the null hypothesis, then the null hypothesis must be accepted indicating that there is no significant difference between the observed and predicted values. The model appears to fit the data reasonably well.

Third, the statistic used in explaining persistence based on estimated coefficients of each variable in the model was the odds ratio. Tabachnick and Fidell (1996) defined the odds ratio as "the increase (or decrease if the ratio is less than one) in odds of being in one outcome category when the value of the predictor increases by one unit" (p. 607). Norusis (1997) suggested that understanding the odds ratio should not be confused with simple probability. As multiple linear regression provides straightforward regression coefficients that tells the amount of change in the dependent variable for a one-unit change in the independent variable, logistic regression tells you the odds of the change in

the dependent variable with one unit of change in the independent variable. Log of the odds, which is called a logit is written:

$$\text{Log}\left[\frac{\text{(Prob (event)}}{\text{(Prob (no event)}}\right] = B_0 + B_1X_1 + \ldots + B_pX_p$$

From this equation, the logistic regression coefficient can be interpreted as the change in the log odds associated with a one-unit change in the independent variable. For example, if you have a regression coefficient (in the regression data this statistic is identified as *B*). For example, a HSGPA variable coefficient of 0.76 infers that when the HSGPA changes from 0 to 1, 1 to 2, or 2 to 3, and the values of the other independent variables remain the same, the log odds of the student being retained increase by 0.76. To further understand odds ratio, the odds equation is written as:

$$\frac{\text{Prob (event)}}{\text{Prob (no event)}} = e^{B0+B1X1+\ldots+BpXp} = e^{B0}\,e^{B1X1}\ldots e^{BpXp}$$

Then *e* raised to the power of B_i is the factor by which the odds change when the *i*th independent variable increases by one unit (Norusis, 1996). As mentioned earlier, the natural logs of the odds ratio is the coefficient *B*, the odds ratio = e^B. As an example, if the odds ratio is 2.75 for HSGPA, then for each unit increase in HSGPA the student is almost three times more likely to be retained.

Chapter Summary

Chapter 3 has been an overview of the process engaged in this study. The chapter explained the structuring of research questions and drawing out matching null hypotheses. The method utilized for student data selection was also specified. The process of logistic regression and the research methods needed to execute the procedure were described in full.

Chapter 4

DATA ANALYSIS

This study was designed to identify the dimensions of persistence factors that impact persistence of African-American freshmen students in comparison to White freshmen students at Indiana State University after their first year. These dimensions of persistence variables determined the predictability of each variable's contribution to persistence of African-American and White students at Indiana State University after their first year. Further this study would determine what relationships exist between the persistence variables for African-American students and White students.

The logistic regression process was used to identify the persistence variables of African-American and White students through several statistics that tested the fit of the data variables with the chosen model and built a model of significant variables related to student persistence.

The independent variables chosen for this study were: SATM, SATV, ACTM, ACTV, mother's formal schooling, father's formal schooling, mother's customary occupation, father's customary occupation, total family income, length of time parents saved for college, high school grades, PSAT/National Merit Scholarship status, greatest single source of income, HSGPA, kind of high school graduated, adequate high school education, enrolled hours, when the student decided to attend college, highest degree expected to attain, satisfied with college choice, importance of quality of student

activities, importance of student/faculty ratio, importance of social organizations at ISU, importance of social activities at ISU, expect to meet professor outside of class, expect to participate in fraternity or sorority activities, and expect to join a fraternity or sorority. The dependent variable was retention after the first year.

In this chapter, the results of the logistic regression are reported and the findings discussed as they are related to the null hypotheses introduced in the first chapter. The null hypotheses that were tested include:

H_1: There is no significant difference among the factors that influence persistence for first year students at Indiana State University.

H_2: There is no significant difference among the factors that influence persistence for African-American students in comparison to White students at Indiana State University.

H_3: There is no significant difference among factors that influence persistence for African-American students at Indiana State University.

H_4: There is no significant difference among factors that influence persistence for White students at Indiana State University.

The Office of Institutional Research and Testing was the source for data contained in this study. These data represent information collected from the university's Student Information Questionnaire (SIQ). The SIQ is a survey given to incoming freshmen students during summer orientation preceding the Fall semester. During the Fall of 1996, the SIQ that had been used for approximately ten years was redesigned by the Student Outcomes Assessment Advisory Committee chair and Assistant Vice President of the Office of Institutional Research. As a result, the 1997 SIQ was a modified version of the 1996 SIQ and was administered to 1997 incoming freshmen. Although the 1997 SIQ has

been tested for validity and reliability, these data were kept separate to maintain accuracy of student responses. However, those variables that asked the same questions on both questionnaires were selected and analyzed by year (1996 and 1997) and ethnicity (African-American and Caucasian).

The SIQ contained six options for race; however, for the purpose of this study only those options for African-American = 1 or Caucasian = 3, were selected. The dependent variable was coded retained = 1 and not retained = 0. All other coding for incoming freshmen were numbered according to the options on the instrument. This data analysis did not take into account those students who may have returned the following Spring semester after the Fall semester used in the study.

One requirement for logistic regression is that each record must not contain missing data, otherwise the record was eliminated for analysis. Due to this default in logistic regression, the original unweighted N = 1925 for all students in 1996 resulted in a final N = 830 with 1095 cases being rejected due to missing data; a final N = 775 with 827 cases being rejected due to missing data for White students; and a final N = 41 with 161 cases being rejected due to missing data for African-American students. For 1997, the original unweighted N = 1944 for all students who completed the 1997 SIQ resulted in N = 935 with 1009 cases being rejected due to missing data; for White students a final N = 862 with 769 cases being rejected due to missing data; and for African-American students, a final N = 57 with 165 cases being rejected due to missing data.

Quantitative Data Analysis

Logistic regression started the statistical process with a constant that established the initial set of statistics to identify the model fit. As mentioned in chapter 3, the

backward elimination process was used with the log-likelihood-ratio determining the significance of each variable's contribution to the overall model.

Beginning block number 1 entered at step number 1 all variables to begin the backward elimination process. This process continued for block number 2, entering all data from block two as well as those variables remaining from block 1. The logistic regression continued this process with block number 3 by placing all variables in the equation along with remaining variables from blocks 1 and 2 and began the elimination process to produce the persistence model of significant variables. Although logistic regression provided several statistics for data analysis, only those mentioned in chapter 3 were used for analysis.

The first set of data included all students completing the 1996 SIQ. The default option for testing the model in logistic regression contained a constant-only model that represented the reduced model to be compared to the subsequent models that were identified as the full models. In the model containing the constant only, the –2LL was 980 and the classification table indicated that 72.25% of cases were correctly predicted for being retained. The goodness-of-fit chi-square significance, Exp(B)—or odds ratio—statistics were not provided for the constant only model. Logistic regression began with block 1 and entered all variables to begin analysis of the LR for removal of insignificant variables as well as analysis of all other statistics relevant to goodness-of-fit. In the process of running logistic regression for block 1 in comparison to the constant-only model, the –2LL decreased to 888 with a model chi-square significance of .0000, the classification table statistic increased to 74.34% and the goodness-of-fit chi-square significance was .9180. The classification table predicted 100 percent correct for students who would be retained using the constant only and 95 percent with all variables in the

full (or subsequent) model for predicting who would be retained. However the overall prediction of those who would be retained and those who would not be retained was 72.29 percent for the constant-only model and 74.34 percent for the full model. It appeared that the increase in the overall percentage prediction revealed that the full model increased the ability to predict those who persisted and those who did not. The goodness-of-fit chi square statistic representing the comparison of the constant-only model and the model with the inclusion of block 1 variables indicated that the null hypothesis should not be rejected. As the LR searched the significance of each variable, total family income was identified with a significance level of .8035 for removal. Table 1 shows the statistics for the model upon removal of each variable in order of level of insignificance according to the LR.

Table 2

Logistic regression statistics for Block 1

Model	-2LL Statistic	Classification Table Percentage (overall)	Hosmer-Lemeshow Test (chi-square significance)	Model Chi-Square Significance
Block 1: (All variables)	888.201	72.29%	.9180	.0000
Q22 removed (LR = .8035)	888.263	74.34%	.6495	.0000
Q107 removed (LR = .7021)	888.410	74.46%	.7525	.0000
Q21 removed (LR = .6746)	888.544	74.34%	.7777	.0000
SATV removed (LR = .4452)	889.127	73.98%	.8726	.0000

Table 2 Continued

Logistic regression statistics for Block 1

Model	-2LL Statistic	Classification Table Percentage (overall)	Hosmer-Lemeshow Test (chi-square significance)	Model Chi-Square Significance
Q54 removed (LR = 2821)	890.284	72.89%	.4824	.0000
Q20 removed (LR = .2264)	891.747	73.25%	.7686	.0000
Q19 removed (LR = .1981)	893.403	72.77%	.8732	.0000
SATM removed (LR = .1578)	895.399	72.05%	.9406	.0000
ETHNIC Removed (LR = .1255)	897.746	71.57%	.6303	.0000

The data in Table 2 indicated that as the variables failed to meet the .05 significance level were removed from the model several indices occurred. The number of overall cases correctly predicted increased until PSAT/National Merit Scholarship status was removed, yet the goodness-of-fit (Hosmer-Lemeshow) statistic indicated that the null hypothesis regarding the model difference should not be rejected. After no more variables met the criteria for removal, the process left in the model those variables that predicted persistence for all students completing the 1996 SIQ. These variables included HSGPA with a significance of .0012, mother's formal schooling with a significance of .0202, and high school grades with a significance of .0196.

Data from block 2 (commitment and intentions) were added to the remaining variables in block 1 and processed the same. The results indicated a –2LL of 882, a

model chi-square significance of .0000, overall correctly predicted cases of 73.49 percent, and a Hosmer-Lemshow goodness-of-fit statistic of .7063. Satisfied with college was the first variable removed due to its insignificance according to an LR of .6721 with a –2LL of 882, a model chi-square significance of .0000, an overall correct prediction of 73.49 percent, and a Hosmer-Lemeshow statistic of .7023. Two more variables were removed from the model which included when the student decided to attend college with a LR = .3284 and adequate high school education with a LR = .1261. Concomitantly, the model chi-square significance was .0000 after both variable removals, and the –2LL's after removal of these two variables were 883 and 886, respectively. For the data in block 3, all variables were removed due to the insignificance of the LR. However, there was one statistical concern with the inclusion of block 3. The Hosmer-Lemeshow test calculated fewer than six groups. This indicated that sensitivity to departures from the model fit was substantially reduced. The results indicated that there were too many variables in comparison to too few cases relative to outcome for intense analysis. As mentioned in chapter 3, these data must be analyzed with careful scrutiny because the data could easily result in an over-fitting of the model causing a type II error. The suggestion Tabachnick and Fidell (1996) made was to either delete some of the predictors, or add more cases. Due to the limited number of predictors necessary for this study, no variables could be deleted, and because there were no more cases to be added, no cases were added. As a result, the statistics for block 3 were reported but not analyzed.

Upon completion of the logistic process for all students who completed the SIQ in 1996, Table 3 shows the variables remaining in the model. A list of all variables

removed from the persistence equation for all 1996 freshmen students is provided in logistic regression Table A1 in appendix A.

Table 3

Variables remaining in the logistical regression equation for all 1996 freshman students.

Variables	.05 Significance	Exp(B) (Odds Ratio)
Block 1		
HSGPA	.0011	2.5560
Father's formal schooling	.0194	.8453
High school Grades	.0163	.7840
Block 2		
Highest degree you expect to attain	.0379	.8612
Kind of high school graduated	.0584	2.7711

When the data were broken down by ethnicity, the above mentioned concern with the number of cases available for analysis was applied due to the number of African-American students used in the data analysis. Since the Hosmer-Lemeshow goodness-of-fit statistic was least sensitive with African-American student data, the model chi-square significance was used with the –2LL for analysis of both groups' data. The overall classification percentage and the Hosmer-Lemeshow statistic were not used due to the possibility of over-fitting the model to the data.

For White students, the logistic regression model revealed a fit throughout the removal of variables. The model with all variables from block 1 had a –2LL of 824 and a model chi-square significance of .0000. At the end of the entire process—blocks 1, 2, and 3—the –2LL was 823 and the model chi-square was significant at .0000.

The logistic regression process removed eight (8) variables from block 1 leaving three (3) variables in the equation for 1996 White students. The three variables included HSGPA with a significance level of .0024 and an odds ratio of 2.4622, father's formal schooling with a significance level of .0077 and an odds ratio of .8192, and high school grades with a significance level of .0376 and an odds ratio of .8044. From block 2, two variables remained in the model and three variables were removed. The two variables that remained in the model were highest degree expected to attain with a significance of .0696 and an odds ratio of .8720, and kind of high school graduated with a significance of .1016 and an odds ratio of 2.5269. After blocks 1, 2, and 3 were processed as one full model, there were five variables remaining in the equation for 1996 White students. (See Table 4) The list of all variables removed from the persistence equation for 1996 White freshman students is provided in logistic regression Table A2 in appendix A.

Table 4

Variables remaining in the logistical regression equation for 1996 White freshman students.

Variables	.05 Significance	Exp(B) (Odds Ratio)
Block 1:		
HSGPA	.0024	2.4622
Father's formal schooling	.0077	.8192
High school Grades	.0376	.8044
Block 2:		
Highest degree you expect to attain	.0696	.8720
Kind of high school graduated	.1016	2.5269

For 1996 African-American students, the logistic regression process resulted in a fit throughout the removal of variables with a –2LL of 28 at the beginning of all variables in block 1 to a –2LL of 19 when insignificant variables were removed, with a model chi-square significance of .0508 and .0002, respectively. The process removed eight (8) variables from block 1, leaving three (3) variables in the equation. The three remaining variables that were significant for 1996 African-Americans were high schools grades with a significance of .0083 and an odds ratio of .1203, SATM with a significance of .0278 and an odds ratio of 1.0349, and SATV with a significance of .0158 and an odds ratio of .9589. The processing of block 2 for 1996 African-Americans resulted in three variables being removed and two variables remaining in the equation. The two variables included satisfied with college with a significance of .0235 and an odds ratio of .2436 and kind of high school graduated with a significance of .8348 and an odds ratio of 352.2272. Due to the unusually large and inconsistent parameter coefficient for kind of high school graduated, it was unwise to make an inference regarding this variable for this group. (See Table 5). A list of variables removed from the persistence equation for 1996 African-American students is provided in logistic regression Table A3 in appendix A.

Table 5

Variables remaining in the logistical regression equation for 1996 African-American freshman students.

Variables	.05 Significance	Exp(B) (Odds Ratio)
Block 1:		
High school grades	.0189	.1203
SATM	.0278	1.0349
SATV	.0158	.9589

Table 5 Continued

Variables remaining in the logistical regression equation for 1996 African-American freshman students.

Variables	.05 Significance	Exp(B) (Odds Ratio)
Block 2:		
Satisfied with college choice	.0238	.0949
Kind of high school graduated	.8098	510.7828
Block 3:		
Importance of social organizations at ISU	.0623	.1429
Importance of social activities at ISU	.0329	11.6446

For all students who completed the 1997 SIQ, the initial –2LL for all variables in block 1 was 1007 with a model chi-square significance of .0000. In addition, the Hosmer-Lemeshow goodness-of-fit significance was .2266 and the classification table correctly predicted 73.16 percent of the overall cases. The logistic regression process removed seven (7) variables from block 1, leaving five variables in the equation. The five variables left in the equation were HSGPA with a significance of .0794 and an odds ratio of 1.5921, length of time parents saved for college with a significance of .0003 and an odds ratio of .8318, mother's occupation with a significance of .0252 and an odds ratio of 1.0772, high school grades with a significance of .0013 with an odds ratio of .7325, and adequate high school education with a significance of .0417 and an odds ratio of .7940.

Once the entire model was complete, which included variables from blocks 1, 2, and 3, the –2LL was 993, the model chi-square significance was .0000, the Hosmer-

Lemeshow goodness-of-fit significance was .5778, and the classification table correctly predicted 74.33 percent of the overall cases. The variables remaining in the model that contributed to persistence of all students included HSGPA, length of time parents saved for college, mother's occupation, high school grades, adequate high school education, expect to join a fraternity or sorority, and expect to participate in fraternity and sorority activities. The variables remaining in the overall 1997 student persistence equation and their corresponding statistics are in Table 6. Statistics for variables removed from the model for all 1997 students are provided in logistic regression Table A4 in appendix A.

Table 6

Variables remaining in the logistical regression equation for all 1997 freshman students.

Variables	.05 Significance	Exp(B) (Odds Ratio)
Block 1:		
HSGPA	.2388	1.3783
Length of time parents saved for college	.0020	.8502
Mother's occupation	.0376	1.0729
High school grades	.0012	.7282
Adequate high school education	.0405	.7911
Block 2:		
Decided to go to college	.0857	.9119
Enrolled Hours	.0311	1.1119
Block 3:		
Expect to join a fraternity or sorority at ISU	.0231	.8180
Expect to participate in fraternity or sorority activities at ISU	.0296	.8380

When the 1997 SIQ data were broken down by ethnicity, the information revealed similarities and differences. The only variable in the equation that remained from block 1 for African-American students that also remained in the equation from block 1 for White students was the length of time parents saved for college. For White students, the significance level was .0016 with an odds ratio of .8460 and for African-American students, the significance level was .0327 with an odds ratio of .5999. The model statistics for White students remained consistent with significance of model-fit remaining .0000, however, for the African-American students the model-fit statistics did not imply model fit until several variables were removed. The model chi-square significance began at .1566 with all variables in the model and dropped to .0422 only after mother's occupation, SATM, SATV, and ACTM were removed from the model.

For block 2, the only variable that influenced persistence for White students included when the student decided to go to college with a significance of .0460 and an odds ratio of .8949. For African-American students, there were no variables left in the equation from block 2 that influenced persistence. The –2LL for White students with all variables from block 2 and those remaining from block 1 in the equation was 918 with a model chi-square significance of .0000. Once all insignificant variables had been removed the model had a –2LL of 911 and a model chi-square of .0000. For African-American students the –2LL for block 3 began at 63 with a model chi-square significance of .3038 and resulted in a –2LL of 65 and model chi-square significance of .0175 once all insignificant variables were removed. After the processing of block 2, White students had a total of six (6) variables in their equation from blocks 1 and 2, and African-Americans had only one (1) variable in their equation from blocks 1 and 2.

The statistical processing of block 3 resulted in no shared variables remaining in the persistence equations for African-American students and White students. White students had two (2) variables in their equation from block 3 which were expect to join a fraternity or sorority with a significance of .0389 and an odds ratio of .8250 and expect to participate in a fraternity or sorority with a significance of .0760 and an odds ratio of .8551. (See Table 7) African-American students had one (1) variable remaining from block 3 which was expect to meet with professor outside of class with a significance of .0337 with an odds ratio of .5163. (See Table 8)

Upon complete processing of both African-American and White students for 1997, African-American students had two (2) variables in their final persistence equation and White students had nine (9). A listing of variable removal and corresponding statistics for 1997 White students is provided in logistic regression Table A5 in appendix A, and a complete list of variable removal and corresponding statistics for 1997 African-American students is listed in logistic regression Table A6 in appendix A.

Table 7

Variables in the logistical regression equation for 1997 White freshman students.

Variables	.05 Significance	Exp(B) (Odds Ratio)
Block 1: Length of time parents saved for high school	.0081	.8660
Mother's occupation	.0277	1.0804
High school grades	.0082	.7616
Adequate high school education	.0695	.8038
HSGPA	.0688	1.6817

Table 7 Continued

Variables in the logistical regression equation for 1997 White freshman students.

Variables	.05 Significance	Exp(B) (Odds Ratio)
Block 2:		
Decided to go to college	.0757	.9050
Enrolled Hours	.0506	1.1017
Block 3:		
Expect to join a fraternity or Sorority at ISU	.0389	.8250
Expect to participate in fraternity or Sorority activities at ISU	.0760	.8551

Table 8

Variables remaining in the logistical regression equation for 1997 African-American freshman students.

Variables	.05 Significance	Exp(B) (Odds Ratio)
Block 1:		
Length of time parents saved for college	.0151	.5145
Block 2:		
No variables remaining in equation		
Block 3:		
Expect to meet with faculty outside of class	.0337	.5163

The logistic regression procedure resulted in several variables being removed for all students and several variables remaining in the equation that predicted persistence of all students in 1996 and 1997. The first null hypothesis that there is no significant

difference among the factors that influence persistence for first year students at Indiana State University must be rejected.

For 1996 and 1997 African-American and White students, the logistic regression process removed several variables for African-American students that were not removed for White students, leaving dissimilar variables in each group's persistence equation. Therefore, the second null hypothesis that there is no significant difference among factors that influence persistence of African-American students in comparison to White students at Indiana State University must be rejected.

For 1996 and 1997 African-American students several variables were eliminated from the persistence model which resulted in the rejection of the third null hypothesis that stated that there is no significant difference among factors that influence persistence for African-American students at Indiana State University.

For 1996 and 1997 White students several variables were eliminated from the persistence model. Therefore, the fourth null hypothesis that there is no significant difference among the factors that influence persistence for White students at Indiana State University must be rejected.

Chapter Summary

The purpose of this study was to identify the persistence factors that impacted persistence of African-American freshmen students in comparison to White freshmen students at Indiana State University after their first year. These variables determined the predictability of African-American students and White students persisting at Indiana State University after their first year.

According to the logistic regression analysis in this research variables that influenced persistence for African-American freshmen students were not necessarily the same variables that impacted White freshmen student persistence. Although there were a few variables that were similar to both groups, the overall final equations that predicted persistence for these two groups were different.

A summary of the study and impact of the findings are discussed in chapter 5. Conclusions and recommendations are also included in the following chapter.

Chapter 5

SUMMARY OF THE STUDY, SUMMARY OF FINDINGS, CONCLUSIONS, DISCUSSIONS, RECOMMENDATIONS, AND CHAPTER SUMMARY

A summary of the study is provided in this chapter along with a summary of the findings from the research. Conclusions, discussions, and recommendations for further examination are also presented.

Summary of the Study

This study was designed to identify the persistence factors that impacted persistence for African-American freshmen students in comparison to White freshmen students at Indiana State University after their first year. These persistence variables determined the predictability of each variable's contribution to persistence of African-American and White students at Indiana State University after their first year. Further, this study determined what relationships existed between the persistence variables for African-American students and White students. The students included in this research were incoming freshmen students during the Fall of 1996 and Fall 1997.

The research questions for this study were:

1. Which of the chosen factors have the most influence on persistence for first-year students at Indiana State University?
2. Are there differences between African-American and White student persistence factors?

3. What factors have the most influence for African-American students?

4. What factors have the most influence for White students?

5. Based on the analysis of factors, what strategies for policy development should be implemented?

The following null hypotheses were constructed from the above questions to complete a statistical analysis:

H_1: There is no significant difference among the factors that influence persistence for first year students at Indiana State University.

H_2: There is no significant difference among the factors that influence persistence for African-American students in comparison to White students at Indiana State University.

H_3: There is no significant difference among factors that influence persistence for African-American students at Indiana State University.

H_4: There is no significant difference among factors that influence persistence for White students at Indiana State University.

To answer the above research questions and test the null hypotheses, information concerning incoming freshmen students at Indiana State University was acquired from the Office of Institutional Research and Testing. Information obtained for each student included in this study consisted of: SATM, SATV, ACTM, ACTV, mother's formal schooling, father's formal schooling, mother's customary occupation, father's customary occupation, total family income, length of time parents saved for college, high school grades, PSAT/National Merit Scholarship status, greatest single source of income, HSGPA, kind of high school graduated, adequate high school education, enrolled hours, when the student decided to attend college, highest degree expected to attain, satisfied

with college choice, importance of quality of student activities, importance of student/faculty ratio, importance of social organizations at ISU, importance of social activities at ISU, expect to meet professor outside of class, expect to participate in fraternity or sorority activities, and expect to join a fraternity or sorority.

Summary of Findings

Logistic regression processed twenty-two variables from the 1996 student information questionnaire (SIQ) and 23 variables from the 1997 SIQ and identified variables that were significant for one group that were not significant for another group. The variables that were significant for all freshmen students who completed the 1996 SIQ included HSGPA ($p = .0011$; Exp(B) = 2.5), father's formal schooling ($p = .0194$; Exp(B) = .85), high school grades ($p = .0163$; Exp(B) = .78), highest degree expected to attain ($p = .0379$; Exp(B) = .86), and kind of high school graduated ($p = .0584$; Exp(B) = 2.8).

When the 1996 SIQ data were separated by ethnicity, variables that proved to be significant for White students included HSGPA ($p = .0024$; Exp(B) = 2.5), father's formal schooling ($p = .0077$; Exp(B) = .82), and high school grades ($p = .0376$; Exp(B) = .80). There were two variables that remained in the logistic regression equation that did not meet the .05 significance level which included highest degree expected to attain ($p = .0696$; Exp(B) = .87) and kind of high school graduated ($p = .1016$; Exp(B) = 2.5).

The variables that logistic regression proved to be significant for African-American students who completed the 1996 SIQ included high school grades ($p = .0189$; Exp(B) = .12), SATM ($p = .0278$; Exp(B) = 1.0), SATV ($p = .0158$; Exp(B) = .96), satisfied with college choice ($p = .0238$; Exp(B) = .09), and importance of social activities at ISU ($p = .0329$; Exp(B) = 11.6). Additional variables that remained in the

equation for African-American students but did not meet the .05 significance level included kind of high school graduated (p = .8098; Exp(B) = 510.8) and importance of social organizations at ISU (p = .0623; Exp(B) = .14).

The 1997 SIQ data also revealed significant variables for all freshmen students. These variables included length of time parents saved for college (p = .0020; Exp(B) = .85), mother's occupation (p = .0376; Exp(B) = 1.1), high school grades (p = .0012; Exp(B) = .73), adequate high school education (p = .0405; Exp(B) = .79), enrolled hours (p = .0311; Exp(B) 1.1), expect to join a fraternity or sorority (p = .0231; Exp(B) = .82), and expect to participate in fraternity or sorority activities (p = .0296; Exp(B) = .84). There were two additional variables that remained in the equation that did not meet the .05 significance level. These variables included HSGPA (p = .24; Exp(B) = 1.4) and when the student decided to go to college (p = .09; Exp(B) = .91).

When the 1997 SIQ data were separated by ethnicity, variables identified by logistic regression that remained in the persistence equation for White students included length of time parents saved for college (p = .0081; Exp(B) = .87), mother's occupation (p = .0277; Exp(B) = 1.1), high school grades (p = .0082; Exp(B) = .76), enrolled hours (p = .0506; Exp(B) = 1.1), and expect to join a fraternity or sorority (p = .0389; Exp(B) = .83). Variables that remained in the logistic regression equation but did not meet the .05 significance level included adequate high school education (p = .0695; Exp(B) = .80), HSGPA (p = .0688; Exp(B) = 1.7), when the student decided to go to college (p = .0757; Exp(B) = .91), and expect to participate in fraternity or sorority activities at ISU (p = .0760; Exp(B) = .86).

Variables identified by logistic regression as significant predictors for African-American students who completed the 1997 SIQ included length of time parents saved

for college (p = .0151; Exp(B) = .51) and expect to meet with faculty outside of class (p = .0337; Exp(B) = .52).

These data results show that predictor variables were significantly different for all 1996 and 1997 freshmen students, 1996 and 1997 White freshmen students, and 1996 and 1997 African-American students.

Conclusions

Differences in the persistence factors that were significant for African-American and White students exist. As a result of this research, nearly all variables that impacted persistence for all students in the 1996 and 1997 cohorts were also the variables that impacted persistence for White students. However, variables that impacted persistence for African-Americans students in both 1996 and 1997 cohorts were different from those variables that impacted persistence for White students and the overall cohorts of both years.

According to the variables remaining in the equation, there was significant difference among the persistence factors that predicted persistence for 1996 and 1997 African-Americans and 1996 and 1997 White students. More importantly, the odds ratio revealed more information regarding the impact of each variable for each group in each cohort. The odds ratio revealed that for every one unit increase in a particular variable identified for the different groups there was a corresponding increase in odds of persistence.

The 1996 pre-college dimensional persistence factors that were more likely to impact White students were length of time parents saved for college, HSGPA, high school grades, father's formal schooling, mother's occupation, and adequate high school education. The high school grades factor was the only variable shared by African-

American and White students. However, the odds ratios were different for these two groups signifying differences in the variable's impact or non-impact. For every unit increase in high school grades, there was a .80 increase in odds of persistence for White students, and a .12 increase in odds of persistence for African-American students. However, HSGPA was a variable identified only for White students that had an odds ratio of 2.5. This odds ratio indicated that for every unit increase in this variable, White students were 2.5 times more likely to persist. The differences in these variables for this cohort of African-American and White students raised a concern regarding the students' perception of the grades they reported (high school grades) in comparison to the grades that were retrieved from the high school transcript (HSGPA).

Other strong odds ratios in the 1996 pre-college dimensional factors were associated with SATM and SATV for African-American students which indicated that for every unit increase in SATM and SATV score, there was a 1.03 and .96 times increase in their probability of persisting, respectively. It was interesting to note that this variable did not remain in the persistence equation for White students. A final observation for pre-college factors included father's schooling which proved to be a significant variable for White students with an odds ratio of .82, yet did not appear significant for African-American students.

In regard to the commitment and intentions dimensional factors for the 1996 cohort, the factor that was more likely to impact retention for African-American students included satisfied with college choice with a low odds ratio of .09, while highest degree expected to attain proved to be significant for White students with an odds ratio of .87. Finally, for White students, kind of high school graduated had an odds ratio of 2.5. Due

to over-fitting the model to the data with too few cases, African-American students' odds ratio was 510.8 for kind of high school graduated.

In regard to the 1996 academic and social integration dimensional factors, there were no variables that remained in the persistence equation for White students; however, importance of social activities at ISU remained in the persistence equation for African-American students with a high odds ratio of 11.6.

The 1997 pre-college dimensional variables were very similar to the 1996 data in that those variables that proved to be significant for all students as a cohort were almost identical to the variables that proved to be significant for White students only. The only variable that 1997 White and African-American students shared was the length of time parents saved for college which resulted in an odds ratio of .51 for African-American students, and an odds ratio of .87 for White students. Once again, HSGPA and mother's occupation proved to be significant variables for White students with odds ratios of 1.4 and 1.1, respectively.

The 1997 commitment and intentions dimensional variables were significant for White students only. The factor regarding when the student decided to go to college had an odds ratio of .91 and the factor enrolled hours had an odds ratio of 1.1. No variables proved significant for African-American students in this dimension.

In regard to academic and social integration for the 1997 cohort, White students had two variables that proved to be significant. These two variables included expect to join a fraternity or sorority with an odds ratio of .83, and expect to participate in fraternity or sorority activities with odds ratios of .86. Although neither of these variables proved to be significant for African-American students, they expected to meet with faculty outside of class with an odds ratio of .52 as a significant persistence factor ($p = .0337$).

In light of these differences, not only do pre-college, commitment and intentions, and academic and social integration persistence factors differ between these two ethnic groups and across cohorts, the odds ratios differ as well. The variable high school grades was the only shared variable between African-American and White students in the 1996 cohort, and length of time parents saved for college was the only shared variable for these two groups in the 1997 cohort. Even here, the odds ratio for African-Americans was not as strong as it was for White students.

Discussion

Chapter 1 identified a major issue facing the state of Indiana which is an increasing population of adults beyond the age of 25 who do not hold a bachelor's degree. In addition, this issue is more prevalent among African-American students who make up approximately seven percent of the higher education student population, but graduate at half the rate of all students within four years and 20 percent less in six years. In order to increase the graduation rates of African-American students, several implications can be drawn from the persistence factors identified in this research.

This study revealed that for the pre-college dimension high school grades, SATM, and SATV were significant contributors to persistence for 1996 African-American students while length of time parents saved for college was a significant factor for 1997 African-American students. Aggregate research regarding the cultural bias of SAT tests for minority groups have resulted in multiple conclusions (Fleming and Garcia, 1998). However, this study indicated that regardless of the bias or non-bias of SAT predictability, this factor proved significant for ISU African-American students and not for ISU White students. This study supports Tinto's (1987) work that contended that pre-

college academic preparedness was a critical component in the persistence of African-Americans.

There were several variables that were removed from the African-American student persistence equation that did not meet the .05 significance level, but were worth noting in light of the literature. First, with the pre-college factors, although the variable relating to greatest source of income was removed for both 1996 African-Americans and White students, the likelihood ratios were significantly different for these two groups. (This statistic removed those variables that lacked significance at the .05 level. In other words, the smaller the *p*-value and the later the variable was removed in the logistic process, the more significant the impact.) The variable regarding greatest source of income was removed from the equation at step five of nine for White students with a significance of .60, and was removed at step nine of nine with a significance of .2 for African-American students. This could indicate that African-American student persistence may not be impacted by income concerns as much as it is impacted by other factors when all factors were in the equation. However, African-American students were impacted by income concerns more than White students.

Other pre-college factors that were significantly different for African-American students and White students were parents' schooling and occupation. Pascarella and Terenzini (1996) indicated in their research that the mother's formal schooling had a greater influence on student persistence than the father's schooling. This study was somewhat supportive of that finding. Although mother's formal schooling was removed from the persistence equation for both White and African-American students, for White students it was removed at step eight of nine with a significance of .18 and removed at step one of nine for African-American students with a significance of .98. In contrast to

Pascarella and Terenzini's (1996) research, it was the father's schooling that proved to be a significant factor for 1996 White students. These findings could suggest two things; one, past research has been more successful with explaining persistence relevant to White students than it has been in explaining persistence for African-Americans, and two, the African-American population used in this study was too small for statistical analysis.

When observing the 1997 cohort data regarding mother and father's formal schooling and occupation, the father's occupation was removed from the persistence equation at step nine of nine with a significance of .13 for 1997 African-American students. Although these variables did not meet significance in comparison to those variables that remained in the equation, the step at which they were removed and their significance indicated that they were somewhat important. This could imply that given a significance level of .15 or .20, this factor could have proven significant for 1996 White students and the 1997 African-American students in support of past research.

Another finding in this study was relative to high school aspirations regarding when students decided to go to college. The study completed by the Indiana Commission for Higher Education (1998) revealed that African-American students, as a group, had higher aspirations to attend college than any other group (all students or White students) in the state of Indiana and had high aspirations regarding the highest degree they expected to attain. This research indicated that 1996 African-American students' satisfaction with college choice had a greater influence than when they decided to go to college or the highest degree expected to attain. However, for White students highest degree expected to attain proved significant for the 1996 cohort while when the student decided to attend college remained in the equation as a persistence factor for the 1997 cohort.

When the commitment and intention variables for these two groups were observed based on their removal from the persistence equation, college choice was removed from the equation at step one of four for African-Americans with a significance of .89, and was removed at step five of six for White students with a significance of .18. This may suggest that this factor did not prove as significant for African-American students because their concern with whether or not they would attend college is not as significant as where they would attend college. Although college choice did not remain in the equation for White students either, its significance level in the removal process is noteworthy. This implied that college choice had greater influence for White students. Another consideration regarding the absence of college choice as a variable in the persistence equation for African-American students could suggest that these students are aware that ISU is a predominately white institution, yet being the only African-American student in the classroom is not something most are prepared to experience. Unfortunately, this lack of preparedness often leads to isolation and alienation that many African-American students experience, and therefore, a sense of belonging must be established.

Results regarding African-American student persistence variables within academic integration revealed that the 1996 cohort did not have importance of faculty/student ratio in their final equation, yet when this variable was removed, it was removed at step three of four with a significance of .2. However, African-American students in the 1997cohort, expected to meet with their faculty outside of class (p = .0337). This may indicate that the students' understanding of what the faculty/student ratio implied was not a clear indication of faculty/student relationship, since logistic regression identified the variable of expected to spend additional time with faculty

outside of class in the persistence equation. It is also interesting that this variable did not remain in the persistence equation for White students in the 1997 cohort as it did for African-American students. Perhaps, expecting to spend additional time with faculty may not have been significant for White students because this opportunity was not viewed as being directly related to performance in the classroom. On the other hand, the lack of significance of this variable in the persistence equation for White students could imply that this expectation is a given in the educational process and is one that does not require identification of significance. However, for African-American students, this expectation was a significant factor in their persistence equation.

The social integration component of this study proved two interesting points. First, Tinto (1993) indicated that persistence for students of color appeared to include activities that were central, rather than tangential, to the institution. He further suggested that including students of color on departmental and institutional committees would prove to be effective. This study supported Tinto's work in that the 1996 African-American students identified the importance of social organizations and activities as significant and the 1997 African-Americans did not identify fraternities and sororities as important to the educational process. This could suggest that African-American students view the quality of social organizations and activities as important, but do not necessarily view fraternities and sororities as those social activities and organizations that are significant to the academic experience. Aggregate research indicated that social activities and organizations are expected to enhance student persistence and this research supported past findings. However, this research did not show whether or not the importance of these activities and organizations were for the enhancement of the educational experience. Second, White students in the 1996 cohort did not identify the importance of

social activities and organizations as significant contributors to their persistence, but identified participation in fraternities and sororities as significant. This could imply that White students, as did African-American students, did not make the connection between social activities and organizations in the 1996 SIQ with fraternities and sororities in the 1997 SIQ. Either way, this research revealed that African-American students were impacted by the quality of social activities and organizations, while White student were impacted by fraternities and sororities.

Recommendations for Further Policy Research

This study was designed to determine which set of persistence factors impacted African-American freshmen students in comparison to White freshmen students after their first year at Indiana State University. Understanding which factors impacted these two groups of students was a critical first step if the institution is expected to develop strategies to retain and graduate both groups equally. In order to retain and graduate African-American students, those identifiers that are significant to their persitence and graduation must become as systematic as those identifiers for White students and all students in general.

The following recommendations for further study are based on the findings and conclusions of this research and indicate areas for potential policy development:

Recommendation 1: Utilize the variables (high school grades, SATM, SATV, and length of time parents saved for college) which were identified in the pre-college dimension as significant for African-American students as an opportunity to allow faculty, graduate students, and upper-class students to become more involved in the ISU/K-12 network.

ISU currently has several outlets into the K-12 community that have just as many foci. It would be in the interest of ISU if these multiple efforts were culminated into one major effort that had several strands. First, ISU could easily establish a tutoring program for African-American students who are not performing as well in the eighth through twelfth grades. In addition, ISU faculty who currently work with the PDS program are in a valuable position to help K-12 faculty research and develop intervention strategies that help enhance the academic productivity of African-American students. Second, programs that were originally intended to enhance higher education opportunity and performance need to be revamped and evaluated. Upward Bound and TRIO programs at ISU were originally intended to help African-American and at-risk students in their transition to higher education. Although the program still proves beneficial in its efforts, legislative changes have resulted in fewer African-American students being served by Upward Bound. Third, College Challenge, a program that offers high school students an opportunity to receive credit for college courses while in high school could intensify its marketing strategies to include more African-American students. Fourth, financial aid should provide African-American students with information regarding the financial aid process before they are accepted into the university. As one of the outreach programs into K-12, the financial aid office can help students understand the finances that are available to them as early as ninth grade. Since this research identified what persistence factors impacted African-American students and White students differently, further research could identify how these pre-college persistence factors have impacted African-American and White students differently.

Recommendation 2: ISU should utilize the variables identified in the commitment and intentions dimension (kind of high school graduated and satisfaction with

college choice) as an opportunity to develop academic support systems that are more inclusive of African-American student needs.

Students must have a support system that encourages, enhances, and develops cognitive and affective skills. Most students do not choose the high schools from which they graduate, nor do they select the quality of the curriculum of those high schools; however, it is the student who suffers when entering institutions of higher education with deficient academic skills. In this regard, there are three components that explain this recommendation. First, Indiana State University has the Student Academic Services Center (SASC) which assists academically challenged students (AOP), open preference students (OP), and athletes. This type of assistance is extremely important to many students, specifically African-American students whose SAT scores are significantly lower than the SAT scores of White students. Second, University 101 is a course that is expected to yield positive results regarding students' acclimation to the institution. Expanding this course to include the realities African-American students face could serve as an opportunity to minimize a sense of isolation and alienation that is often experienced. Third, African-American students are aware that when choosing to attend ISU, they are choosing a predominantly white institution. However, having the tools necessary to be successful in such an environment usually eludes most African-American students. As a result, many students are unable to meet the challenge of isolation and alienation that is usually an automatic factor in being the "only one" in the classroom. A question to consider is: to what extent does the sense of isolation and alienation at ISU impact persistence of African-Americans?

Recommendation 3: Faculty should be required to receive training in understanding how their relationship with students, specifically with African-

American students, impact the student's perception of how the student will perform academically.

This research clearly showed that African-American students expected to spend additional time with faculty outside of class and therefore expected that this would affect their overall academic performance. This recommendation can be facilitated by faculty understanding that the students' perceptions of their willingness to provide genuine help, specifically for African-American students is vital to their perception of being successful at Indiana State University. From the perspective of an African-American student, faculty office hours do not necessarily constitute an opened, unbiased invitation for help—it is only one step in the process of being available to students. From the view of the student, faculty must be perceived as being receptive of student concerns—recognizing those concerns as authentic, and being perceived as genuinely interested in the students' academic and institutional performance. Helping faculty understand this recognition of African-American student needs could be established by the Center for Teaching and Learning and the office of the Special Assistant to the President on Ethnic Diversity. Further research could measure the impact of the students' perception of the faculty's genuine concern for their success at ISU and in the classroom and its impact on the students' sense of belonging.

Recommendation 4: Faculty should be trained in collaborative learning, learning communities in the classroom, and classroom assessment.

In most higher education institutions where faculty are trained as independent thinkers in their discipline, collaborative process are not usually part of that training. Yet, when students are actively engaged in their learning processes, they are less likely to have a sense of isolation and alienation. Collaborative learning fosters inclusion of the

students' view point as well as morphological make up and values in the classroom. Learning communities reiterate the significance of valuing students' differences and accepting them as integral components to everyone's learning, and classroom assessment further typifies the students' active engagement in the learning process. These three pedagogical methods allow students to be engaged in the classroom process of learning. The teacher is not only the instructor but a learner as well. Implementing one or all three of these strategies in each classroom could mean the difference in the retention of many students and African-American students in particular. Further research could measure the significance of these pedagogical methods in comparison to traditional lecture and group work.

Recommendation 5: The university should consider placing the African-American Culture Center in a centralized location of the institution to signify its importance to the socialization process of ISU students.

Since African-American students identified the quality and type of social activities and organizations as important, it seemed that African-American students expected their activities and organizations to be central to the institution. Theoretically, the Hulman Memorial Student Union (HMSU) is the place that sets the precedent for which student activities are identified as vital to the institution's social structure in preparing students for life beyond the degree. Therefore, relocating the African American Cultural Center into the HMSU and displaying African and African-American works throughout the union could enhance the sense of inclusion for African American students. Currently, the African-American Culture Center is located on the periphery of the campus just as it is on most predominantly white campuses. However, it is often this peripheral "placement" of culture-specific facilities that implies peripheral significance to

African-American students who identify with this center. Further research could measure the impact of how the students value their educational experience in relation to the types of activities and organizations that are relevant to their culture and existence.

Recommendation 6: There should be follow-up research six weeks after the beginning of the freshmen year and at the end of the freshmen year to compare data with the SIQ information received at the beginning of the year.

Conducting this type of follow-up research could provide the institution with data and information that isolate the degree of impact these variables can have on the students allowing for efficient utilization of resources for intervention methods. This research can be conducted by the Assessment and Evaluation team, Office of Institutional Research and Testing, or the First-Year Experience Assessment coordinator. Additional consideration could assess the comparison of student responses that were provided on the SIQ and the mid-test, post-test, and retention data.

Chapter Summary

This research revealed that although we can identify which variables impact African-American and White students differently, there must be additional research to isolate how these variable impact these students differently. Isolating the degree and direction of the impact persistence variables have on African-American and White students could provide a wealth of information to facilitate policy change.

Many of the discussions and recommendations suggested as a result of this research could also serve all students. However, it is the lack of inclusion of certain methodologies and the maintenance of systemic processes that perpetuate isolation of

African-American students minimizing their sense of belonging that is necessary for persistence in any environment.

Although social activities prove to be significant for African-Americans, it appears that faculty have the greater impact. This finding is supported by aggregate research regarding the two domains of college life (student affairs and academic affairs). The question then becomes to what extent should faculty become accountable to this responsibility? Should this be a part of their evaluation and what criteria should be given certain weight? Are faculty expected to develop pedagogical methods that ensure the inclusive efforts of all students? To what extent should faculty be responsible for students' sense of belonging in the classroom and the institution?

As Indiana State University seeks to establish its competitive edge over other traditional and virtual institutions of higher education, identifying the academic and graduation success of African-Americans is a viable and attainable proposition to present to the public. The students who choose to attend ISU somewhat represent the belief that students can be successful graduates. It is therefore incumbent upon the institution to appropriately allocate resources, research, and develop policy that facilitate the success of all students, and more specifically, African-American students.

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APPENDIX A

LOGISTIC REGRESSION TABLE A1

ALL 1996 STUDENTS IN LOGISTIC REGRESSION

Variables Removed (LR)	-2LL Statistic	Classification Table Percentage (overall)	Hosmer-Lemeshow Test (chi-square significance)	Model Chi-Square Significance
Block 1:				
Q22 (.8035)	888.263	74.34%	.6495	.0000
Q107 (.7021)	888.410	74.46%	.7525	.0000
Q21 (.6746)	888.544	74.34%	.7777	.0000
SATV (.4452)	889.127	73.98%	.8726	.0000
Q54 (.2821)	890.284	72.89%	.4824	.0000
Q20 (.2264)	891.747	73.25%	.7686	.0000
Q19 (.1981)	893.403	72.77%	.8732	.0000
SATM (.1578)	895.399	72.05%	.9406	.0000
ETHN (.1255)	897.746	71.57%	.6303	.0000
Block 2:				
Q118 (.6721)	882.911	73.49%	.7023	.0000
Q55 (.3284)	883.867	73.37%	.3906	.0000
Q40 (.1261)	886.207	72.77%	.8585	.0000
Block 3:				
Q97 (.9473)	41.634	99.40%	.2594	.0000
Q91 (.7295)	41.754	99.40%	.2620	.0000
Q93 (.2622)	43.011	99.40%	.6835	.0000
Q98 (.2188)	44.523	99.40%	.8574	.0000

LOGISTIC REGRESSION TABLE A2

ALL 1996 WHITE STUDENTS IN LOGISTIC REGRESSION

Variables Removed (LR)	-2LL Statistic	Classification Table Percentage (overall)	Hosmer-Lemeshow Test (chi-square significance)	Model Chi-Square Significance
Block 1:				
Q21 (.9728)	824.505	74.45%	.8414	.0000
Q22 (.9434)	824.510	74.06%	.8407	.0000
SATV (.8819)	824.532	74.19%	.8460	.0000
Q107 (.5980)	824.810	73.81%	.7308	.0000
Q54 (.4822)	825.304	73.03%	.8765	.0000
Q20 (.2519)	826.617	73.55%	.8832	.0000
Q18 (.1761)	828.448	73.03%	.3123	.0000
SATM (.1578)	830.734	73.68%	.5280	.0000
Block 2:				
Q118 (.4624)	820.211	73.94%	.6768	.0000
Q55 (.3234)	821.186	74.32%	.0657	.0000
Q40 (.1748)	823.027	73.68%	.6610	.0000
Block 3:				
Q93 (.8738)	822.064	74.32%	.1919	.0000
Q91 (.6753)	822.239	73.94%	.4994	.0000
Q98 (.4026)	822.940	73.68%	.8417	.0000
Q97 (.7679)	823.027	73.68%	.6610	.0000

LOGISTIC REGRESSION TABLE A3

ALL 1996 AFRICAN-AMERICAN STUDENTS IN LOGISTIC REGRESSION

Variables Removed (LR)	-2LL Statistic	Classification Table Percentage (overall)	Hosmer-Lemeshow Test (chi-square significance)	Model Chi-Square Significance
Block 1:				
Q18 (.8887)	28.086	80.49%	.3273	.0333
Q21 (.3729)	28.880	82.93%	.3300	0269
Q22 (.4372)	29.483	82.93%	.6298	.0197
HSGPA (.4035)	30.181	78.05%	.7170	.0144
Q19 (.2075)	31.769	80.49%	.4636	.0142
Q20 (.2881)	32.898	80.49%	.2367	.0113
Q54 (.1344)	35.138	80.49%	.3055	.0137
Q107 (.1677)	37.041	78.05%	.2635	.0138
Block 2:				
Q55 (.9485)	27.738	82.93%	.9152	.0057
Q40 (.9285)	27.746	82.93%	.8890	.0028
Q102 (.8119)	27.803	82.93%	.7189	.0013
Block 3:				
Q91 (.2473)	17.767	95.12%	.9152	.0002
Q93 (.1963)	19.436	95.12%	.7089	.0002

LOGISTIC REGRESSION TABLE A4

ALL 1997 ALL STUDENTS IN LOGISTIC REGRESSION

Variables Removed (LR)	-2LL Statistic	Classification Table Percentage (overall)	Hosmer-Lemeshow Test (chi-square significance)	Model Chi-Square Significance
Block 1:				
SATM (.9770)	1007.041	73.16%	.9347	.0000
Q15 (.9340)	1007.48	73.05%	.8919	.0000
Q14 (.7252)	1007.171	73.16%	.8930	.0000
ETHN2 (.5206)	1007.584	73.62%	.9122	.0000
ACTE (.5275)	1007.983	73.16%	.7448	.0000
ACTM (.8230)	1008.033	73.05%	.8177	.0000
SATV (.5024)	1008.483	73.48%	.8229	.0000
Block 2:				
Q101 (.9604)	1000.510	73.58%	.9052	.0000
Q26 (.3177)	1001.508	73.48%	.9970	.0000
Q160 (.2706)	1002.722	73.26%	.9341	.0000
Q107 (.1566)	1004.729	73.48%	.9064	.0000
Block 3:				
Q90 (.8442)	991.953	73.69%	.8544	.0000
Q95 (.3629)	992.781	74.44%	.8544	.0000
Q92 (.4337)	993.394	74.33%	.5778	.0000

LOGISTIC REGRESSION TABLE A5

ALL 1997 WHITE STUDENTS IN LOGISTIC REGRESSION

Variables Removed (LR)	-2LL Statistic	Classification Table Percentage (overall)	Hosmer-Lemeshow Test (chi-square significance)	Model Chi-Square Significance
Block 1:				
SATM (.8296)	924.990	72.85%	.5239	.0000
Q15 (.8224)	925.041	72.97%	.7544	.0000
Q14 (.7202)	925.169	73.20%	.8133	.0000
ACTE (.6510)	925.374	73.20%	.7500	.0000
ACTM (.6531)	925.576	73.20%	.6382	.0000
SATV (.5858)	925.873	73.32%	.6163	.0000
Block 2:				
Q101 (.7854)	918.442	73.09%	.8888	.0000
Q26 (.5254)	918.845	72.97%	.9057	.0000
Q160 (.2452)	920.195	73.55%	.9260	.0000
Q107 (.1849)	921.953	72.97%	.3061	.0000
Block 3:				
Q92 (.6594)	911.839	74.48%	.6077	.0000
Q95 (.4989)	912.297	74.36%	.5929	.0000
Q90 (.3526)	913.161	74.01%	.2366	.0000

LOGISTIC REGRESSION TABLE A6

ALL 1997 AFRICAN-AMERICAN STUDENTS IN LOGISTIC REGRESSION

Variables Removed (LR)	-2LL Statistic	Classification Table Percentage (overall)	Hosmer-Lemeshow Test (chi-square significance)	Model Chi-Square Significance
Block 1:				
Q13 (.9786)	55.496	75.44%	.9684	.1116
SATM (.8360)	55.539	75.44%	.9692	.0767
SATV (.4687)	56.064	77.19%	.7729	.0585
ACTM (.4870)	56.547	75.44%	.8012	.0422
ACTE (.8535)	56.581	77.19%	.9292	.0244
Q39 (.2822)	57.738	71.93%	.9646	.0202
HSGPA (.1753)	59.575	70.18%	.0369	.0213
Q14 (.1251)	61.927	66.67%	.1682	.0271
Q15 (.1922)	63.628	71.93%	.2127	.0239
Q35 (.1773)	65.447	68.42%	.6705	.0175
Block 2:				
Q107 (.8842)	63.930	66.67%	.2248	.2085
Q9 (.7573)	64.026	66.67%	.6022	.1322
Q26 (.5825)	64.328	66.67%	.5403	.0796
Q160 (.5064)	64.769	70.18%	.3571	.0423
Q101 (.4102)	65.447	68.42%	.6705	.0175
Block 3:				
Q94 (.9536)	56.961	73.68%	.4991	.0282
Q153 (.8012)	57.024	77.19%	.0678	.0152
ENHRS (.8108)	57.081	78.95%	.1012	.0072
Q95 (.3739)	57.872	75.44%	.1677	.0042
Q92 (.1112)	60.409	73.68%	.8522	.0048

APPENDIX B

HOSMER-LEMESHOW GOODNESS-OF-FIT TEST TABLE B1

ALL 1996 FRESHMAN STUDENTS

	RETAINED = 0		RETAINED = 1		
Group	Observed	Expected	Observed	Expected	Total
1	43.000	46.856	40.000	36.144	83.000
2	42.000	37.180	41.000	45.820	83.000
3	34.000	31.565	49.000	51.435	83.000
4	26.000	26.913	57.000	56.087	83.000
5	22.000	22.897	61.000	60.103	83.000
6	20.000	19.271	63.000	63.729	83.000
7	18.000	16.178	65.000	63.729	83.000
8	10.000	13.110	73.000	69.890	83.000
9	8.000	9.935	75.000	73.065	83.000
10	7.000	6.100	76.000	76.900	83.000

	Chi-Square	df	Significance
Goodness-of-fit test	3.9968	8	.8574

HOSMER-LEMESHOW GOODNESS-OF-FIT TEST TABLE B2

1996 WHITE FRESHMAN STUDENTS

	RETAINED = 0		RETAINED = 1		
Group	Observed	Expected	Observed	Expected	Total
1	42.000	43.564	36.000	34.436	78.000
2	37.000	33.965	41.000	44.035	78.000
3	29.000	28.910	49.000	49.090	78.000
4	21.000	24.657	57.000	53.343	78.000
5	20.000	21.092	53.000	56.908	78.000
6	20.000	17.677	58.000	60.323	78.000
7	19.000	14.497	59.000	63.503	78.000
8	10.000	11.945	68.000	66.055	78.000
9	6.000	9.346	72.000	68.654	78.000
10	7.000	5.348	66.000	67.652	73.000

	Chi-Square	df	Significance
Goodness-of-fit test	5.8769	8	.6610

HOSMER-LEMESHOW GOODNESS-OF-FIT TEST TABLE B3

1996 AFRICAN-AMERICAN FRESHMAN STUDENTS

	RETAINED = 0		RETAINED = 1		
Group	Observed	Expected	Observed	Expected	Total
1	4.000	3.949	.000	.051	4.000
2	2.000	2.765	2.000	1.235	4.000
3	2.000	1.884	2.000	2.116	4.000
4	1.000	1.111	3.000	2.889	4.000
5	2.000	.592	2.000	3.408	4.000
6	.000	.349	4.000	3.651	4.000
7	.000	.226	4.000	3.774	4.000
8	.000	.081	4.000	3.919	4.000
9	.000	.037	4.000	3.963	4.000
10	.000	.005	5.000	4.995	5.000

	Chi-Square	df	Significance
Goodness-of-fit test	5.4471	8	.7089

HOSMER-LEMESHOW GOODNESS-OF-FIT TEST TABLE B4

ALL 1997 FRESHMAN STUDENTS

	RETAINED = 0		RETAINED = 1		
Group	Observed	Expected	Observed	Expected	Total
1	52.000	53.932	42.000	40.068	94.000
2	38.000	41.412	56.000	52.588	94.000
3	34.000	33.885	60.000	60.115	94.000
4	34.000	28.692	60.000	65.308	94.000
5	28.000	24.468	66.000	69.532	94.000
6	18.000	20.869	76.000	73.131	94.000
7	13.000	17.914	81.000	76.086	94.000
8	20.000	15.389	74.000	78.611	94.000
9	12.000	11.980	82.000	82.020	94.000
10	7.000	7.459	82.000	81.541	89.000

	Chi-Square	df	Significance
Goodness-of-fit test	6.6228	8	.5778

HOSMER-LEMESHOW GOODNESS-OF-FIT TEST TABLE B5

ALL 1997 WHITE FRESHMAN STUDENTS

	RETAINED = 0		RETAINED = 1		
Group	Observed	Expected	Observed	Expected	Total
1	46.000	50.328	40.000	35.672	86.000
2	39.000	38.020	47.000	47.980	86.000
3	34.000	30.908	52.000	55.092	86.000
4	24.000	26.583	62.000	59.417	86.000
5	29.000	22.391	54.000	63.609	86.000
6	12.000	19.123	74.000	66.877	86.000
7	15.000	16.460	71.000	69.540	86.000
8	19.000	14.071	67.000	71.929	86.000
9	12.000	10.881	74.000	75.119	86.000
10	6.000	7.234	82.000	80.766	88.000

	Chi-Square	df	Significance
Goodness-of-fit test	10.4233	8	.2366

HOSMER-LEMESHOW GOODNESS-OF-FIT TEST TABLE B6

ALL 1997 AFRICAN-AMERICAN FRESHMAN STUDENTS

	RETAINED = 0		RETAINED = 1		
Group	Observed	Expected	Observed	Expected	Total
1	3.000	2.146	.000	.854	3.000
2	4.000	5.094	5.000	3.906	9.000
3	1.000	.565	.000	.435	1.000
4	4.000	4.426	7.000	6.574	11.000
5	2.000	2.093	5.000	4.907	7.000
6	2.000	1.544	4.000	4.456	6.000
7	1.000	1.209	7.000	6.791	8.000
8	1.000	.637	5.000	5.363	6.000
9	.000	.288	6.000	5.712	6.000

	Chi-Square	df	Significance
Goodness-of-fit test	3.3370	8	.8522

APPENDIX C

Indiana State University

TERRE HAUTE

STUDENT INFORMATION QUESTIONNAIRE

Prepared by

OFFICE OF INSTITUTIONAL
RESEARCH AND TESTING

June 1997

I. GENERAL INFORMATION

1 Compared to your hometown (when you graduated from high school) how big is Terre Haute?
- A Much larger
- B Larger
- C About the same size
- D Smaller
- E Much smaller
- F Don't know

2 What area do you feel best describes where you lived during high school?
- A Rural area
- B Small town
- C Moderate city
- D Large city
- E Suburban area outside large city

3 How many miles is it from your home to Indiana State University?
- A 10 or less
- B 11-50
- C 51-100
- D 101-500
- E 501-1,000
- F More than 1,000

If you will not return to your home each evening, please GO TO Q5, otherwise answer Q4.

4 How much time will you spend each school day commuting (one way) from your home to ISU?
- A 5 minutes
- B 10 minutes
- C 15 minutes
- D 20 minutes
- E 30 minutes
- F One hour
- G One hour and 30 minutes
- H Two hours or more

Q5 How big was your high school graduating class?
- A 100 students or less
- B 101 to 200 Students
- C 201 to 300 Students
- D 301 to 400 Students
- E 401 to 500 Students
- F 501 to 600 Students
- G More than 600 Students
- H Don't know

Use the following scale to answer Q6 through Q8.
- A None
- B 1-2 times
- C 3-5 times
- D 6-10 times
- E 11 or more times

During the past 3 years, how often have you have traveled:

Q6 More than 100 miles from your home

Q7 More than 1000 miles from your home

Q8 Outside the country in which you lived

Q9 When did you decide to attend college?
- A Elementary School
- B Grades 7 and 8
- C Grade 9 (Freshman year)
- D Sophomore year
- E Junior year
- F Senior year
- G After high school graduation

If you graduated from high school more than 3 years ago, please GO TO Q11, otherwise answer Q10.

Q10 How long would you estimate that your parents have been saving for your college education?
- A Before I entered high school
- B During high school but before my senior year
- C My senior year in high school
- D I do not know how long they have been saving.
- E I do not know whether they saved for my college education.

II. FAMILY BACKGROUND

Parental education attainment

Use the following scale to indicate the highest educational attainment of your parents:
- A Graduate Professional Training. (Persons who complete a recognized professional course leading to a graduate degree.)
- B Standard College or University Graduation. (All individuals who complete a recognized four-year college degree.)
- C Associate's Degree. (All individuals who complete a two-year degree program.)
- D Partial College Training. (Individuals who complete at least one year but not a full college degree program.)
- E High School Graduate. (All secondary school graduates awarded a high school diploma or its equivalent.)
- F Partial High School. (Individuals who complete nine to eleven grades, but do not complete high school.)
- G Middle School. (Individuals who complete the seventh through ninth grades.)
- H Less Than Seven Years of School. (Individuals who do not complete the seventh grade.)

Q11 Mother's formal schooling

Q12 Father's formal schooling

rental occupations (If deceased or unemployed, indicate former or customary occupation.)

hich of the following come closest to describing your parents' occupations?

- A Not employed outside the home
- B Retired
- C Unskilled worker, laborer, farm worker (nonowner)
- D Semi-skilled worker (e.g., machine operator, assembly-line worker)
- E Service worker (police, hairdresser, military noncommissioned officer, sales clerk, hospital attendant)
- F Skilled worker (carpenter, foreman, electrician, mason, painter, sales rep, bookkeeper, office worker, clerk)
- G Owner, manager, partner of farm or small business, governmental employee, commissioned military officer
- H Professional requiring degree (teacher, engineer, registered nurse, accountant, journalist)
- I Owner/high level executive of large business, governmental agency
- J Professional requiring advanced college degree (doctor, lawyer, college professor, dentist)

113 Mother's occupation
114 Father's occupation

115 What is your best estimate of your family income last year? Consider before-tax income from all sources.

- A less than $15,000
- B between $15,001 and $20,000
- C between $20,001 and $25,000
- D between $25,001 and $30,000
- E between $30,001 and $35,000
- F between $35,001 and $40,000
- G between $40,001 and $45,000
- H between $45,001 and $50,000
- I between $50,001 and $55,000
- J between $55,001 and $60,000
- K between $60,001 and $65,000
- L over $65,001

Use the following scale to answer Q16 through Q18.

- A 1
- B 2
- C 3
- D 4
- E 5
- F 6 or more

Including yourself, how many ...

Q16 children do your parents have?
Q17 members of your immediate family (parents and siblings) are in college this year?
Q18 of your parents' children have attended Indiana State University (or will be attending this year)?

Use the following scale to answer Q19 and Q20.

- A Graduated from Indiana State University
- B Attended ISU but did not graduate
- C Did not attend Indiana State University

Q19 Father's Indiana State University attendance?
Q20 Mother's Indiana State University attendance?

Q21 Did a grandparent attend or graduate from Indiana State University?

- A Yes
- B No

Use the following scale to answer Q22 and Q23.

- A Very supportive
- B Somewhat supportive
- C Neutral (They don't care one way or the other.)
- D Somewhat unsupportive
- E Not supportive

How supportive do you feel your family is of your plans to:

Q22 enroll in college?
Q23 enroll at Indiana State University?

Use the following scale to answer Q24 and Q25.

- A Most of them
- B About half of them
- C A few of them
- D Almost none of them

Q24 How many of your close friends from high school are attending college this year?
Q25 How many high school friends are attending Indiana State University this year?

III. SECONDARY SCHOOL BACKGROUND

Q26 From what kind of high school or secondary school did you graduate?

- A public high school
- B private, nonreligious, nonmilitary
- C religious
- D military
- E other

Did you participate in school government?
- A Yes, Class/Student Body President
- B Yes, other
- C No

the following scale to answer Q28 through Q34.
- A less than 1 hour per week
- B 1-5 hours per week
- C 6-10 hours per week
- D 11-15 hours per week
- E 16-20 hours per week
- F 21-25 hours per week
- G 26 or more hours per week

a typical week during your senior year, how many hours you spend:

28 Doing homework?
29 Socializing with friends?
30 Participating in school sponsored sports?
31 Working in a job for pay?
32 Doing volunteer work?
33 Exercising on your own?
34 Partying?

35 What were your usual grades in high school?
- A A or A- (mostly A's)
- B B+ (A's and B's)
- C B (mostly B's)
- D B- (more B's than C's)
- E C+ (more C's than B's)
- F C (mostly C's)
- G D (mostly D's)

Use the following to answer Q36 and Q37.
- A A lot
- B Some
- C None at all

How much supportive individual attention did you receive from your high school teachers:

Q36 In class
Q37 After class

Q38 During your senior year, how often (e.g., at parties, as friends) did you come into social contact with people of an ethnic or racial background different from your own?
- A Very often
- B Often
- C Sometimes
- D Rarely
- E No contact

Q39 How adequate do you think your high school education was?
- A Excellent
- B Good
- C Average
- D Below average
- E Very inadequate

Use the following scale to answer Q40 to Q52.
- A Very good
- B Good
- C Average
- D Not very good
- E Not good at all

Rate your ability to:

Q40 Lead a group discussion
Q41 Solve problems creatively
Q42 Make well-informed decisions
Q43 Express your thoughts in oral communication
Q44 Spend leisure time wisely
Q45 Express your thoughts in writing
Q46 Solve an algebra problem
Q47 Discuss intelligently current world events
Q48 Discuss intelligently national politics
Q49 Use computers in completing school work
Q50 Find information over the World Wide Web
Q51 Use the library to gain information
Q52 Work with others on school projects

Use the following scale to answer Q53 to Q67.
- A Very important
- B Important
- C Not very important
- D Not important at all
- E No opinion at all

Rate these reasons in your decision to go to college:

Q53 Learning about a variety of topics
Q54 Getting a more enjoyable job
Q55 Making more money
Q56 Becoming an educated person
Q57 Becoming more cultured
Q58 Improving study skills
Q59 Preparing for graduate/professional school
Q60 Learning about a specific topic
Q61 Making my parents happy
Q62 Developing social networks
Q63 Finding a boyfriend/girlfriend/spouse
Q64 Keeping a boyfriend/girlfriend
Q65 Gaining a college degree
Q66 Developing intellectually
Q67 Learning to live and interact with people

Q68 Darken the number on your answer sheet for the reason listed above which is most important to you.

69 Which of the following best describes your attitude toward studying for your high school classes:

A Studying was my favorite thing to do
B Liked studying very much
C Liked studying somewhat
D Could take it or leave it
E Didn't like studying very much
F Didn't like studying at all
G Didn't ever really study in high school

IV. COLLEGE LEARNING EXPECTATIONS

Use the following scale to answer Q70 through Q84.

A Agree strongly
B Agree somewhat
C Neutral
D Disagree somewhat
E Disagree strongly

A college education is supposed to help you:

Q70 Get along with others
Q71 Think critically
Q72 Respect the views of others
Q73 Develop close relationships with others
Q74 Be sensitive to the feelings of others
Q75 Be independent
Q76 Develop greater ability to choose moral and ethical behavior
Q77 Establish your identity
Q78 Develop social skills
Q79 Develop a meaningful philosophy of life
Q80 Develop leadership skills
Q81 Handle stress
Q82 Understand & appreciate people who come from cultures other than your own
Q83 Develop an expertise in a given subject area
Q84 Communicate with others more effectively

Q85 Where do you expect to live during your first semester?

A With parents
B University residence hall
C Fraternity house
D Other off campus housing

Use the following scale to answer Q86 and Q87.

A None
B 1-5 hours per week
C 6-10 hours per week
D 11-15 hours per week
E 16-20 hours per week
F More than 20 hours per week

During your 1st semester, how much do you plan to work:

Q86 In an on campus job?
Q87 In an off campus job?

Use the following scale to answer Q88 through Q100.

A None
B 1-5 hours per week
C 6-10 hours per week
D 11-15 hours per week
E 16-20 hours per week
F 21-25 hours per week
G 26-30 hours per week
H 31-35 hours per week
I More than 35 hours per week

During your first year in college, how much time per week do you expect to spend:

Q88 Studying outside of class
Q89 Using the library to find information
Q90 Meeting with your professors outside of class
Q91 Meeting with other students in a study group
Q92 At campus events such as ISU sports teams or sponsored speakers/concerts
Q93 Participating in student government
Q94 Participating in fraternity/sorority events
Q95 Participating in other campus organizations
Q96 Socializing with new friends made on campus
Q97 Socializing with friends made before coming to ISU
Q98 Exercising
Q99 Doing volunteer community service
Q100 Doing church work

Q101 What is the highest academic degree that you intend to attain? (MARK ONLY ONE.)

A None
B Associate degree
C Bachelor's degree
D Master's degree
E Doctoral degree
F Medical degree
G Law degree

Use the following list to answer Q102 through Q104.

A Communication (speech)
B English Composition
C Laboratory Sciences (biology, chemistry, geography, physics)
D Literary and Artistic Studies (art, humanities, literature, music, philosophy)
E Mathematics
F Multi-cultural Studies (Africana Studies, Latin American Studies)
G Physical Education
H Social Sciences (economics, history, political science, psychology, sociology)

Q102 Which academic area will be most difficult for you
Q103 Your second most difficult academic area
Q104 Your third most difficult academic area

: the following list to answer Q105 through Q111.

A Indiana State University
B Purdue University-West Lafeyette (Main Branch)
C Indiana University Purdue University - Indianapolis
D Indiana University - Bloomington (Main Branch)
E University of Southern Indiana
F Ball State University
G Vincennes University
H Ivy Tech State College
I Other Indiana public colleges
J Other Indiana private colleges
K Non-Indiana public colleges
L Non-Indiana private colleges

RK ALL THAT APPLY for Q105 and Q106.

105 To which of these college/universities have you applied?
106 Which of these have accepted you?

RK ONLY ONE for Q107 through Q111.

107 Which was your first choice?
108 Which was your second choice?
109 Which was your third choice?
110 Which was your fourth choice?
111 Which was your fifth choice?

112 What percent of your decision to attend Indiana State University would you say was your own?

A 0-10%
B 11-20%
C 21-30%
D 31-40%
E 41-50%
F 51-60%
G 61-70%
H 71-80%
I 81-90%
J 91-100%

Use the following scale to answer Q113 through Q120.

A Very important
B Important
C Not very important
D Not important at all

How important were each of the following in your choice to attend Indiana State University?

Q113 Indiana State University representative
Q114 High school counselor
Q115 High school teacher
Q116 Parents
Q117 Friends
Q118 Indiana State University alumnus
Q119 Current Indiana State University student
Q120 Relative other than parents

Use the following scale to answer Q121 through Q130.

A Did not consult
B Very helpful
C Somewhat helpful
D Not very helpful
E Not helpful at all

How helpful were the following information sources in learning about Indiana State University?

Q121 An Indiana State University student
Q122 An ISU admissions representative
Q123 Advertisements or media articles (newspaper, TV, radio)
Q124 Reading an Indiana State University publication
Q125 A high school counselor
Q126 An Indiana State University alumnus
Q127 A friend of a family member
Q128 An Indiana State University faculty member
Q129 The ISU website or the Internet
Q130 An ISU information video

Q131 How does the amount of information you have been able to receive from Indiana State resources compare to what you desired? **(MARK ALL THAT APPLY.)**

A Too much
B About right -- satisfied my needs
C Too little Admissions information
D Too little Academic information
E Too little information about costs
F Too little Financial Aid information
G Too little Housing information

Q132 For which of these programs have you spent more than one day on the ISU campus? **(MARK ALL THAT APPLY.)**

A American Legion Hoosier Boys' State/Girls' State
B Summer Honors Seminar Program
C 21st Century Scholars
D State Police Camp
E Music Workshop(s)
F Athletics or cheerleading workshops
G Other

Q133 Using a 4-point scale (4=A, 3=B, 2=C, 1=D, 0=F), indicate what you predict will be your overall grade point average for your first semester:

A 3.00-4.00
B 2.50-2.99
C 2.00-2.49
D 1.30-1.99
E Below 1.30

Reasons for Deciding to Attend Indiana State University

se the following scale to answer Q134 through Q152.

A Essential
B Very important
C Fairly important
D Not very important
E Not at all important

ow important was each of these factors to you in reaching our decision to attend Indiana State University:

134 Financial aid available at Indiana State University
135 Low cost
136 Close to home
137 Far away from home
138 Appearance of campus
139 Visit to Indiana State University's campus
140 A publication of Indiana State University
141 Academic reputation of Indiana State University
142 Academic reputation of the department in major area
143 Quality of faculty
144 ISU's presentation at a College Day/Night at your high school
145 A "Presenting ISU" session at a location near you
146 Size of campus
147 Campus social life
148 Student activities and organizations
149 Class size
150 Student Computing facilities
151 Opportunity to study with particular professor
152 Life in the residence halls

Expectations of Time at ISU

Use the following scale to answer Q153 through Q162.

A Very good chance
B Some chance
C Very little chance
D No chance

What do you consider the chances are of the following things happening to you during your educational career:

Q153 Join a fraternity or sorority at Indiana State University
Q154 Fail one or more classes
Q155 Get tutoring help in specific courses
Q156 Need extra time to complete your degree requirements
Q157 Graduate with honors
Q158 Transfer to another college before graduating
Q159 Drop out permanently (excluding transferring)
Q160 Be satisfied with your college
Q161 Be gainfully employed during the school year
Q162 Have a car on campus during your first semester

THANK YOU FOR TELLING US ABOUT YOURSELF. THE INFORMATION YOU HAVE PROVIDED IS CONFIDENTIAL AND WILL BE USED FOR RESEARCH PURPOSES.

NOW, IT IS YOUR TURN. THE REST OF THE QUESTIONS ON THE ANSWER SHEET ALLOW YOU THE OPPORTUNITY TO LET US KNOW IF THERE ARE SOME AREAS WE CAN HELP YOU WITH AT ISU. YOUR ANSWERS IN THIS SECTION WILL BE FORWARDED TO THOSE ISU PERSONNEL WHO CAN BEST MEET YOUR NEEDS.