Cognitive and Non-Cognitive Characteristics as Predictors of College Success Among African-American and Caucasian Students in a Comprehensive Community College

Denise Marie Scameheorn

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School of Education

COGNITIVE AND NON-COGNITIVE CHARACTERISTICS AS PREDICTORS OF COLLEGE SUCCESS AMONG AFRICAN-AMERICAN AND CAUCASIAN STUDENTS IN A COMPREHENSIVE COMMUNITY COLLEGE

A Dissertation

Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

Denise Marie Scameheon

April 2001
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ABSTRACT

COGNITIVE AND NON-COGNITIVE CHARACTERISTICS AS PREDICTORS OF COLLEGE SUCCESS AMONG AFRICAN-AMERICAN AND CAUCASIAN STUDENTS IN A COMPREHENSIVE COMMUNITY COLLEGE

by

Denise Marie Scameheorn

Chair: Frederick A. Kosinski Jr.
Title: COGNITIVE AND NON-COGNITIVE CHARACTERISTICS AS PREDICTORS OF COLLEGE SUCCESS AMONG AFRICAN-AMERICAN AND CAUCASIAN STUDENTS IN A COMPREHENSIVE COMMUNITY COLLEGE

Name of researcher: Denise Marie Scameheorn

Name and degree of faculty chair: Frederick A. Kosinski Jr., Ph.D.

Date completed: April 2001

Problem

This study examined the relationship of selected cognitive and non-cognitive characteristics of community college students, particularly African-American and Caucasian students, with self-concept, class attendance patterns, and GPA.

Method

The subjects were 185 community college students. They completed the Non-Cognitive Questionnaire and the Learning and Study Strategies Inventory. Demographic data were obtained from the college student database. Instructors provided attendance and grade records.
Results

1. Student self-concept was related to age, academic background and skills, and selected learning and study strategies.

2. Student class attendance was related to family support, ethnicity, academic background and skills, and motivation.

3. Student GPA was related to family support, ethnicity, study environment, academic background and skills, and selected learning and study strategies.

4. African-American students were more likely than Caucasian students to have financial difficulties, transportation difficulties, less family support, and lower academic skills. These factors might explain lower levels of class attendance and lower GPA's among African-American students.

5. Student success was related to having a good study environment, family support, good academic background and skills, an ability to deal with racism, a positive attitude, motivation, and selected learning and study strategies.

Conclusions

The success of African-American students deviated from literature citations as follows:

The variables in Tracey and Sedlacek’s Non-Cognitive Questionnaire did not predict academic success for the minority students in this sample.
This dissertation is dedicated to my husband Lee and to my two sons, Gabriel and Casey; who through their continued support, encouragement, and sacrifices, made its completion possible.
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I would like to thank each member of my dissertation committee for their time and expertise. There are also many individuals who helped me in a variety of ways with the research and the preparation of this document. There is not enough space to name them all, but their assistance was invaluable, and I'm deeply appreciative of the help each one contributed.

Most of all, I thank God, who is my unfailing, eternal support.
CHAPTER 1

INTRODUCTION

Introduction

One of the most significant issues for higher education today is student retention. Enrollment declines in recent years have stressed the importance of retaining students once they have matriculated into the institution. Over the past three decades, thousands of studies have been done on the reasons students drop out or stay in college until the completion of their programs.

From an institutional point of view, data on enrollment projections support program planning and budgeting. The prediction of enrollment necessitates the ability to predict both the number of new students and the number of returning students. By studying the factors that contribute to attrition and retention of students, colleges are then better able to predict both enrollment and retention of students.

From a student-centered point of view, this information is equally important to colleges interested in identifying and providing services for students at risk of dropping out. In order for a college to identify ways to provide intervention with students likely to drop out, that institution must be able to predict which "types" of students are more likely
to leave and to identify ways to intervene with the dropout-prone student while
intervention is still possible.

For most schools with selective enrollment, academic variables are the primary
variables that are utilized in selection for the freshman class. These include variables
such as high-school grades, SAT and ACT scores, grades in selective classes, and the
number of math and science classes taken. This practice is supported by studies that have
shown the relationship between the high-school academic record and grades during the
freshman year (Pascarella, Duby, Miller, & Rasher, 1981).

Recent years have brought an increasingly diversified student body to higher
education. The college/university student today is more likely to be female or minority
than in the past (Bean & Metzner, 1985; McCauley, 1988). As these changes have
occurred in higher education, traditional models of student persistence that have been
based on academic performance factors such as high-school grades, and SAT and ACT
scores, have been less useful for determining the relative chances for success of these
entering college students.

In studying the retention of minority students, it has become clear that while it is
understood that cognitive factors are a major determinant of academic performance in
college, these factors say less about whether or not a person remains in college. Other
non-academic variables have been linked to student satisfaction and well-being. Several
studies have demonstrated the importance of self-esteem and self-attributions of ability to
success in college (House, 1993a, 1993b; Megerian, 1994; Mooney, Sherman, & Lo
Non-cognitive variables may be even more critical in determining the success of minority students. Tracey and Sedlacek (1984, 1985) found that non-cognitive dimensions were more important than traditional cognitive measures in predicting success for minority students. Many studies have shown the relative unimportance of academic performance factors alone in predicting the retention of African-American students (McCauley, 1988; Sedlacek & Brookes, 1976; Tracey & Sedlacek, 1987a, 1987b).

Most of the research done on attrition/retention of students in the 1970s and early 1980s focused on 4-year college student populations. Primarily longitudinal in design, much of it was built on the foundation of work by Tinto (1975) that looks at the relationship between the individual and the academic and social systems of the college. Tinto's theory explains that personal attributes and background characteristics affect a student's initial choice of, and subsequent commitment to, an institution. These social systems play an important part in a student's commitment to a residential institution.

However, social systems are less important in the environment of community colleges, whose students are primarily commuter, rather than residential. The typical community college student is somewhat older, more likely part-time, and more likely to have outside obligations such as family and work than their 4-year counterparts.

During the past 15 years, studies in student persistence at community colleges have increased. Nowhere is more diversity found in higher education than in the nation's community colleges. For most community colleges, the mission is to serve the educational and training needs of the community in which it resides. This necessitates that each institution have a clear understanding of the educational and training needs unique to its community. Additionally, the college must determine the characteristics of
its own student populations.

Community colleges, for the most part, operate with an open-door policy. The typical community college student is likely to be the first in his or her family to attend college. The student population is more likely to represent diversity of age, gender, ethnicity, and socioeconomic status than student populations at 4-year colleges/universities. The student population is also more likely to enter college lacking in the basic academic, learning, and study skills necessary to do college-level academic work.

Statement of the Problem

What is clear from the research is that many non-cognitive variables have been important in explaining success and retention for community college students, particularly for minority students. What is less clear is how they affect student performance and achievement.

Which variables are related to past academic experience? The open door policy of the community college provides the opportunity for enrollment in college, in spite of a poor academic record in high school and/or other colleges. Students often enroll with less than adequate basic skills in reading, writing, and/or mathematics to do regular college work.

But even adequate academic records (high-school GPA and SAT/ACT scores) do not necessarily predict college success, particularly for minority students (Arbona & Novy, 1990). Other non-cognitive variables have been identified as important factors in

Several questions remain to be answered. What variables are related to a student’s self-attributions of his or her ability to succeed at college? What variables are related to a student’s academic self-concept? What variables are related to a student’s expectation of achieving his or her goals? Do these differ for Caucasian and African-American students?

Which variables are related to students’ current academic behaviors? Specifically, which variables affect class attendance? Do these differ for Caucasian and minority students?

**Purpose of the Study**

The purpose of this study, therefore, was:

1. To examine the extent to which selected cognitive and non-cognitive variables characterize the students at Lake Michigan College
2. To determine what differences exist between African-American and Caucasian students on these variables
3. To determine the relationship between these variables and student self-attributions regarding ability (academic self-concept) and expectations of achieving their goal, and whether the relationship differs for Caucasian and African-American students
4. To determine the relationship between these variables and academic behaviors (class attendance), and whether the relationship differs for Caucasian and African-
American students

5. To determine the relationship between these variables and academic achievement (within semester persistence and academic achievement [2.00 or better GPA]), and whether the relationship differs for Caucasian and African-American students.

Specifically, how were the following variables related to: (1) the students’ self-concept, (2) their academic behaviors during the semester, and (3) their successful completion of the semester?

1. Demographic and situational variables—Age, sex, dependent children, work hours, financial difficulties, place at home to study, transportation, family support

2. Academic variables—English placement test scores, mathematics placement test scores, reading test scores, and high-school GPA

3. Non-cognitive variables—Positive self-concept, ability to understand and deal with racism, realistic self-appraisal, preference toward long-range goals rather than short-term or immediate gratification, availability of a strong support person or mentor, demonstrated community service, successful leadership experience, and knowledge acquired in a field

4. Student learning and study-skills variables—attitude as a measure of interest and goals in college; motivation as a measure of diligence and self-discipline; time management; test anxiety; concentration; information processing as a measure of reasoning, paraphrasing, and elaborative processing; main idea selection; study aids utilization; self-testing as a measure of reviewing content; and test-taking strategies.
Need for the Study

One of the challenges that faces Lake Michigan College, as it does any community college with an open admissions policy, is to create an educational environment whose open door does not become a "revolving" door for students. While minority enrollments have risen, the attrition rate for African-American students is significantly higher than the average attrition rate from the college. Even when cognitive abilities are controlled for, the disparity remains.

Several factors have been shown in the literature to contribute to retention of minority and non-minority students in community colleges. Models have been developed that provide some insight into the factors affecting the retention of this population. However, two problems remain.

The first problem concerns the nature of a community college. Unique missions, communities, and students suggest that one model "does not fit all." The second problem arises with the limitations of retention models in general. While research models suggest which characteristics might determine which students are more likely to stay or to drop out, they do not explain a student's experience. This study attempted to respond to these two issues for the minority and non-minority populations at Lake Michigan College.

Questions to Be Answered

Specifically, the study addressed the following questions:

1. What cluster of non-cognitive characteristics described the entire student population? What cluster of non-cognitive characteristics described the African-
What cluster of non-cognitive characteristics described the Caucasian population?

2. What cluster of non-cognitive characteristics described the successful student?

What cluster of non-cognitive characteristics described the successful African-American population? What cluster of non-cognitive characteristics described the successful Caucasian population?

3. Was there a relationship between selected demographic variables and (a) self-concept, (b) academic behaviors, and (c) academic achievement?

4. Was there a relationship between selected academic variables and (a) self-concept, (b) academic behaviors, and (c) academic achievement?

5. Was there a relationship between selected personality and affect variables and (a) self-concept, (b) academic behaviors, and (c) academic achievement?

6. Was there a relationship between student learning and study skills and (a) self-concept, (b) academic behaviors, and (c) academic achievement?

**Delimitations**

The study was delimited to:

1. A sample of students in selected freshman classes at Lake Michigan College, Benton Harbor, MI. Lake Michigan College is a comprehensive community college whose primary service delivery area is Berrien County, Michigan, and draws students from Southwestern Lower Michigan and Northern Indiana.

2. Students who self-declared their race on the survey form as “African-American” or “white non-Hispanic.”
Limitations

This study was limited by the following factors:

1. The study was limited to students enrolled in specific classes, rather than utilizing an entirely random group of students.

2. This study focused on within-semester attrition of students (dropping out prior to the completion of the semester in which they are enrolled). It did not examine retention between semesters.

3. This study excluded minority students other than African-American, due to the relatively small numbers of other minority students at Lake Michigan College.

Assumptions

The assumptions made in this study were:

1. Students answered the questions in the survey instruments objectively and honestly.

2. Students of mixed-race heritage recorded the race with which they most identify themselves.

3. Instructors in the classes being studied accurately collected the data on student attendance and grades.

Definition of Terms

**African-American student:** A student of African ancestry who was born and raised in the United States.

**ASSET:** A test battery published by ACT designed to measure basic skill levels for entering community college students. Lake Michigan College administers the math
section and writing section of this instrument, to determine which students must take developmental classes before enrolling in regular classes.

**Attrition:** 1) Leaving college before completion of the semester; 2) Leaving college before program completion (or other stated student goal is met).

**Community College:** Offers freshman and sophomore college classes that lead to associate degree(s). Most are non-residential, deriving students from the "community" in which they are located.

**Developmental student:** One who enters college with academic deficiencies necessitating remediation prior to entry in regular college classes.

**Dropout:** A student who leaves college prior to the completion of the semester, or prior to the completion of his or her stated goal(s).

**Persistor:** A student who continues to attend college until graduation or completion of his or her goals.

**Retention:** (1) Completion of the semester in which the student is enrolled; (2) Continued enrollment until program completion (or other stated student goal is met).

**Organization of the Study**

This study contains five chapters. Chapter 1 includes the introduction to the study and the statement of the problem. It also includes the purpose of the study, need for the study, research questions, delimitations, limitations, assumptions, definition of terms, and the organization of the study. Chapter 2 reviews the relevant literature pertaining to this research. It focuses on the following areas: models of student retention that have provided the framework for most retention studies in the past 10 years, the retention of
minority students, retention for community college students, and the literature regarding specific variables that influence academic success and retention. Chapter 3 describes the methodology used in this research. Chapter 4 describes the results of the study, and Chapter 5 discusses the findings of the research.
CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

One of the most studied aspects of higher education in the past several decades has been the successful retention of students. Academic success and retention continue to be two of the most cogent issues for academic administration today. In an era of declining enrollment and increasingly diversified student populations, the study of academic success and retention becomes not only more important, but also more complex.

For restricted-admission 4-year colleges and universities, this research provides information helpful in admission decisions. However, for open-access colleges such as most community colleges, the issues are somewhat different. Admission is generally open to everyone with a high-school diploma, a General Education Diploma (GED), or with minimum competencies that assure the institution that the student has the "ability to benefit."

For community colleges, then, the study of student success and retention allows community colleges to predict possible problems and provide appropriate interventions, when possible. This issue becomes more complex given the diversity of "communities"
that a community college serves. Over 50% of the country’s college students begin their post-secondary education at a community college (Tinto, 1987).

This review of the literature examines issues of student success and retention, with a focus on studies related to the determinants of community college student success and how those determinants vary by ethnicity. The review is divided into four sections. The first section examines major models of student retention that have provided the framework for most retention studies in the past 10 years. The second section discusses the retention of minority students. The third section looks at retention for community college students. The final section examines the literature regarding specific variables that influence student success and retention.

**Theories of Student Persistence and Attrition**

Student success and retention issues have been extensively studied over the past two decades. Two theoretical approaches that have laid the groundwork for much of this research are Tinto’s student integration model (1975, 1987) and Bean’s student attrition model (1980).

While student retention had been the subject of countless studies over the past 50 years, a new era of inquiry began with the work of Vincent Tinto, with much of the research done on retention in the past 20 years based on his theoretical studies (1975, 1982, 1987). Tinto’s theoretical model of academic behavior was built on the foundation laid by Durkheim’s theory of suicide (1951) and Spady’s subsequent work on retention (1970, 1971) that was based on Durkheim’s ideas.
Durkheim (1951) suggested that suicide is more likely to occur when individuals are not sufficiently integrated into society. That is, when an individual’s values are highly divergent from society and when there is insufficient interaction with others, suicide is more likely. Spady (1970, 1971) drew upon this theory to hypothesize that dropping out of the college’s social system is not unlike “dropping out” of society via suicide. That is, a discrepancy between a student’s values and the values of the institution leads to lessened commitment to the institution, as does insufficient interaction with others in the academic environment. This lessened commitment to the institution then, leads to a greater likelihood of dropping out of the institution.

Building upon these ideas of Durkheim and Spady, Tinto’s theory suggests that withdrawal appears to relate to a lack of congruency between the individual and both the intellectual climate of the institution and the social system composed of his peers. It is the successful integration of the student into the existing social and academic systems of the institution which best predicts persistence.

Tinto explained the relationship between pre-college characteristics and commitment to the institution (1975):

Given individual characteristics, prior experiences, and commitments, the model argues that it is the individual’s integration into the academic and social systems of the college that most directly relates to his continuance in that college. . . . Other things being equal, the higher the degree of integration of the individual into the college systems, the greater will be his commitment to the specific institution and to the goal of college completion. (p. 96)

Thus, background characteristics (family background, individual attributes, and high-school experiences) affect initial commitments to both the goal of college
completion and commitment to the particular institution. These commitments, in turn, influence grade performance and intellectual development that leads to further academic integration. These commitments also influence peer-group interactions and faculty interactions and thus lead to social integration. The combination of academic and social integration impacts goal commitment and institutional commitment, and consequently the decision on whether or not to stay at the institution and complete college.

Pascarella, Terenzini, and associates established the predictive validity of Tinto’s model in several studies in the 1980s and 1990s. These studies examined a variety of institutional types, and in each case found that academic and social integration ultimately affects student attrition. Pascarella and Terenzini (1980) applied the model to the analysis of attrition from a large, private, residential university. Terenzini, Lorang, and Pascarella (1981) found similar results in a large, public, residential university. Another study reported similar findings with commuter students in a 4-year institution (Pascarella et al., 1981). In a study that focused on 2-year community college students (Pascarella, Smart, & Ethington, 1986), findings again showed that the two variables that contributed most to persistence were academic and social integration.

Unlike Tinto’s model, studies by Bean and associates showed that academic achievement is a measure of both academic and social experiences at the institution and of the student’s external environment. Bean’s initial causal model of student attrition (1980) is based on studies of turnover in work organizations. Briefly, these theories state that employee turnover is primarily caused by organizational determinants that interact
with the person’s background characteristics to affect satisfaction, which then influences “attrition.”

In Bean’s model of student attrition, background variables were added to the model “to reflect the influences of a student’s prematriculation characteristics on the student’s interaction with the organization.” These variables included prior academic performance, socioeconomic status (the degree to which a student’s parents have achieved status through occupational level), state residency, distance from home, and hometown size. These background variables were examined to determine the effect they had on academic and social experiences at the institution. The effect of the background variables was reflected in the subsequent relationship between academic and social experiences and student success.

In their 1985 study, Bean and Metzner focused on a nontraditional student population that included older, part-time, and commuter students, to develop a model of the dropout process that was applicable to nontraditional students. In their discussion, they noted that the differences between traditional and nontraditional students was often a matter of extent. Regarding these differences, they made the following observations:

1. Traditional and nontraditional students “cannot be easily classified into simple dichotomous categories” (p. 488). A student who enrolls for 3 credits one term and 12 credits the next does not necessarily go from nontraditional to traditional.

2. While traditional students attend college for academic and social reasons, nontraditional students are more focused on academic reasons for attendance.

3. Traditional students are in social environments and degree programs expected
to have a long-term impact; nontraditional students do not change their social environment and may not be seeking a degree.

This last point becomes especially important when studying nontraditional student populations, since it alters the definition of "dropout." An operational definition of a "dropout" in a nontraditional student population, then, is a student who drops out before completing her planned course of study, whether or not that course of study is only one course or an entire degree program. Bean and Metzner further point out that "since many nontraditional students drop out, stop out, or transfer, a researcher needs to be careful to choose an operational definition of attrition that is appropriate for the research problem to be investigated" (1985, p. 489).

The model suggests that dropout decisions will be based on the relationship of several sets of variables and outcomes, as shown in Table 1.

For nontraditional students, environmental variables are presumed to be more important than academic variables. "Thus, for nontraditional students, environmental support compensates for weak academic support, but academic support will not compensate for weak environmental support" (Bean & Metzner, 1985, p. 492).

The chief difference between the attrition process of traditional and nontraditional students noted in this study was that nontraditional students were more affected by the external environment than by the social integration variables affecting traditional student attrition.
TABLE 1

VARIABLES AND OUTCOMES IN BEAN AND METZNER’S MODEL OF STUDENT ATTRITION

<table>
<thead>
<tr>
<th>Type of Variable</th>
<th>Name of Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background and defining variables</td>
<td>Age, enrollment status, educational goals, high-school performance, ethnicity, gender</td>
</tr>
<tr>
<td>Academic variables</td>
<td>Study habits, academic advising, absenteeism, major certainty, course availability</td>
</tr>
<tr>
<td>Environmental variables</td>
<td>Finances, hours of employment, outside encouragement, family responsibilities, opportunity to transfer</td>
</tr>
<tr>
<td>“Intent to leave” variable</td>
<td>Expectations regarding dropout</td>
</tr>
<tr>
<td>Academic outcome</td>
<td>GPA</td>
</tr>
<tr>
<td>Psychological outcomes</td>
<td>Utility, satisfaction, goal commitment, stress</td>
</tr>
</tbody>
</table>

The Retention of Non-Traditional Students

Retention of Minority Students

The retention of minority students has become an important issue in higher education. Higher attrition rates exist among minority groups, relative to White students (Giles-Gee, 1989; McCauley, 1988). In most studies, differences in academic success and retention between minority and non-minority students have not been explained by academic factors (Tinto, 1975; Tracey & Sedlacek, 1985).

Many of the studies of minority retention (McCauley, 1988; Sedlacek & Brookes, 1976; Tracey & Sedlacek, 1987a) attempt to explain why the major theories of retention are not applicable when studying the success of minority students. Sedlacek and Brookes
(1976) proposed eight non-cognitive variables that were related to academic success, particularly for minority students:

1. Positive self-concept; Strong self-feeling, strength of character; Determination, independence

2. Realistic self-appraisal, especially academic; Recognizes and accepts any deficiencies and works hard at self-development; Recognizes need to broaden his/her individuality

3. Understanding of and ability to deal with racism; Realist based upon personal experience of racism; Is committed to fighting to improve existing system; Not submissive to existing wrongs, nor hostile to society, nor a "cop-out"; Able to handle racist system; Asserts school or organization role to fight racism

4. Preference for long-term goals over short-term or immediate needs; Able to respond to deferred gratification

5. Availability of a strong support person to whom to turn in crises

6. Successful leadership experience in any area pertinent to his/her background (gang leader, church, sports, non-educational groups, etc.)

7. Demonstrated community service; Has involvement in his/her cultural community

8. Knowledge acquired in a field; Unusual and/or culturally related ways of obtaining information and demonstrating knowledge; The field itself may be non-traditional.

Tracey and Sedlacek (1984) found that the identified non-cognitive factors had
good predictive validity for grades for both Black and White students, either when used alone or when used in conjunction with SAT scores. When used to predict college persistence, these variables had high predictive validity only for the Black student sample (however, SAT scores were not predictive of persistence for any racial group). Tracey and Sedlacek (1984) suggested that these variables might be used to identify students who may not persist in school until graduation, since the non-persisters are not distinguishable on academic ability measures.

Tracey and Sedlacek (1987a) found that student attitudes and expectations at matriculation were related to graduation 5 or 6 years later. The non-cognitive dimensions as assessed by the Non-Cognitive Questionnaire (NCQ) were significantly related to graduation, but academic measures of ability were not.

In another study, neither age, SAT scores, high-school rank, nor out-of-class activities were found to be associated with Black students' retention. However, their family status, sex, and academic major were related to retention (McCauley, 1988).

Not all studies have supported Tracey and Sedlacek's findings. Arbona and Novy (1990) failed to replicate their findings. They found that, ironically, the non-cognitive variables measured on the NCQ were more predictive of White student persistence than of Black or Mexican American student persistence.

Other studies have focused specifically on the role of ethnicity as an influence on student success and retention. Murguia, Padilla, and Pavel (1991) examined the role of ethnicity in Tinto's model through a qualitative analysis of 24 junior and senior Hispanic and Native American students attending a large, Southwestern university. The study
utilized structured interviews to answer the following questions: (1) How is ethnicity rooted in the life of the individual, and (2) What is the function of ethnicity for individuals on campus?

Findings indicated that ethnicity can limit access to majority groups either through self-selection or enforced selection. Thus, social integration into acceptable ethnic groups can provide the student with an ethnically compatible environment. Since, according to Tinto, social integration is a primary factor leading to institutional commitment, the definition of social integration should be revisited to take into account the importance of “ethnic enclaves” in the social integration of minority students.

In another study that focused on social integration, Mallinckrodt (1988) compared Black and White students on the relationship of social support and student retention. He found that measures of perceived social support correctly predicted persistence for nearly 70% of the White students and over 70% of the Black students. Individual item analysis further suggested that while family support was the most important support for White students, support from members of the campus community was more important for Black students.

Retention in Community Colleges

While Tinto’s model found that both academic and social integration were important factors in student persistence, there is some question regarding whether or not social integration is an important factor in community college student retention. While there have been some mixed results, most studies have reported that social integration
among commuter students (including most community college students) is less of a factor in retention than for students at residential institutions. Several studies (Fox, 1986; Mutter, 1992; Nora & Attinasi, 1990; Pascarella & Chapman, 1983) have found that, unlike students at residential, 4-year colleges, social integration did not influence persistence of community college students. Even in those studies of community college students that appear to support Tinto's model, social integration was less of a factor than was academic integration.

Halpin (1990) found the Tinto model to have predictive validity with first-semester freshmen at a comprehensive community college. However, he points out that “the apparent greater influence of academic integration compared to social integration is particularly noteworthy” (p. 30). Another study that reported similar findings (Mutter, 1992) found that while selected factors of social and academic integration were associated with student retention, the students in this study reported fewer social than academic links to the institution.

Bers and Smith (1991) used the social and academic integration scales developed by Pascarella and Terenzini to replicate 4-year college studies on a community college population. In this examination of community college persistence, the academic and social integration of community college students differentiated persisters from non-persisters, as hypothesized in Tinto's model. However, while these scales did differentiate persisters and non-persisters, student pre-college characteristics and employment status played a greater role in persistence than either academic or social integration.
Two methodological differences in this study are worth noting, because they point to other differences in a community college population. This study included a sample of all enrolled students rather than first-time-in-any-college freshmen, the traditional group examined in earlier studies. The second difference was that retention was defined from fall to winter term, rather than from fall to fall. This again reflects one of the differences between community colleges and 4-year institutions. Community college students are more likely to be transfer students who have earned other college credit elsewhere, or stop-in/stop-out part-time students. A traditional definition of an entering student cohort becomes more problematic at community colleges, and would exclude the majority of students.

In summary, community colleges are generally open-door institutions; as such, the typical entering student is much more likely to be "at risk" of dropping out. Community college students are more likely to enter college with academic deficiencies. They are more likely to be the first generation in their family to attend college. They are more likely to be older, minority, and female than students in residential 4-year colleges and universities. They are more likely to be "at risk" of dropping out, due to a combination of academic deficiencies as well as situational constraints that contribute to attrition. Ryland, Riordan, and Brack (1994) found that for academically at-risk community college students, student demographic and retention characteristics were most useful in predicting attrition. The next section discusses some of these background variables that are related to levels of academic success and retention.
Background Variables

Academic Variables

The importance of academic preparation for college cannot be underestimated. Most college admission systems rely heavily on prior academic performance and measured academic abilities, through such tests as the ACT and the SAT. These aptitude scores have consistently shown substantial predictive validity (Lichtman et al., 1989). However, several studies have indicated that academic preparation, as measured by these traditional tests, does not adequately predict retention, particularly of minority and other non-traditional students (Lichtman et al., 1989; McCauley, 1988; Tracey & Sedlacek, 1985; Young & Sowa, 1992).

High-school GPA also provides one of the best predictors of college academic status. However, it is less effective in predicting the academic performance of African-American students than for White students (Sedlacek & Adams-Gaston, 1992).

Situational and Demographic Variables

In the prior discussion of Bean's model of student attrition, background variables were described as those prematriculation characteristics that affect the student's interaction with the institution. Demographic variables such as age and sex are routinely used as criterion variables in studies of retention.

Age

One of the fastest growing groups of students is the adult learner. Defined in most literature as a student 25 years of age or older, adult learners have increased on all types
of college campuses, particularly at the community college. The mean student age at most community colleges is closer to 30 than to 20 (Robertson, 1991).

Grosset (1991) explored age differences in the community college in a study of student persistence, based on Tinto's model. She found that for the younger student, the most important measures to persistence were measures representing integration and goal commitment. For older students, a positive sense of one's readiness for the academic demands of higher education, as measured by self-assessment of study skills, was the most important factor in persistence. Institutional commitment impacted older student retention, but not for younger students.

Sex

Today there are more women than men enrolled in higher education. An early gender difference noted in higher education comes during the admission process. Standardized tests are not as valid for women as they are for men. Standardized tests, such as the SAT, consistently underpredict women's grades (Gamache & Novick, 1985).

Family Responsibilities

Findings regarding family responsibilities are mixed. Grosset (1991) reported that family responsibility was, ironically, inversely correlated with student persistence. Those who persisted reported greater numbers of dependents than did non-persisters. Perhaps the responsibility of family makes it more difficult to transfer, resulting in a greater commitment to the institution.

In another study of underprepared community college students, almost 40% of the
mostly female African-American student sample reported that having a job as well as having family responsibilities took time away from their school work (Moss & Young, 1995).

**Employment**

Bers and Smith (1991) found that, among many variables, employment status contributed the most to the discriminant function. The more hours students worked, the less likely they were to persist (though students not employed at all were less likely to persist than those employed part-time). Ryland et al. (1994) found more nonpersisting students were employed than persisting students. The mean hours worked per week for nonpersisting students was 8 more than the mean hours worked by persisting students.

**Financial Situation**

Several studies have linked finances and retention (Cabrera, Nora, & Castañeda, 1992; Quiroga, 1996; Ryland et al., 1994). The Carbrera study (Cabrera et al., 1992) of student persistence found that while financial aid and attitudes regarding finance had no direct effects on persistence, each had a significant total effect (through intervening variables) on persistence. Financial aid, and the concomitant attitudes concerning finance, equalized opportunities between high- and low-income students, as well as allowed integration of the student into the academic and social components of the institution. Additionally, financial aid directly influenced students’ commitment to stay in college.

Another study that highlighted the indirect influence of finances on the academic
experience was Launier's 1997 study of 200 African-American students at a historically African-American college. He found that money shortages, or problems and worries about money, had an inverse correlation with emotional stress balance.

Quiroga (1996) studied a variety of variables and their relationship to student retention in a group of 279 community college students. He found that among the variables examined, credit load and financial aid best predicted both retention and academic performance.

**Family Support**

Family relationships that foster student autonomy while providing emotional support have been associated with lowered levels of psychological distress for students at the time of entering college. The strength of that attachment security (positive family attachment) has been found to be positively related to a student’s psychological well-being (Kenny & Perez, 1996).

In a study of Hispanic community college students, Solis (1995) found that family support had an indirect effect on persistence. Family support directly affected students' motivation, which in turn effected persistence.

**Affective Variables**

**Self-concept**

Several recent studies have examined the relationship between self-concept and various college success measures, including GPA and retention. A study of female college freshmen (Mooney et al., 1991) examined the relationship between locus of
control, self-esteem, and perceived distance from home as predictors of college adjustment. The study found that students with high levels of self-esteem and an internal locus-of-control had higher levels of adjustment to college.

Megerian (1994) studied the relationship of self-concept and student retention in a community college environment. She found that self-concept was significantly related to retention at the college. Seventy-nine percent of those with adequate self-concept persisted, while only 37.5% of those without an adequate self-concept persisted.

Megerian's study is also of interest because it does not support the idea that self-concept is a by-product of one’s self-assessment of ability. When the relationship between placement into remedial classes and self-concept was examined, it was found that general self-concept was not significantly related to remedial course placement.

This may be explained by the fact that an academic self-concept construct cannot be interchanged with measures of general self-concept. It may also be due to students' unrealistic views of their academic ability, thus inflating measures of academic self-concept beyond what might be expected for a student entering college with academic deficiencies.

One study that examined the relationship between academic self-concept, academic ability, and academic achievement was conducted with a group of 179 freshmen enrolled in college chemistry during their first year. House (1993a, 1993b) found that students' initial attitudes regarding their academic abilities and their expectancies for academic achievement were significant predictors of their grades in the course. Self-ratings were significant predictors of grades of C or better. However, the
number of years of high-school math significantly predicted grades of D or better, suggesting that attitudes become significant predictors when prerequisite skills are held.

House (1993a, 1993b) also found that a variety of academic self-concept measures were significantly related to retention in college over a 4-year period. In this study, 2,544 regularly admitted freshmen completed a questionnaire during orientation prior to their first fall semester. The questionnaire included items that asked students to self-rate their abilities and expectations for performance in college on the following factors: overall academic ability, drive to achieve, mathematical ability, writing ability, and self-confidence in their intellectual ability. The overall model of academic self-concept measures was significantly related to school withdrawal.

The relationship between academic self-concept and academic success seems particularly strong for non-traditional students. Sicherer (1995) studied the relationships between global self-concept, academic self-concept, and academic achievement among 120 multicultural women. He found that the relationship between academic self-concept and GPA was similar for all racial and ethnic groups. Academic self-concept had a positive, significant relationship with GPA (global self-concept had a positive, but not significant, relationship with GPA in this study).

Academic self-concept has been particularly singled out as a significant predictor of academic success among minority students. In a study of 98 freshman engineering students (57% African-American, 30% Hispanic, 5% Asian, 4% Euro-American), several variables were examined to determine their relationship with academic success (GPA after three semesters in the program). The predictor variables were high-school average,
assessment tests in mathematics and reading, and a measure of academic self-concept. Academic self-concept was found to be "by far the best predictor of academic success" (Gerardi, 1990, p. 405).

In a study of 50 community college students (Blustein et al., 1986), findings showed that while many non-cognitive variables had a moderate to high simple correlation with GPA, only "expectations from learning" and "reading comprehension" were significant in the multiple regression.

**Ability to Understand and Deal with Racism**

Many studies have documented the relationship between a person's perception of prejudice and his/her decision to stay in college (Nettles, Thoeny, & Gosman, 1986; Tracy & Sedlacek, 1984, 1985, 1987a). Some research has documented that minority students who persist despite having experienced racial prejudice have developed mechanisms to help them cope with experiences of prejudice (Nora & Cabrera, 1996; Tracy & Sedlacek, 1984, 1985, 1987a). In fact, Tracy and Sedlacek have argued that the ability to cope with prejudice in the academic environment is more predictive of student success than the student's entering academic ability.

Handling racism involves both individual and institutional racism. Sedlacek (1987) pointed out that institutional racism is often more of a problem for African-American students than is individual racism. Institutional racism involves "policies and procedures, either formal or informal, that result in negative outcomes for Blacks" (p. 486). Admissions criteria, lack of faculty role models, campus environments, and
attitudes of other students may all reflect aspects of institutional racism that affect minority students.

Support From Others

Several studies have reinforced the importance of support from family, faculty, and friends (Bilal, 1996; Carstens, 1994). In a study of the usefulness of participation in a program for underprepared Black freshmen, Carroll (1988) found that three measures of student attitudes toward their college experience were strongly related to student outcome: peer group associations, student-faculty interactions, and student-counselor interactions.

DeSousa and King (1992) looked at the different levels of involvement in collegiate experiences for Black and White students. They found that few differences existed; and where they did exist, Black students were more involved than White students. Black students reported significantly higher levels of participation in activities in the Student Union. They also reported more involvement in campus clubs and organizations. One explanation offered was that Black students find within these activities the support and socialization they need. Often, activities designed to socialize minority students into the campus environment are organized by offices for multicultural affairs or other related student services offices.

If given the opportunity, minority students would prefer seeking support from a faculty member of their own ethnicity (Noel & Smith, 1996). They found that all ethnic groups were more willing to disclose information to a faculty member of their own
ethnicity. They also found that Black and Latino students were less disclosing to ethnic
groups not their own ethnicity than were White students. The study’s authors
hypothesized that this may be due to the students’ unwillingness to disclose to someone
they fear will not understand them.

However, the reality is that minority students attending a predominantly White
school have to adjust to interaction in the dominant culture (McEwen, Roper, Bryant, &
Langa. 1990). Another study (Steward, Gimenez, & Jackson, 1995) pointed out that
racial integration or shared socioeconomic status does not necessarily mean that the
minority student feels assimilated into the “host” culture.

Alienation is a “multidimensional concept consisting of components such as
powerlessness, meaninglessness, and social isolation” (Steward, Jackson, & Jackson,
1990, p. 509). They pointed out that Black students experience alienation to a greater
degree on White campuses than do their White peers. In a study of alienation of Black
students in a predominantly White university environment, Steward et al. (1990) found
that successful Black students change their interaction styles to accommodate
predominantly White or Black campus situations.

An important factor in the retention of African-American students on
predominantly White campuses is the sense of being an active part of a community. It
may be on or off campus, “but it will commonly be based on race or culture. . . . Blacks
need a supportive group that can give them advice, counsel, and orientation to sustain
them as they confront the larger, often hostile systems they must negotiate” (Sedlacek,
1987, p. 488).
Learning and Study Skills

Davidson and Smith (1990) have defined “learning strategies” as “methods employed by learners to facilitate their acquisition of knowledge and skills.” These are techniques that students use to support the processing of information while learning, and include behaviors as well as thought processes. They can be “mental techniques for organizing and elaborating on knowledge, active study strategies such as note taking, as well as tactics for coping with learning anxiety” (p. 15).

Weinstein (1987) identified 10 learning/study strategies that represent both thought processes and behaviors. According to Weinstein, “these thought processes and behaviors contribute significantly to success in post-secondary educational and training settings” (p. 2). These strategies include:

1. attitude—addresses attitude and interest in college
2. motivation—addresses students’ diligence, self-discipline, and willingness to work hard
3. time management—examines students’ use of time management principles for academic tasks
4. anxiety—addresses the degree to which students worry about school and their performance
5. concentration—focuses on students’ ability to pay close attention to academic tasks
6. information processing—looks at several sub-areas, including the use of imaginal and verbal elaboration, comprehension monitoring, and reasoning
7. selecting main ideas—addresses students’ ability to pick out important information for further study

8. study aids—examined the degree to which students use support techniques or materials to help them learn and remember new information

9. self-testing—concentrates on reviewing and preparing for classes and tests

10. test strategies—focused on students’ approach to preparing for and taking examinations (pp. 2-3).

Study skills have been identified as a deficiency by incoming freshmen, even though they perceived their academic preparation as adequate. Rowser (1997) conducted a study to determine what new African-American students perceived as their needs upon entering the university. More than 90% felt their academic preparation was at least adequate, almost all expected a GPA of over 2.00 (more than one third expected to earn a 3.00 or higher GPA their first year), and more than 90% expected to graduate in 5 years or less. In spite of these high expectations, almost half (46% of the females and 45% of the males) felt that they needed study-skills help to be successful.

In a study of community college students, the most powerful predictors of GPA were reading ability and an attitudinal factor relating to study habits and expectations from learning (Blustein et al., 1986). In another community college study, Mutter (1992) found that hours spent preparing classroom assignments were associated with persistence. Davidson and Smith (1990) found that certain study skills (as measured on the Learning and Study Skills Inventory) indicated significant differences among academic achievement levels of associate-degree nursing students. These study skills were: test-
taking strategies, selecting main ideas, concentration, and motivation.

In summary, the literature supports the relationship of study skills to student retention. Perhaps the inability of academic measures to predict persistence with some student populations might reflect a lack of study skills acquired prior to enrollment in post-secondary education.

**Summary**

This review demonstrated that extensive literature exists regarding the variables associated with academic success and retention. While most of it has focused on 4-year institutions, the number of studies related to community college student persistence has dramatically increased in the past decade. This review also described various characteristics associated with student retention.

While the literature reviewed provided ample support for this study, it also demonstrated the complexity of describing the factors associated with student success and retention. While the variables suggested for study have been cited in numerous retention studies, no studies were found that examined the relationship of these selected background student characteristics to student expectations, within-semester academic behaviors, and their subsequent relationship to student success.
CHAPTER 3

METHODOLOGY

Introduction

This chapter describes the research design used to study the relationship between selected student characteristics and academic achievement. The population and sample are described. The data collection procedures are discussed, including the instrumentation, data collection, and analysis.

As the review of the literature has suggested, traditional models of student retention have been reexamined for their applicability in a community college. In addition, traditional models are less adequate when predicting success of minority or non-traditional college students.

This study examined several variables that have been found to have a relationship to student success, particularly for non-traditional and minority students. Most student retention models focus on student outcomes, rather than within-semester behaviors that result in those outcomes. This study also examined the relationship between the selected variables and within-semester class attendance.

Research Design

This was a short-term longitudinal research study of students enrolled during the
Winter 1998 term at Lake Michigan College, a comprehensive community college. It utilized descriptive and correlational techniques to describe student characteristics and their relationship to self-attributions, academic behaviors, and academic outcomes. Comparative analyses were also utilized.

Variables in Study

Dependent Variables

This study contained three primary dependent variables. The first of these variables was academic achievement of the students, as defined by within-semester retention and GPA of 2.00 or better. Specifically, this variable was a measure of whether or not a student persisted during the semester and achieved a satisfactory grade, or what differentiated successful and unsuccessful students at Lake Michigan College. GPA was also examined as a continuous variable to determine its relationship to the independent variables.

Other variables were treated as dependent variables for the purpose of describing the behaviors considered to foster academic success. Class attendance was examined as a dependent variable to determine differences in attendance related to various cognitive, non-cognitive, and demographic variables. Self-concept was examined to determine its relationship to the independent variables examined in the study. Selected demographic variables were also examined as dependent variables to determine differences between groups, specifically between African-American and Caucasian students.
Independent Variables

The independent variables selected for study were identified in the literature as related to academic success and retention. Four sets of variables were examined to determine their relationship to: (1) self-attributions regarding ability and expectations of achieving, (2) academic behaviors, and (3) academic achievement.

As discussed in chapter 2, several non-cognitive variables have been found to be more predictive of academic success for minority students than traditional cognitive factors used to predict success in college. The variables included in this study were those measured by Tracey and Sedlacek's Non-Cognitive Questionnaire. These were: (1) positive self-concept, (2) ability to understand and deal with racism, (3) realistic self-appraisal, (4) preference toward long-range goals rather than toward short-term or immediate gratification, (5) availability of a strong support person or mentor, (6) successful leadership experience, and (7) demonstrated community service.

Another group of variables shown in the literature to be related to student success includes various learning and study-skills variables. In many urban high schools, grade inflation means that even students with average to above average GPAs may be coming to college without the requisite learning and study skills necessary to academic success in college coursework. The variables included were those measured in the Learning and Study Strategies Inventory. They included: (1) attitude as a measure of interests and goals in college, (2) motivation as a measure of diligence and self-discipline, (3) time management, (4) test anxiety, (5) concentration, (6) information processing, (7) main idea...
selection, (8) study aids utilization, (9) self-testing as a measure of reviewing content, and (10) test-taking strategies.

Selected academic variables were also examined as independent variables. These included high-school GPA and placement scores in writing, math, and reading. Certain demographic variables were also examined as independent variables.

**Population and Sampling**

The population for this study was the Winter 1998 student population at Lake Michigan College. Lake Michigan College is a tax-assisted, public, co-educational community college that provides developmental, liberal arts, vocational, and technical education services. The community it serves includes both urban and rural constituencies, with problems typical of both environments. Like many other community colleges across the country, it is an open-access college.

Approximately 79% of the students are first-generation college students, low income, and/or disabled. The enrollment is predominantly Caucasian (82%). African-Americans account for approximately 13% of the population.

The sample was chosen from freshman-level classes that students typically take during their first year of college. In addition, every effort was made to identify classes in which the enrollment provided the minimum sample size of 112 African-American and 112 Caucasian students. Given the less than 1:5 ratio of African-American to Caucasian students at Lake Michigan College, classes were chosen from those classes in which the ratio of African-American to Caucasian students was the greatest.
Because of the variety of statistical tests utilized in the analysis of the data, the ideal sample size was based on the largest sample requirements among the various types of analyses being used. By setting $\alpha = .05$, and power $= .90$ for the following types of analysis, a sample size of 112 per group, or 224 total, would have been optimum, based on the power analysis of the correlational analysis to be used in the study. However, while a total sample of 185 was obtained, and 111 Caucasian students were part of the sample, only 53 African-American students were part of the final sample. The other 21 students were from other ethnic backgrounds.

For discriminant analysis, the maximum number of variables in any analysis was 10. Kendall (1975, p. 11) has recommended approximately 10 persons per variable. Thus any single analysis required a minimum of 100 subjects to ensure stability of the variance/covariance matrix. For the correlational analysis, with an effect size of $r = .30$, $\alpha = .05$, and power $= .90$, the required number of subjects is 112 (Cohen, 1969, p. 99). If for one of the separate ethnic groups the available $n$ was only 80, then the power will be .78 (Cohen, 1969, p. 90). For $t$-tests for 2 groups, using $\alpha = .05$, power $= .90$, and a medium effect size of .50, each group would need 85 subjects (Cohen, 1969, p. 53).

**Instrumentation**

Learning and Study Strategies Inventory (LASSI)

The Learning and Study Strategies Inventory is a diagnostic tool for assessing students’ levels of learning and study strategies and methods. It is designed for use in post-secondary institutions for diagnosing problem areas in students’ academic cognitions.
and behaviors. The test’s author describes it as a “diagnostic and prescriptive measure. The focus is on both covert and overt thoughts and behaviors that relate to successful learning and that can be altered through educational interventions” (Weinstein, 1987, p. 2).

The Inventory includes 10 scales. The following is a brief description of each scale.

1. Attitude Scale—attitude and interest in college
2. Motivation Scale—students’ diligence, self-discipline, and willingness to work hard
3. Time Management—students’ use of time management principles for academic tasks
4. Anxiety—degree to which students worry about school and their performance
5. Concentration—students’ ability to pay close attention to academic tasks
6. Information Processing—several subareas, including use of imaginal and verbal elaboration, comprehension monitoring, and reasoning
7. Selecting Main Ideas—students’ ability to pick out important information for further study
8. Study Aids—the degree to which students use support techniques or materials to help them learn and remember new information
9. Self-Testing—reviewing and preparing for classes and tests
10. Test Strategies—students’ approach to preparing for and taking examinations.

LASSI consists of a series of 77 statements. It utilizes a five-level Likert scale to
rate each response from “very much typical of me” to “not at all typical of me.” Each test scale has eight items except for “Selecting main idea,” which has five items. Approximately half the items are worded negatively and half positively, to deter directional bias in answering.

LASSI takes approximately 15-20 minutes to complete. It is untimed, requires no special administration procedures, and can be self-administered and self-scored. The scores are converted to percentile score equivalents, for use in comparison with the national norms.

**Reliability and Validity**

During scale development, coefficient alphas were computed for each possible scale. Coefficient alphas for the resulting scales ranged from a low of .68 to a high of .86.

Three-week test-retest correlation coefficients ranged from .72 to .85 for the 10 scales. These were computed from a sample of 209 students in an introductory communications course in a large Southern university (Weinstein, 1987).

The test manual reported that “a number of different approaches have been used to examine the validity of the LASSI” (Weinstein, 1987, p. 5). The Inventory was compared to similar scales to establish the concurrent validity of the instrument. The manual also reported that several of the scales have been validated against performance measures.

**Non-Cognitive Questionnaire-Revised**

The Non-Cognitive Questionnaire-Revised (NCQ) was developed by Tracey and
Sedlacek (1984) to measure non-cognitive variables connected with post-secondary student retention, particularly for minority students. The NCQ consists of 23 items. These items measure eight non-traditional or non-cognitive variables that relate to minority student retention—positive self-concept, realistic self-appraisal, understanding and dealing with racism, preferring long-range goals to short-term or immediate needs, availability of strong support person, demonstrated community service, successful leadership experience, and knowledge acquired in a field.

**Reliability and Validity**

Test-retest reliability coefficients ranged from .70 to .94 for each item, with a median value of .85. Interjudge agreement on open-ended items ranged from .83 to 1.00 (Tracey & Sedlacek, 1984). Initially, the fit of the revised NCQ to eight hypothesized constructs was examined using confirmatory factor analysis on a sample of 101 Black students. It was found that the revised instrument adequately represented the data. Tests of the invariance of the factor structure obtained on the initial Black samples compared to a second Black sample of 97 students and a sample of 202 White students revealed that the factor structure held across samples. It was concluded that the revised instrument was content valid and that the scales were stable and invariant across race (Tracey & Sedlacek, 1987b).

**Data Collection Procedures**

Survey instruments were administered to the students in the classes selected as part of the sample. Originally, survey administration was planned for the first 2 weeks of
the semester. However, because the first 10 days of the semester are part of the official period in which students can add and drop a class without penalty, the decision was made to wait until the end of the period to begin survey administration, to ensure that students included in the study were part of the final class roster. Surveys were, therefore, administered during the 3rd and 4th weeks of the semester. Demographic information was collected from the college's student database. It was initially planned to have instructors record attendance, assignment completion, and test completion on forms provided for each class. However, several instructors who agreed to administer the survey packets in their class preferred to simply photocopy their grade books. Therefore, grade information was collected from instructors at the end of the semester by obtaining copies of the relevant pages of their gradebooks. One instructor failed to provide a copy of her grades before leaving the college for the summer. The grades from her class were obtained through the college database. Attendance data were figured as a percentage of the total classes the student attended, for those instructors who kept attendance records.

The "positive self-concept" measure in the Non-Cognitive Questionnaire was used as both an independent variable (one of the non-cognitive variables) and as a dependent variable. Where the measure was used as an independent variable it is referred to as "positive self-concept." Where it was used as a dependent variable it is referred to as "self-concept." All data were entered into a data file in the Statistical Package for the Social Sciences (SPSS-Version 7) for analysis.
Method of Analyses

Different analytical techniques were used to respond to the various questions that this study addressed. Several sets of variables were studied to determine their relationship to student success factors and how they varied on ethnicity. For ease of discussion, these variables are listed in Table 2 in their respective groups. When examined as a group, these variable groups are identified in the hypotheses by group labels.

Two descriptive research questions were answered in the course of this study.

Question 1

What characteristics describe students at Lake Michigan College? What characteristics describe African-American students at Lake Michigan College? What characteristics describe Caucasian students at Lake Michigan College?

Question 2

What characteristics describe successful students at Lake Michigan College? What characteristics describe successful African-American students at Lake Michigan College? What characteristics describe successful Caucasian students at Lake Michigan College?

Questions 1 and 2 were analyzed through various descriptive statistical methods. Counts are reported for categorical items. Means and standard deviation scores are reported for the scaled items.
### TABLE 2

**VARIABLE GROUPS AND NAMES**

<table>
<thead>
<tr>
<th>Variable Group</th>
<th>Variable Name</th>
</tr>
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<tbody>
<tr>
<td>Demographic / situational</td>
<td>Age</td>
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<tr>
<td>Variables</td>
<td>Sex</td>
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<tr>
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<td>Ethnicity</td>
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<td>Dependent children</td>
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<td>Work hours</td>
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<td>Financial difficulties</td>
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<td>Place to study at home</td>
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<td></td>
<td>Transportation</td>
</tr>
<tr>
<td></td>
<td>Family support</td>
</tr>
<tr>
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<td>Placement test–English</td>
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<tr>
<td></td>
<td>Placement test–Reading</td>
</tr>
<tr>
<td></td>
<td>Placement test–Mathematics</td>
</tr>
<tr>
<td></td>
<td>High-school GPA</td>
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<tr>
<td>Non Cognitive Variables</td>
<td>Positive self-concept</td>
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<td></td>
<td>Realistic self-appraisal</td>
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<td></td>
<td>Ability to understand and deal with racism</td>
</tr>
<tr>
<td></td>
<td>Preference toward long-range goals rather than toward short-term or immediate</td>
</tr>
<tr>
<td></td>
<td>gratification</td>
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<tr>
<td></td>
<td>Availability of a strong support person or mentor</td>
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<td></td>
<td>Demonstrated community service</td>
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<tr>
<td></td>
<td>Successful leadership experience</td>
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<tr>
<td></td>
<td>Knowledge obtained in a field</td>
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<tr>
<td>Student Learning and Study</td>
<td>Attitude</td>
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<td>Skills Variables</td>
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<td>Concentration</td>
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<tr>
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<td>Information processing</td>
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<tr>
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<td>Main idea</td>
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<td></td>
<td>Study aids</td>
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<tr>
<td></td>
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</tr>
<tr>
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<td>Test-taking</td>
</tr>
<tr>
<td>Outcome Variables</td>
<td>Self-concept</td>
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<td></td>
<td>Academic behaviors (class attendance)</td>
</tr>
<tr>
<td></td>
<td>Academic achievement (semester GPA)</td>
</tr>
</tbody>
</table>
Hypotheses

Twenty-three hypotheses were examined in this study. These hypotheses (and the related sub-hypotheses) are presented here as null hypotheses.

Hypotheses 1-4

Hypothesis 1 stated: *There is no significant relationship between the demographic/situational variables and each student outcome.*

Hypothesis 1A: There is no significant relationship between age and student outcomes.

Hypothesis 1B: There is no significant relationship between sex and student outcomes.

Hypothesis 1C: There is no significant relationship between ethnicity and student outcomes.

Hypothesis 1D: There is no significant relationship between number of dependent children and student outcomes.

Hypothesis 1E: There is no significant relationship between hours worked per week and student outcomes.

Hypothesis 1F: There is no significant relationship between financial need and student outcomes.

Hypothesis 1G: There is no significant relationship between study environment and student outcomes.

Hypothesis 1H: There is no significant relationship between student
transportation and student outcomes.

Hypothesis 1I: There is no significant relationship between family support for student goals and student outcomes.

Hypothesis 2 stated: There is no significant relationship between academic variables and each student outcome.

Hypothesis 2A: There is no significant relationship between English placement test scores and student outcomes.

Hypothesis 2B: There is no significant relationship between mathematics placement test scores and student outcomes.

Hypothesis 2C: There is no significant relationship between reading placement test scores and student outcomes.

Hypothesis 2D: There is no significant relationship between high-school grade point average (GPA) and student outcomes.

Hypothesis 3 stated: There is no significant relationship between non-cognitive variables and each student outcome.

Hypothesis 3A: There is no significant relationship between “positive self-concept” and student outcomes.

Hypothesis 3B: There is no significant relationship between “realistic self-appraisal” and student outcomes.

Hypothesis 3C: There is no significant relationship between “ability to understand and deal with racism” and student outcomes.

Hypothesis 3D: There is no significant relationship between “preference toward
long-range goals” and student outcomes.

Hypothesis 3E: There is no significant relationship between the “availability of a strong support person” and student outcomes.

Hypothesis 3F: There is no significant relationship between “demonstrated community service” and student outcomes.

Hypothesis 3G: There is no significant relationship between “leadership experience” and student outcomes.

Hypothesis 3H: There is no significant relationship between “knowledge obtained in a field” and student outcomes.

Hypothesis 4 stated: There is no significant relationship between learning and study-skills variables and each student outcome.

Hypothesis 4A: There is no significant relationship between “attitude” and student outcomes.

Hypothesis 4B: There is no significant relationship between “motivation” and student outcomes.

Hypothesis 4C: There is no significant relationship between “time management” and student outcomes.

Hypothesis 4D: There is no significant relationship between “test anxiety” and student outcomes.

Hypothesis 4E: There is no significant relationship between “concentration” and student outcomes.

Hypothesis 4F: There is no significant relationship between “information
processing" and student outcomes.

Hypothesis 4G: There is no significant relationship between "main idea" comprehension and student outcomes.

Hypothesis 4H: There is no significant relationship between "study aids" and student outcomes.

Hypothesis 4I: There is no significant relationship between "self-testing" and student outcomes.

Hypothesis 4J: There is no significant relationship between "test-taking" and student outcomes.

Hypotheses 1 through 4 were analyzed utilizing a variety of statistical measures of association. Chi-square analysis was used to examine the relationships between categorical and continuous variables, zero-order correlation to examine the relationships between continuous variables, and multiple regression to examine the relationship between each variable group and each outcome variable. t-tests for two independent samples were also utilized in post hoc examinations of significant differences between successful and unsuccessful students on the variables.

Hypotheses 5-9

Hypothesis 5 stated: There is no significant difference between the African-American and Caucasian subgroups on any single demographic/situational variable.

Hypothesis 5A: There is no significant difference between the African-American and Caucasian subgroups on age.
Hypothesis 5B: There is no significant difference between the African-American and Caucasian subgroups on sex.

Hypothesis 5C: There is no significant difference between the African-American and Caucasian subgroups on number of dependent children.

Hypothesis 5D: There is no significant difference between the African-American and Caucasian subgroups on hours worked per week.

Hypothesis 5E: There is no significant difference between the African-American and Caucasian subgroups on financial need.

Hypothesis 5F: There is no significant difference between the African-American and Caucasian subgroups on study environment.

Hypothesis 5G: There is no significant difference between the African-American and Caucasian subgroups on student transportation.

Hypothesis 5H: There is no significant difference between the African-American and Caucasian subgroups on family support for student goals.

Hypothesis 6 stated: *There is no significant difference between the African-American and Caucasian subgroups on any single academic variable.*

Hypothesis 6A: There is no significant difference between the African-American and Caucasian subgroups on English placement test scores.

Hypothesis 6B: There is no significant difference between the African-American and Caucasian subgroups on Mathematics placement test scores.

Hypothesis 6C: There is no significant difference between the African-American and Caucasian subgroups on Reading placement test scores.
Hypothesis 6D: There is no significant difference between the African-American and Caucasian subgroups on high-school grade point average (GPA).

Hypothesis 7 stated: *There is no significant difference between the African-American and Caucasian subgroups on any single non-cognitive variable.*

Hypothesis 7A: There is no significant difference between the African-American and Caucasian subgroups on “positive self-concept.”

Hypothesis 7B: There is no significant difference between the African-American and Caucasian subgroups on “realistic self appraisal.”

Hypothesis 7C: There is no significant difference between the African-American and Caucasian subgroups on “ability to understand and deal with racism.”

Hypothesis 7D: There is no significant difference between the African-American and Caucasian subgroups on “preference toward long range goals.”

Hypothesis 7E: There is no significant difference between the African-American and Caucasian subgroups on “availability of a strong support person.”

Hypothesis 7F: There is no significant difference between the African-American and Caucasian subgroups on “demonstrated community service.”

Hypothesis 7G: There is no significant difference between the African-American and Caucasian subgroups on “leadership experience.”

Hypothesis 7H: There is no significant difference between the African-American and Caucasian subgroups on “knowledge gained in a field.”

Hypothesis 8 stated: *There is no significant difference between the African-American and Caucasian subgroups on any single learning and study-skills variable.*
Hypothesis 8A: There is no significant difference between the African-American and Caucasian subgroups on “attitude.”

Hypothesis 8B: There is no significant difference between the African-American and Caucasian subgroups on “motivation.”

Hypothesis 8C: There is no significant difference between the African-American and Caucasian subgroups on “time management.”

Hypothesis 8D: There is no significant difference between the African-American and Caucasian subgroups on “test anxiety.”

Hypothesis 8E: There is no significant difference between the African-American and Caucasian subgroups on “concentration.”

Hypothesis 8F: There is no significant difference between the African-American and Caucasian subgroups on “information processing.”

Hypothesis 8G: There is no significant difference between the African-American and Caucasian subgroups on “main idea” comprehension.

Hypothesis 8H: There is no significant difference between the African-American and Caucasian subgroups on “study aids.”

Hypothesis 8I: There is no significant difference between the African-American and Caucasian subgroups on “self-testing.”

Hypothesis 8J: There is no significant difference between the African-American and Caucasian subgroups on “test-taking.”

Hypothesis 9 stated: There is no significant difference between the African-American and Caucasian subgroups on the outcome variables.
Hypothesis 9A: There is no significant difference between the African-American and Caucasian subgroups on self-concept.

Hypothesis 9B: There is no significant difference between the African-American and Caucasian subgroups on attendance.

Hypothesis 9C: There is no significant difference between the African-American and Caucasian subgroups on GPA.

Hypotheses 5 through 9 were analyzed utilizing a variety of statistical measures of association. *t*-tests for two groups and chi-square analyses were used to examine the relationships between ethnicity and each of the variables.

Hypotheses 10-14

Hypothesis 10 stated: *There is no linear combination of demographic/situational variables which significantly discriminates between African-American and Caucasian students.*

Hypothesis 11 stated: *There is no linear combination of academic variables which significantly discriminates between African-American and Caucasian students.*

Hypothesis 12 stated: *There is no linear combination of non-cognitive variables which significantly discriminates between African-American and Caucasian students.*

Hypothesis 13 stated: *There is no linear combination of learning and study-skills variables which significantly discriminates between African-American and Caucasian students.*

Hypothesis 14 stated: *There is no linear combination of demographic/situational,*
academic, non-cognitive, and learning and study-skills variables which significantly discriminates between African-American and Caucasian students.

Hypotheses 10 through 14 were analyzed utilizing discriminant analysis.

Hypotheses 15-18

Hypothesis 15 stated: *There is no significant difference between successful and unsuccessful students on any single demographic/situational variable.*

Hypothesis 15A: There is no significant difference between successful and unsuccessful students on age.

Hypothesis 15B: There is no significant difference between successful and unsuccessful students on sex.

Hypothesis 15C: There is no significant difference between successful and unsuccessful students on number of dependent children.

Hypothesis 15D: There is no significant difference between successful and unsuccessful students on hours worked per week.

Hypothesis 15E: There is no significant difference between successful and unsuccessful students on financial need.

Hypothesis 15F: There is no significant difference between successful and unsuccessful students on study environment.

Hypothesis 15G: There is no significant difference between successful and unsuccessful students on student transportation.

Hypothesis 15H: There is no significant difference between successful and
unsuccessful students on family support for student goals.

Hypothesis 16 stated: *There is no significant difference between successful and unsuccessful students on any single academic variable.*

Hypothesis 16A: There is no significant difference between successful and unsuccessful students on English placement test scores.

Hypothesis 16B: There is no significant difference between successful and unsuccessful students on Mathematics placement test scores.

Hypothesis 16C: There is no significant difference between successful and unsuccessful students on Reading placement test scores.

Hypothesis 16D: There is no significant difference between successful and unsuccessful students on high-school grade point average (GPA).

Hypothesis 17 stated: *There is no significant difference between successful and unsuccessful students on any single non-cognitive variable.*

Hypothesis 17A: There is no significant difference between successful and unsuccessful students on “positive self-concept.”

Hypothesis 17B: There is no significant difference between successful and unsuccessful students on “ability to understand and deal with racism.”

Hypothesis 17C: There is no significant difference between successful and unsuccessful students on “realistic self-appraisal.”

Hypothesis 17D: There is no significant difference between successful and unsuccessful students on “preference toward long-range goals.”

Hypothesis 17E: There is no significant difference between successful and
unsuccessful students on “availability of a strong support person.”

Hypothesis 17F: There is no significant difference between successful and unsuccessful students on “demonstrated community service.”

Hypothesis 17G: There is no significant difference between successful and unsuccessful students on “leadership experience.”

Hypothesis 17H: There is no significant difference between successful and unsuccessful students on “knowledge gained in a field.”

Hypothesis 18 stated: There is no significant difference between successful and unsuccessful students on any single learning and study-skills variable.

Hypothesis 18A: There is no significant difference between successful and unsuccessful students on “attitude.”

Hypothesis 18B: There is no significant difference between successful and unsuccessful students on “motivation.”

Hypothesis 18C: There is no significant difference between successful and unsuccessful students on “time management.”

Hypothesis 18D: There is no significant difference between successful and unsuccessful students on “test anxiety.”

Hypothesis 18E: There is no significant difference between successful and unsuccessful students on “concentration.”

Hypothesis 18F: There is no significant difference between successful and unsuccessful students on “information processing.”

Hypothesis 18G: There is no significant difference between successful and
unsuccessful students on “main idea” comprehension.

**Hypothesis 18H:** There is no significant difference between successful and unsuccessful students on “study aids.”

**Hypothesis 18I:** There is no significant difference between successful and unsuccessful students on “self-testing.”

**Hypothesis 18J:** There is no significant difference between successful and unsuccessful students on “test-taking.”

Hypotheses 15 through 18 were analyzed utilizing a variety of statistical measures of association. *t*-tests for two groups and chi-square analyses were used to examine the relationships between academic success and each of the variables.

**Hypothesis 19-23**

**Hypothesis 19** stated: *There is no linear combination of demographic/situational variables which significantly discriminates between successful and unsuccessful students.*

**Hypothesis 20** stated: *There is no linear combination of academic variables which significantly discriminates between successful and unsuccessful students.*

**Hypothesis 21** stated: *There is no linear combination of non-cognitive variables which significantly discriminates between successful and unsuccessful students.*

**Hypothesis 22** stated: *There is no linear combination of learning and study skills variables which significantly discriminates between successful and unsuccessful students.*

**Hypothesis 23** stated: *There is no linear combination of demographic/situational, academic, non-cognitive, and learning and study-skills variables which significantly*
discriminates between successful and unsuccessful students.

Hypotheses 19 through 23 were analyzed utilizing discriminant analysis. All hypotheses in this study were tested utilizing an $\alpha = .05$. 
CHAPTER 4

RESULTS

Introduction

This study was designed to study the relationship between selected student characteristics and the self-concept, academic behaviors, and academic achievement of community college students. The study examined the characteristics of the overall student population at Lake Michigan College, and two specific subgroups: Caucasian and African-American students. Certain non-cognitive variables found to be more predictive of academic success for minority students were measured by Tracey and Sedlacek's Non-Cognitive Questionnaire (NCQ). These included (1) positive self-concept, (2) realistic self-appraisal, (3) ability to understand and deal with racism, (4) preference toward long-range goals rather than toward short-term or immediate gratification, (5) availability of a strong support person or mentor, (6) demonstrated community service, (7) leadership experience, and (8) knowledge obtained in a field. Certain learning and study skills shown in the literature to be related to student success were measured by Weinstein's Learning and Study Skills Inventory (LASSI). Demographic variables examined included age, gender, ethnicity, number of dependent children living with student, and work hours. It also examined whether or not a student had financial difficulties, a place
to study at home, transportation, and family support. This chapter discusses the sample and the results of the statistical analyses used to test each hypothesis.

Sample

The sample was taken from students enrolled during the Winter 1998 semester at Lake Michigan College, a comprehensive community college. The sample was obtained through the selection of freshman-level classes that students might take during their first year of college. Additionally, classes were chosen that had the highest ratio of African-American to Caucasian students, since part of the study focused on characteristics of African-American students.

Ten classes were selected based on the criteria stated above. Table 3 shows the total number of students enrolled in each class, the number returned, and the response rate. Overall, the response rate was 68%. There were 298 packets distributed to instructors, based on the final count in their respective classes. However, the final sample was determined by the number of students who attended class on the day surveys were distributed and completed. Of the 298 packets distributed to instructors, 204 were completed. Of the 204 packets completed, 19 were discarded because the permission slip was not signed or the surveys were only partially completed. Surveys were completed in classes between the second and third weeks of the semester, after the official period in which to drop a class with no penalties was over. This time line was followed to ensure that the cohort was composed of only those students on the final class list. The
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<thead>
<tr>
<th>Course</th>
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<td>Initial Return</td>
<td>Included in Sample</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>298</strong></td>
<td><strong>204</strong></td>
<td><strong>68</strong></td>
<td><strong>185</strong></td>
<td><strong>62</strong></td>
</tr>
</tbody>
</table>
instructors administered the surveys, and provided attendance and grade information after the semester was completed.

There were 185 students in the final sample. Of these, 66 were males and 119 were females. There were 53 African-Americans, 111 Caucasians, and 21 students of other ethnic backgrounds. These 21 students indicated their ethnicity as Asian (Pacific Islander), American Indian or Alaskan Native, or other ethnicity not listed. These have been grouped together due to the low numbers in these three categories. Table 4 reports the ages of the student sample by ethnicity and gender.

**TABLE 4**

**AGE BY ETHNICITY AND GENDER**

<table>
<thead>
<tr>
<th>Age</th>
<th>African-American</th>
<th>Caucasian</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>18-19</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>20</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>21</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>22-24</td>
<td>2</td>
<td>6</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>25-29</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>30-39</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>40 and over</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Not reported</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>33</td>
<td>35</td>
<td>76</td>
</tr>
</tbody>
</table>
The following tables summarize the demographic variables by ethnicity and gender. Table 5 reports the number of dependent children living with the students in the sample. The hours worked per week by the student sample is given in Table 6. Table 7 reports the number of students who indicated that they need financial aid. Table 8 reports the responses to the question, "Do you have a good place to study at home?" Table 9 reports the number of students who indicated that they had problems with transportation to the college. Table 10 reports the number of students who indicated that their family supports their decision to attend college.

**TABLE 5**

DEPENDENT CHILDREN BY ETHNICITY AND GENDER

<table>
<thead>
<tr>
<th>Dependent children</th>
<th>African-American</th>
<th>Caucasian</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>None</td>
<td>13</td>
<td>15</td>
<td>24</td>
<td>47</td>
</tr>
<tr>
<td>One</td>
<td>2</td>
<td>10</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Two</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Three</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Four or more</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Did not respond</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>33</td>
<td>35</td>
<td>76</td>
</tr>
</tbody>
</table>
### TABLE 6

**HOURS WORKED PER WEEK BY ETHNICITY AND GENDER**

<table>
<thead>
<tr>
<th>Hours worked per week</th>
<th>African-American</th>
<th>Caucasian</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>None</td>
<td>10</td>
<td>7</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>1 - 10</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>11-19</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>20-29</td>
<td>3</td>
<td>8</td>
<td>8</td>
<td>17</td>
</tr>
<tr>
<td>30-39</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>40 and over</td>
<td>2</td>
<td>6</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>33</td>
<td>35</td>
<td>76</td>
</tr>
</tbody>
</table>

### TABLE 7

**FINANCIAL NEED BY ETHNICITY AND GENDER**

<table>
<thead>
<tr>
<th>Financial need</th>
<th>African-American</th>
<th>Caucasian</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>13</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>No</td>
<td>16</td>
<td>20</td>
<td>33</td>
<td>59</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>33</td>
<td>35</td>
<td>76</td>
</tr>
</tbody>
</table>

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TABLE 8

A GOOD PLACE TO STUDY BY ETHNICITY AND GENDER

<table>
<thead>
<tr>
<th>Do you have a good place to study at home?</th>
<th>African-American</th>
<th>Caucasian</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Yes</td>
<td>15</td>
<td>26</td>
<td>28</td>
<td>60</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>7</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Did not respond</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>33</td>
<td>35</td>
<td>76</td>
</tr>
</tbody>
</table>

TABLE 9

TRANSPORTATION PROBLEMS BY ETHNICITY AND GENDER

<table>
<thead>
<tr>
<th>Do you have problems with transportation to the College?</th>
<th>African-American</th>
<th>Caucasian</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>29</td>
<td>31</td>
<td>73</td>
</tr>
<tr>
<td>Did not respond</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>33</td>
<td>35</td>
<td>76</td>
</tr>
</tbody>
</table>

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TABLE 10
FAMILY SUPPORT BY ETHNICITY AND GENDER

<table>
<thead>
<tr>
<th>My family supports my decision to attend college.</th>
<th>African-American</th>
<th>Caucasian</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>30</td>
<td>35</td>
<td>76</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Did not respond</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>33</td>
<td>35</td>
<td>76</td>
</tr>
</tbody>
</table>

Analysis of the Responses

Three outcome variables were examined in this study. Self-concept was examined as an outcome variable, to examine the relationship between the selected variables and a student's self perception (it was also analyzed as an independent variable, to study its effect on attendance and GPA). This variable was measured by the self-concept scale of the Non-Cognitive Questionnaire. Attendance was examined as a measure of in-class behaviors related to academic success. Attendance records were obtained from those instructors whose classes were part of the sample and who also took attendance for their classes. One hundred sixteen (116) students in the sample were in classes whose attendance was recorded. Attendance is reported as a percentage of the total class periods the student attended. GPA information for the specific classes in the sample was obtained from records of the instructors, and verified by transcript information in the college student database. Each student's GPA for the Winter 1999
semester was obtained through the college student database. Class and semester GPA's were obtained for the entire sample. Table 11 reports attendance, class GPA, and semester GPA for the sample.

TABLE 11
OUTCOME VARIABLES

<table>
<thead>
<tr>
<th>Outcome Variables</th>
<th>n</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Possible Range</th>
<th>Actual - Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>116</td>
<td>83.4%</td>
<td>14.20%</td>
<td>87.50%</td>
<td>0-100%</td>
<td>27-100%</td>
</tr>
<tr>
<td>Class GPA</td>
<td>185</td>
<td>2.19</td>
<td>1.51</td>
<td>3.00</td>
<td>0.00-4.00</td>
<td>0.00-4.00</td>
</tr>
<tr>
<td>Semester GPA</td>
<td>185</td>
<td>2.25</td>
<td>1.29</td>
<td>2.50</td>
<td>0.00-4.00</td>
<td>0.00-4.00</td>
</tr>
</tbody>
</table>

Placement-test results in reading, mathematics, and English were obtained from the student records database at Lake Michigan College. Scores were not available for the entire sample of 185 students, as noted in Table 12. English, mathematics, and reading placement tests are waived for some students, based on criteria developed by the College. The English and Mathematics placement tests were completed by 165 students, and the Reading test was completed by 167 students.

High-school GPA's were obtained from high-school transcripts on file at the College. High-school transcripts are required for formal admission to Lake Michigan College. However, many students begin their studies at Lake Michigan College without formally applying for admission. Also, students who have received a GED do not have a
TABLE 12

PLACEMENT TEST SCORES AND HIGH-SCHOOL GPA

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Possible Range</th>
<th>Actual - Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>165</td>
<td>42.05</td>
<td>5.89</td>
<td>42</td>
<td>23-54</td>
<td>27-54</td>
</tr>
<tr>
<td>Mathematics</td>
<td>165</td>
<td>40.67</td>
<td>6.45</td>
<td>40</td>
<td>23-55</td>
<td>26-54</td>
</tr>
<tr>
<td>Reading</td>
<td>167</td>
<td>13.35</td>
<td>2.91</td>
<td>13.7</td>
<td>4.1-18.9</td>
<td>4.1-18.9</td>
</tr>
<tr>
<td>High school GPA</td>
<td>103</td>
<td>2.66</td>
<td>0.63</td>
<td>2.60</td>
<td>0.00-4.00</td>
<td>1.31-3.94</td>
</tr>
</tbody>
</table>

high-school GPA as part of their high-school transcript. Therefore, only 103 high-school GPA’s were available for use in this study.

The Non-Cognitive Questionnaire and the Learning and Study Strategies Inventory were the instruments completed by the students in the study. The following section describes the responses for each instrument, along with selected descriptive statistics. As indicated in Tables 13 and 14, the scores obtained on the two instruments used are reasonably distributed across the possible range of scores for the two instruments.

The Non-Cognitive Questionnaire has eight scales. As seen in Table 13, the scores are distributed across most of the possible range. The closeness of the mean and median scores suggests that the scores are symmetrically distributed across the range.

The Learning and Study Skills Inventory contains 10 scales, listed in Table 14. The actual range of scores also covers most of the possible range. The mean and median scores are also close, suggesting that these scores are also symmetrically distributed across the range for each scale.
### TABLE 13

**NON-COGNITIVE QUESTIONNAIRE RESPONSES**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Possible Range</th>
<th>Actual - Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive self-concept</td>
<td>14.49</td>
<td>2.57</td>
<td>14</td>
<td>7-26</td>
<td>8-22</td>
</tr>
<tr>
<td>Realistic self-appraisal</td>
<td>6.98</td>
<td>1.63</td>
<td>7</td>
<td>4-14</td>
<td>4-11</td>
</tr>
<tr>
<td>Ability to understand and deal with racism</td>
<td>13.63</td>
<td>2.51</td>
<td>14</td>
<td>5-25</td>
<td>7-19</td>
</tr>
<tr>
<td>Preference toward long-range goals</td>
<td>6.71</td>
<td>1.52</td>
<td>7</td>
<td>3-13</td>
<td>3-11</td>
</tr>
<tr>
<td>Available strong support person</td>
<td>8.03</td>
<td>1.36</td>
<td>8</td>
<td>3-15</td>
<td>5-13</td>
</tr>
<tr>
<td>Demonstrated community service</td>
<td>6.40</td>
<td>1.31</td>
<td>6</td>
<td>3-13</td>
<td>3-11</td>
</tr>
<tr>
<td>Leadership experience</td>
<td>5.24</td>
<td>1.22</td>
<td>5</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Knowledge obtained in a field</td>
<td>3.60</td>
<td>.90</td>
<td>3</td>
<td>2-6</td>
<td>2-6</td>
</tr>
</tbody>
</table>

### TABLE 14

**LEARNING AND STUDY SKILLS INVENTORY (LASSI) RESPONSES**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Possible Range</th>
<th>Actual - Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>31.19</td>
<td>5.47</td>
<td>32</td>
<td>8-40</td>
<td>9-40</td>
</tr>
<tr>
<td>Motivation</td>
<td>29.74</td>
<td>5.51</td>
<td>29</td>
<td>8-40</td>
<td>12-40</td>
</tr>
<tr>
<td>Time management</td>
<td>23.49</td>
<td>5.68</td>
<td>23</td>
<td>8-40</td>
<td>10-37</td>
</tr>
<tr>
<td>Test Anxiety</td>
<td>25.21</td>
<td>6.13</td>
<td>25</td>
<td>8-40</td>
<td>9-40</td>
</tr>
<tr>
<td>Concentration</td>
<td>24.97</td>
<td>5.74</td>
<td>26</td>
<td>8-40</td>
<td>10-40</td>
</tr>
<tr>
<td>Information processing</td>
<td>26.71</td>
<td>5.10</td>
<td>26</td>
<td>8-40</td>
<td>12-40</td>
</tr>
<tr>
<td>Main idea</td>
<td>17.88</td>
<td>3.78</td>
<td>18</td>
<td>5-25</td>
<td>7-25</td>
</tr>
<tr>
<td>Study aids</td>
<td>23.62</td>
<td>5.65</td>
<td>24</td>
<td>8-40</td>
<td>10-40</td>
</tr>
<tr>
<td>Self-testing</td>
<td>25.67</td>
<td>5.22</td>
<td>26</td>
<td>8-40</td>
<td>12-39</td>
</tr>
<tr>
<td>Test-taking</td>
<td>28.21</td>
<td>5.76</td>
<td>29</td>
<td>8-40</td>
<td>12-40</td>
</tr>
</tbody>
</table>

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Testing the Hypotheses

Demographic Variables and Student Outcomes.

Hypothesis 1

There is no significant relationship between the demographic/situational variables and each student outcome (self-concept, attendance, GPA).

Nine demographic/situational variables were examined to determine if there was any relationship between these variables and self-concept, attendance, and GPA. The following section first examines each of these demographic variables individually to determine whether or not there is a significant relationship between each variable and the selected student outcomes, as reflected in sub-hypotheses 1A through 1I. The demographic/situational variables were then examined as a group (Hypothesis 1) to determine whether there was a significant relationship between them and self-concept, attendance, and GPA. All hypotheses were tested utilizing an $\alpha = .05$.

Three of the demographic/situational variables were interval measures: Age, number of dependent children, and hours worked per week. These were analyzed using Pearson product-moment correlations. The correlation coefficients are shown in Table 15. As the correlation coefficients indicate, there was little relationship between the outcome variables and age, number of dependent children, and hours worked per week.

Hypothesis 1A—There is no significant relationship between age and student outcomes.

In an examination of the relationship between age and the outcome measures, the only significant relationship was between age and self-concept (-.1744). Thus, the null
hypothesis (1A) was retained for attendance and GPA, and rejected only for self-concept. The younger the student, the higher their self-concept. However, this correlation accounted for only about 3% of the variance, and, therefore, does not provide meaningful relationship information.

Hypothesis 1D—*There is no significant relationship between number of dependent children and student outcomes.*

Hypothesis 1E—*There is no significant relationship between hours worked per week and student outcomes.*

There was no significant relationship found between the number of dependent children and the selected outcomes. There was also no significant relationship found between hours worked per week and the outcomes. Therefore, hypotheses 1D and 1E were retained for self-concept, attendance, and GPA.

<table>
<thead>
<tr>
<th>TABLE 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORRELATION MATRIX FOR HYPOTHESES 1A, 1D, 1E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Self-concept</th>
<th>Attendance</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.1744*</td>
<td>.1709</td>
<td>.1018</td>
</tr>
<tr>
<td>Number of dependent children</td>
<td>-.0087</td>
<td>.0579</td>
<td>-.0284</td>
</tr>
<tr>
<td>Hours worked per week</td>
<td>-.0676</td>
<td>-.1224</td>
<td>-.0246</td>
</tr>
</tbody>
</table>

*significant coefficient.
Several of the demographic/situational variables were categorical and were examined using Chi-Square analyses. These variables include gender, ethnicity, financial need, study environment, transportation, and family support. The outcome variable scores were grouped to facilitate adequate minimum cell frequencies. Self-concept scores (8-22) were coded as follows: <=13 = 1, 14 - 16 = 2, >=17 = 3. Attendance percentage was coded as follows: <= 75% attendance = 1, 76%-85% = 2, 86-95% = 3, and 96%-100% = 4. GPA was coded as follows: 0.00-0.99 = 1, 1.00-1.99 = 2, 2.00-2.99 = 3, >=3.00 = 4.

Hypothesis 1B—There is no significant relationship between gender and student outcomes.

There was no significant relationship between gender and self-concept, attendance, or GPA. Table 16 reports the chi-square statistics for gender and the selected student outcomes. Hypothesis 1B was retained.

**TABLE 16**

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Chi-Square (Pearson)</th>
<th>Min. Expected Cell Frequency</th>
<th>Value</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-concept</td>
<td>13.914</td>
<td>5.65905</td>
<td>2</td>
<td>.05904</td>
<td></td>
</tr>
<tr>
<td>Attendance</td>
<td>8.526</td>
<td>2.92898</td>
<td>3</td>
<td>.40271</td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td>9.276</td>
<td>5.54958</td>
<td>3</td>
<td>.13570</td>
<td></td>
</tr>
</tbody>
</table>

*significant coefficient.

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Hypothesis 1C—There is no significant relationship between ethnicity and student outcomes.

Table 17 examines the relationships between ethnicity and the selected student outcomes. For purposes of computing the chi-square, ethnicity was coded as follows: African-American = 1, Caucasian = 2, and Other = 3. There was no significant relationship found between ethnicity and self-concept. The chi-square statistic was significant for attendance and ethnicity. Sixty-five percent of Caucasian students attended class 86% or more of the time, but only 27% of African-American students and 50% of “other” students attended 86% or more of the time. However, 33% of the cells in the cross-tab analysis had an expected frequency of <5. The chi-square for ethnicity and GPA was significant. Forty-nine percent of African-American students had GPA’s of 2.00 or better, 57% of “other” students had GPA’s or 2.00 or better, and 72% of Caucasian students had GPA’s of 2.00 or better. Hypothesis 1C was retained for self-concept, and rejected for attendance and ethnicity. Caucasian students had better attendance and higher GPA’s than other students in the sample.

Hypothesis 1F—There is no significant relationship between financial need and student outcomes.

There was no significant relationship between financial need and self-concept, attendance, or GPA. Table 18 reports the chi-square statistics for gender and the selected student outcomes. Hypothesis 1F was retained.

Hypothesis 1G - There is no significant relationship between study environment and student outcomes.
TABLE 17
CHI-SQUARE FOR ETHNICITY AND STUDENT OUTCOMES

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Min. Expected Cell Frequency</th>
<th>Value</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-concept</td>
<td>4.427</td>
<td>5.55506</td>
<td>4</td>
<td>.23493</td>
</tr>
<tr>
<td>Attendance</td>
<td>1.983</td>
<td>14.56675</td>
<td>6</td>
<td>.02391*</td>
</tr>
<tr>
<td>GPA</td>
<td>2.951</td>
<td>21.60936</td>
<td>6</td>
<td>.00142*</td>
</tr>
</tbody>
</table>

*significant coefficient.

TABLE 18
CHI-SQUARE FOR FINANCIAL NEED AND STUDENT OUTCOMES

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Min. Expected Cell Frequency</th>
<th>Value</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-concept</td>
<td>8.011</td>
<td>1.92503</td>
<td>2</td>
<td>.38193</td>
</tr>
<tr>
<td>Attendance</td>
<td>4.957</td>
<td>4.41925</td>
<td>3</td>
<td>.21961</td>
</tr>
<tr>
<td>GPA</td>
<td>5.341</td>
<td>3.37326</td>
<td>3</td>
<td>.33758</td>
</tr>
</tbody>
</table>

There was no significant relationship between study environment ("a place to study at home") and self-concept, or between study environment and attendance. However, there was a significant relationship found between study environment and GPA. Only 54% of those who did not have a good place to study at home had GPA's of
2.00 or better, while 67% of those who did have a good place to study had 2.00 or better GPA's. Table 19 reports the chi-square statistics for study environment and the selected student outcomes. Hypothesis 1G was retained for self-concept and attendance, and rejected for GPA. Students with a good place to study at home are more likely to be academically successful.

### TABLE 19

**CHI-SQUARE FOR STUDY ENVIRONMENT AND STUDENT OUTCOMES**

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Chi-Square (Pearson)</th>
<th>Min. Expected Cell Frequency</th>
<th>Value</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-concept</td>
<td>8.880</td>
<td></td>
<td>.26218</td>
<td>2</td>
<td>.87714</td>
</tr>
<tr>
<td>Attendance</td>
<td>5.600</td>
<td></td>
<td>3.36151</td>
<td>3</td>
<td>.33917</td>
</tr>
<tr>
<td>GPA</td>
<td>6.076</td>
<td></td>
<td>8.62425</td>
<td>3</td>
<td>.03473*</td>
</tr>
</tbody>
</table>

* significant.

Hypothesis 1H—*There is no significant relationship between student transportation and student outcomes.*

There was no significant relationship between student transportation and self-concept, attendance, or GPA. Table 20 reports the chi-square statistics for transportation and the selected student outcomes. Hypothesis 1H was retained.

Hypothesis 1I—*There is no significant relationship between family support for student goals and student outcomes.*
TABLE 20

CHI-SQUARE FOR TRANSPORTATION AND STUDENT OUTCOMES

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Min. Expected Cell Frequency</th>
<th>Value</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-concept</td>
<td>4.543</td>
<td>1.89647</td>
<td>2</td>
<td>.38742</td>
</tr>
<tr>
<td>Attendance</td>
<td>3.000</td>
<td>3.83600</td>
<td>3</td>
<td>.27973</td>
</tr>
<tr>
<td>GPA</td>
<td>3.109</td>
<td>1.00488</td>
<td>3</td>
<td>.80007</td>
</tr>
</tbody>
</table>

Only 6 students in the sample reported that their family did not support their attending college. Therefore, 50% of the cells in the cross-tabulation have an expected frequency of <5, and, therefore, the chi-square statistic is not a valid one to use. However, 5 out of 6 students whose family did not support their attending college, in fact, did not successfully complete the semester.

Hypothesis 1. There is no significant relationship between the demographic/situational variables and each student outcome (self-concept, attendance, GPA).

Hypotheses 1 was tested for each student outcome by multiple linear regression analysis, using the stepwise method in SPSS. The linear combination of two of the demographic variables, age and gender, yielded a multiple correlation of .227 with self-concept ($R^2=.052$). Table 21 gives the standardized coefficients and $t$-values for age and gender.
Therefore, Hypothesis 1 was rejected for self-concept. There was a significant relationship between these variables. A younger, female student was more likely to have a higher self-concept than other students.

**TABLE 21**

MULTIPLE LINEAR REGRESSION COEFFICIENTS OF AGE AND GENDER WITH SELF-CONCEPT

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized Coefficient</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.199</td>
<td>-2.673*</td>
<td>.0082*</td>
</tr>
<tr>
<td>Gender</td>
<td>.148</td>
<td>1.988*</td>
<td>.0483*</td>
</tr>
</tbody>
</table>

*significant.

The linear combination of three of the demographic variables—age, financial difficulties, and family support—yielded a multiple correlation of .398 with attendance ($R^2 = .158$). Table 22 gives the standardized coefficients and $t$-values for age, financial difficulties, and family support.

Hypothesis 1 was rejected for attendance. There was a significant relationship between these variables. The older the student, the fewer financial difficulties and the more family support, the better the student’s attendance.

The linear combination of four of the demographic variables—gender, financial difficulties, a place to study at home, and family support—yielded a multiple correlation of .359 with GPA ($R^2 = .129$). Table 23 gives the standardized coefficients and $t$-values for gender, financial difficulties, a place to study at home, and family support.
### TABLE 22
MULTIPLE LINEAR REGRESSION COEFFICIENTS OF AGE, FINANCIAL DIFFICULTIES, FAMILY SUPPORT WITH ATTENDANCE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized Coefficient</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.258</td>
<td>2.880*</td>
<td>.0048*</td>
</tr>
<tr>
<td>Financial difficulties</td>
<td>-.181</td>
<td>-2.060*</td>
<td>.0417*</td>
</tr>
<tr>
<td>Family support</td>
<td>.326</td>
<td>3.655*</td>
<td>.0000*</td>
</tr>
</tbody>
</table>

*significant.

### TABLE 23
MULTIPLE LINEAR REGRESSION COEFFICIENTS OF GENDER, FINANCIAL DIFFICULTIES, A PLACE TO STUDY AT HOME, FAMILY SUPPORT WITH GPA

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized Coefficient</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.219</td>
<td>3.019*</td>
<td>.003*</td>
</tr>
<tr>
<td>Financial difficulties</td>
<td>-.155</td>
<td>-2.126*</td>
<td>.035*</td>
</tr>
<tr>
<td>A place to study at home</td>
<td>.156</td>
<td>2.196*</td>
<td>.029*</td>
</tr>
<tr>
<td>Family support</td>
<td>.216</td>
<td>3.046*</td>
<td>.003*</td>
</tr>
</tbody>
</table>

*significant.

Hypothesis 1 was rejected for GPA. There was a significant relationship between these variables. A female with a place to study at home, fewer financial difficulties, and
more family support was more likely to have a higher GPA than other students.

Academic Variables and Student Outcomes

Hypothesis 2

There is no significant relationship between academic variables and each student outcome.

The following section first examined each academic variable individually to determine whether or not there was a significant relationship between each variable and the selected student outcomes, as reflected in sub-hypotheses 2A through 2D. The academic variables were then examined as a group (Hypothesis 2) to determine whether there was a significant relationship between them and self-concept, attendance, and GPA.

Hypothesis 2A—There is no significant relationship between English placement test scores and student outcomes.

Hypothesis 2B—There is no significant relationship between Mathematics placement test scores and student outcomes.

Hypothesis 2C—There is no significant relationship between Reading placement test scores and student outcomes.

Hypothesis 2D—There is no significant relationship between high-school grade point average (GPA) and student outcomes.

Hypotheses 2A-2D were tested by Pearson product-moment correlations. Overall, correlations between student outcome variables and academic variables were small. However, 10 of the 12 correlation coefficients were statistically significant, with α = .05. Table 24 shows the correlation matrix.
Slightly higher correlations were found between GPA and the academic variables. English scores accounted for 11%, Mathematics scores accounted for 11%, Reading for 6%, and High-School GPA for 12% of the variance.

\textbf{TABLE 24}

\textbf{CORRELATION MATRIX FOR SUB-HYPOTHESES 2A - 2D}

\begin{tabular}{lccc}
\hline
\text{Academic Variables} & \text{Student Outcomes} & \\
 & \text{Self-concept} & \text{Attendance} & \text{GPA} \\
\hline
\text{English} & .3029* & .1597 & .3250* \\
\text{Mathematics} & .2863* & .1970* & .3349* \\
\text{Reading} & .2585* & .1407 & .2347* \\
\text{High School GPA} & .4884* & .2376* & .3502* \\
\hline
\end{tabular}

*significant coefficient.

The highest correlation with self-concept was found with high-school GPA, which accounted for 24% of the variance. English accounted for 9% of the variance, Mathematics for 8%, and Reading for 7% of the variance. The correlations between Attendance and the academic variables were very low. The significant correlations (Mathematics and high-school GPA) accounted for only 4% and 6% of the variance, respectively. Each of these correlation coefficients was statistically significant at the $\alpha = .05$ level. Therefore, Hypotheses 2B and 2D were rejected for self-concept, attendance, and GPA. Hypotheses 2A and 2C were rejected for self-concept and GPA, and were retained for attendance.
Hypothesis 2—There is no significant relationship between the set of academic variables and each student outcome.

The relationship between the academic variables and self-concept was tested by multiple linear regression analysis. The SPSS Linear regression-stepwise method program was used in the analysis. No combination of academic variables significantly predicted self-concept. The inclusion of no other variable significantly increased the correlation of high-school GPA with self-concept. The zero-order correlation between high-school GPA and self-concept was the only significant relationship. The zero-order correlation was .4884 ($R^2 = .239$).

Hypothesis 2 was rejected for self-concept. The higher the high-school GPA, the higher the reported self-concept.

The relationship between academic variables and attendance was tested by multiple linear regression analysis. The SPSS Linear regression-stepwise method program was used in the analysis. No combination of academic variables significantly predicted attendance. Hypothesis 2 was retained for attendance.

The relationship between academic variables and GPA was tested by multiple linear regression analysis. The SPSS Linear regression-stepwise method program was used in the analysis. No combination of academic variables significantly predicted GPA. The inclusion of no other variable significantly increased the correlation of high-school GPA with GPA. The zero-order correlation between high-school GPA and GPA was the only significant relationship. The zero-order correlation was .350 ($R^2 = .123$).

Hypothesis 2 was rejected for GPA. The inclusion of no other variable
significantly increased the correlation of high-school GPA with semester GPA. The higher the high-school GPA, the higher was the semester GPA.

Non-Cognitive Variables and Student Outcomes

**Hypothesis 3**

*There is no significant relationship between non-cognitive variables and each student outcome.*

Sub-hypotheses 3A through 3H examine the relationship between each non-cognitive variable and the selected outcome variables. The non-cognitive variables were then examined as a group (Hypothesis 3) to determine whether there was a significant relationship between them and self-concept, attendance, and GPA. The discussion follows the listed hypotheses.

- **Hypothesis 3A**—*There is no significant relationship between “positive self-concept” and student outcomes.*

- **Hypothesis 3B**—*There is no significant relationship between “realistic self-appraisal” and student outcomes.*

- **Hypothesis 3C**—*There is no significant relationship between “ability to understand and deal with racism” and student outcomes.*

- **Hypothesis 3D**—*There is no significant relationship between “preference toward long-range goals” and student outcomes.*

- **Hypothesis 3E**—*There is no significant relationship between the “availability of a strong support person” and student outcomes.*

- **Hypothesis 3F**—*There is no significant relationship between “demonstrated..."
community service” and student outcomes.

Hypothesis 3G - There is no significant relationship between “leadership experience” and student outcomes.

Hypothesis 3H - There is no significant relationship between “knowledge obtained in a field” and student outcomes.

There is little overall relationship between the eight non-cognitive variables and the selected outcomes, as reported in Table 25. Only three of the seven remaining NCQ categories (the “positive self-concept” scale from the NCQ was utilized in this study as an outcome variable) significantly correlated with self-concept. “Ability to understand and deal with racism” accounted for 3% of the variance, “preference for long-range goals” about 4%, and “knowledge obtained in a field” accounted for 13% of the variance. Similarly, only one of the eight NCQ and Attendance correlation coefficients was statistically significant. “Leadership experience” accounted for only 4% of the variance.

Two subscales significantly correlated with GPA, though the correlations were quite small. “Leadership experience” and “knowledge obtained in a field” each accounted for 4% and 3% of the variance, respectively.

Sub-hypotheses 3C and 3D were rejected for self-concept. Sub-hypothesis 3G was rejected for attendance and GPA. Sub-hypothesis 3H was rejected for self-concept and GPA. All other sub-hypotheses were retained.

Hypothesis 3—There is no significant relationship between non-cognitive variables and each student outcome.
The relationship between non-cognitive variables and self-concept was tested by multiple linear regression analysis, using the stepwise method in SPSS. The linear combination of three of the variables—knowledge obtained in a field, preference toward long-range goals, and realistic self-appraisal—yielded a multiple correlation of .435 with self-concept ($R^2=.189$). Table 26 gives the standardized coefficients and $t$-values for knowledge obtained in a field, preference toward long-range goals, and realistic self-appraisal.
TABLE 26
MULTIPLE LINEAR REGRESSION COEFFICIENTS OF
KNOWLEDGE OBTAINED IN A FIELD, PREFERENCE
TOWARD LONG-RANGE GOALS, AND REALISTIC
SELF-APPRAISAL WITH SELF-CONCEPT

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized Coefficient</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge obtained in a field</td>
<td>.3459</td>
<td>5.150*</td>
<td>.0000*</td>
</tr>
<tr>
<td>Preference toward long-range goals</td>
<td>.2055</td>
<td>3.038*</td>
<td>.0027*</td>
</tr>
<tr>
<td>Realistic self-appraisal</td>
<td>.1735</td>
<td>2.571*</td>
<td>.0109*</td>
</tr>
</tbody>
</table>

*significant.

Hypothesis 3 was rejected for self-concept. There was a significant relationship between these variables. The greater the knowledge obtained in a field, a preference toward long-range goals, and a realistic self-appraisal, the higher the student's self-concept.

The relationship between non-cognitive variables and attendance was tested by multiple linear regression analysis, using the stepwise method in SPSS. The inclusion of no other variable significantly increased the correlation of leadership experience with attendance. This zero-order correlation of leadership experience and attendance was the only significant relationship. The correlation was .191 ($R^2=.036$).

Hypothesis 3 was rejected for attendance. There was a significant relationship between these variables. The more leadership experience a student has had, the more likely he or she is to attend classes.
The inclusion of no other variable significantly increased the correlation of leadership experience with GPA. This zero-order correlation of leadership experience and GPA was the only significant relationship. The correlation was .200 ($r^2=.040$).

Hypothesis 3 was rejected for GPA. There was a significant relationship between these variables. The more leadership experience a student has had, the greater the student’s GPA.

Learning and Study Skills Variables and Student Outcomes

**Hypothesis 4**

*There is no significant relationship between learning and study-skills variables and each student outcome.*

Sub-hypotheses 4A through 4J examined the relationship between each learning and study-skills variable and the selected outcome variables. The learning and study-skills variables were then examined as a group (Hypothesis 4) to determine whether there was a significant relationship between them and self-concept, attendance, and GPA. The discussion follows the listed hypotheses.

Hypothesis 4A—*There is no significant relationship between “attitude” and student outcomes.*

Hypothesis 4B—*There is no significant relationship between “motivation” and student outcomes.*

Hypothesis 4C—*There is no significant relationship between “time management” and student outcomes.*

Hypothesis 4D—*There is no significant relationship between “test anxiety” and student outcomes.*
student outcomes.

Hypothesis 4E—There is no significant relationship between “concentration” and student outcomes.

Hypothesis 4F—There is no significant relationship between “information processing” and student outcomes.

Hypothesis 4G—There is no significant relationship between “main idea” comprehension and student outcomes.

Hypothesis 4H—There is no significant relationship between “study aids” and student outcomes.

Hypothesis 4I—There is no significant relationship between “self-testing” and student outcomes.

Hypothesis 4J—There is no significant relationship between “test-taking” and student outcomes.

Sub-hypotheses 4A through 4J examined the relationship between selected learning and study-skills variables and self-concept, attendance, and GPA. Correlation coefficients between the learning and study-skills variables and self-concept, attendance, and GPA are presented in Table 27.

Nine of the 10 learning and study-skills variables showed a significant relationship to self-concept, though only 5 of the 10 correlation coefficients accounted for 10% or more of the variance. Motivation and main idea each accounted for 14% of the variance. Concentration accounted for 12% of the variance, attitude for 11% of the variance, and test-taking for 10% of the variance. Self-testing, test anxiety, information
processing, and study aids, while statistically significant, each accounted for less than 10% of the variance.

Learning and study-skills variables appear to have little or no relationship to students' attendance patterns. Only motivation was significantly correlated with attendance, and that correlation, while statistically significant, accounted for only 3% of the variance.

**TABLE 27**

CORRELATION MATRIX FOR SUB-HYPOTHESES 4A - 4J

<table>
<thead>
<tr>
<th>Learning and Study Skills Inventory</th>
<th>Student Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self-concept</td>
</tr>
<tr>
<td>Attitude</td>
<td>.3294*</td>
</tr>
<tr>
<td>Motivation</td>
<td>.3792*</td>
</tr>
<tr>
<td>Time management</td>
<td>.1214</td>
</tr>
<tr>
<td>Test anxiety</td>
<td>.2405*</td>
</tr>
<tr>
<td>Concentration</td>
<td>.3392*</td>
</tr>
<tr>
<td>Information Processing</td>
<td>.1707*</td>
</tr>
<tr>
<td>Main idea</td>
<td>.3750*</td>
</tr>
<tr>
<td>Study aids</td>
<td>.1790*</td>
</tr>
<tr>
<td>Self-testing</td>
<td>.2496*</td>
</tr>
<tr>
<td>Test-taking</td>
<td>.3084*</td>
</tr>
</tbody>
</table>

*significant coefficient.
Six of the 10 learning and study-skills variables were significantly correlated with semester GPA. Motivation and main idea accounted for 10% and 11% of the variance, respectively. The test-taking and GPA correlation coefficient accounted for about 8% of the variance. Test anxiety and concentration accounted for about 6% of the variance, and attitude accounted for only about 3% of the variance.

Therefore, sub-hypotheses 4A, 4B, and 4D-4J were rejected for self-concept. 4C was retained for self-concept. Only 4B was rejected for attendance. All other sub-hypotheses were retained for attendance. Sub-hypotheses 4A, 4B, 4D, 4E, 4G, and 4J were rejected for GPA, while 4C, 4F, 4H, and 4I were retained for GPA.

Hypothesis 4—*There is no significant relationship between learning and study-skills variables and each student outcome.*

The relationship between learning and study-skills variables and self-concept was tested by multiple linear regression analysis, using the stepwise method in SPSS. The linear combination of two of the LASSI variables, motivation and main idea (selecting main ideas and recognizing important information), yielded a multiple correlation of .422 with self-concept ($R^2=.178$). Table 28 gives the standardized coefficients and $t$-values for motivation and main ideas.

Hypothesis 4 was rejected for self-concept. There is a significant relationship between these variables. The more a student feels motivated and able to identify main ideas and recognize important information when studying, the higher the student's self-concept.
The relationship between learning and study skills variables and attendance was tested by multiple linear regression analysis. The SPSS Linear regression-stepwise method program was used in the analysis. No combination of the learning and study-skills variables significantly predicted attendance. The inclusion of no other variable significantly increased the correlation of motivation with attendance. The zero-order correlation between motivation and attendance was the only significant relationship. The zero-order correlation was .185 ($R^2 = .034$).

Hypothesis 4 was rejected for attendance. The inclusion of no other variable significantly increased the correlation of motivation with attendance. The higher the motivation scores, the greater was the attendance.

The relationship between learning and study-skills variables and GPA was tested by multiple linear regression analysis, using the stepwise method in SPSS. The linear combination of two of the LASSI variables, motivation and main idea (selecting main ideas and recognizing important information), yielded a multiple correlation of .367 with

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**TABLE 28**

MULTIPLE LINEAR REGRESSION COEFFICIENTS OF MOTIVATION AND MAIN IDEA SELECTION WITH SELF-CONCEPT

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized Coefficient</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>.2411</td>
<td>2.875*</td>
<td>.0045*</td>
</tr>
<tr>
<td>Main Idea</td>
<td>.2308</td>
<td>2.752*</td>
<td>.0065*</td>
</tr>
</tbody>
</table>

*significant.
GPA ($R^2=.135$). Table 29 gives the standardized coefficients and $t$-values for motivation and main ideas with GPA.

Hypothesis 4 was rejected for GPA. There was a significant relationship between these variables. The more a student felt motivated and able to identify main ideas and recognize important information when studying, the higher the student's semester GPA.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized Coefficient</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>.1793</td>
<td>2.084*</td>
<td>.0386*</td>
</tr>
<tr>
<td>Main Idea</td>
<td>.2310</td>
<td>2.685*</td>
<td>.0079*</td>
</tr>
</tbody>
</table>

*significant.

Comparison of African-American and Caucasian Students on Demographic Variables

This section compared the African-American and Caucasian subgroups on the demographic variables. Hypothesis 5 examined whether or not there was a significant difference between the African-American and Caucasian subgroups on any demographic/situational variable. Sub-hypotheses 5A-5H are listed, followed by a discussion of the results of the analyses.
Hypothesis 5

There is no significant difference between the African-American and Caucasian subgroups on any single demographic/situational variable.

Hypothesis 5 examined whether or not there was a significant difference between the African-American and Caucasian subgroups on any demographic/situational variable.

Hypothesis 5A—There is no significant difference between the African-American and Caucasian subgroups on age.

Hypothesis 5C—There is no significant difference between the African-American and Caucasian subgroups on number of dependent children.

Hypothesis 5D—There is no significant difference between the African-American and Caucasian subgroups on hours worked per week.

The three demographic/situational variables that were interval measures (age, number of dependent children, and hours worked per week) were analyzed using t tests to determine any significant differences between the African-American and Caucasian students. These results are shown in Table 30. There was no significant difference found between African-American and Caucasian students on these variables. Therefore, sub-hypotheses 5A, 5C, and 5D were retained.

The five categorical demographic variables were examined using Chi-Square analyses. These variables included gender, financial need, study environment, transportation, and family support. Table 31 reports the chi-square statistics for these demographic variables. The Pearson coefficient was used for all the chi-square analyses.
except for the analysis of ethnicity and family support. Because of the low minimum expected cell frequency for that analysis, Fisher's Exact Test was used.

Hypothesis 5B—There is no significant difference between the African-American and Caucasian subgroups on gender.

There was no significant difference between African-American and Caucasian students on gender. Table 31 reports the chi-square statistics for ethnicity and gender. Hypothesis 5B was retained.

**TABLE 30**

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Means</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>African-American</td>
<td>Caucasian</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>23.96</td>
<td>23.27</td>
<td>0.55</td>
</tr>
<tr>
<td>Dependent Children</td>
<td>0.83</td>
<td>0.59</td>
<td>1.39</td>
</tr>
<tr>
<td>Work Hours</td>
<td>18.55</td>
<td>21.43</td>
<td>-1.14</td>
</tr>
</tbody>
</table>

*significant.

Hypothesis 5E—There is no significant difference between the African-American and Caucasian subgroups on financial need.

There was a significant difference between African-American and Caucasian students on financial need. Thirty-two percent of the African-American students indicated financial need, while only 17% of the Caucasian sample did. Table 31 reports
the chi-square statistics for ethnicity and financial need. Hypothesis 5E was rejected.

There was significantly more financial need in the African-American student sample than in the Caucasian student sample.

Hypothesis 5F—There is no significant difference between the African-American and Caucasian subgroups on study environment.

There was no significant difference between ethnicity and study environment.

Table 31 reports the chi-square statistics for ethnicity and study environment. Hypothesis 5F was retained.

**TABLE 31**

**CHI-SQUARE FOR ETHNICITY AND GENDER, FINANCIAL NEED, STUDY ENVIRONMENT, TRANSPORTATION, AND FAMILY SUPPORT**

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Chi-Square (Pearson)**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min. Expected Cell Frequency</td>
</tr>
<tr>
<td>Gender</td>
<td>17.774 .61950</td>
</tr>
<tr>
<td>Financial Need</td>
<td>11.634 4.68487</td>
</tr>
<tr>
<td>Study Environment</td>
<td>10.847 .00402</td>
</tr>
<tr>
<td>Transportation</td>
<td>5.104 4.84141</td>
</tr>
<tr>
<td>Family Support</td>
<td>1.276 8.52327</td>
</tr>
</tbody>
</table>

*significant coefficient.

**Fisher's Exact Test utilized for “family support.”
Hypothesis 5G—There is no significant difference between the African-American and Caucasian subgroups on student transportation.

There was a significant difference between African-American and Caucasian students on student transportation. Seventeen percent of the African-American students indicated transportation difficulties, while only 6% of the Caucasian sample had transportation difficulties. Table 31 reports the chi-square statistics for ethnicity and transportation. Hypothesis 5G was rejected. There were significantly more transportation problems for African-American students than there were for Caucasian students.

Hypothesis 5H—There is no significant difference between the African-American and Caucasian subgroups on family support for student goals.

There was a significant difference between African-American and Caucasian students on family support. Eight percent of the African-American students indicated a lack of family support, while none of the Caucasian sample did. Table 31 reports the chi-square statistics for ethnicity and family support. Hypothesis 5H was rejected. There was significantly less family support by African-American student families than there was by Caucasian student families.

Comparison of African-American and Caucasian Students on the Academic Variables

Hypothesis 6 examined whether or not there was a significant difference between the African-American and Caucasian subgroups on any academic variable. Sub-hypotheses 6A through 6D are listed, followed by a discussion of the results of the analyses.
Hypothesis 6

There is no significant difference between the African-American and Caucasian subgroups on any single academic variable.

Hypothesis 6A—There is no significant difference between the African-American and Caucasian subgroups on English placement test scores.

Hypothesis 6B—There is no significant difference between the African-American and Caucasian subgroups on Mathematics placement test scores.

Hypothesis 6C—There is no significant difference between the African-American and Caucasian subgroups on Reading placement test scores.

Hypothesis 6D—There is no significant difference between the African-American and Caucasian subgroups on high-school grade point average (GPA).

$t$ tests were performed on the four academic variables to determine any significant differences between the African-American and Caucasian students. These results are shown in Table 32.

Hypothesis 6A was rejected. There was a significant difference found between the African-American students and Caucasian students on the English placement test scores. The mean English score for African-American students was significantly lower than the mean for Caucasian students.

Hypothesis 6B was rejected. There was a significant difference found between the African-American students and Caucasian students on the Mathematics placement test scores. The mean Mathematics score for African-American students was significantly lower than the mean for Caucasian students.
TABLE 32
COMPARISON OF ETHNICITY ON THE ACADEMIC VARIABLES

<table>
<thead>
<tr>
<th>Academic Variables</th>
<th>Means</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>African-American</td>
<td>Caucasian</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>39.41</td>
<td>43.89</td>
<td>-4.85*</td>
</tr>
<tr>
<td>Mathematics</td>
<td>37.34</td>
<td>42.74</td>
<td>-5.48*</td>
</tr>
<tr>
<td>Reading</td>
<td>12.22</td>
<td>14.27</td>
<td>-4.23*</td>
</tr>
<tr>
<td>High School GPA</td>
<td>2.33</td>
<td>2.86</td>
<td>-4.33*</td>
</tr>
</tbody>
</table>

*significant.

Hypothesis 6C was rejected. There was a significant difference found between the African-American students and Caucasian students on the Reading placement test scores. The mean Reading score for African-American students was significantly lower than the mean for Caucasian students.

Hypothesis 6D was rejected. There was a significant difference found between the African-American students and Caucasian students on high-school GPA’s. The mean GPA for African-American students was significantly lower than the mean for Caucasian students.

Comparison of African-American and Caucasian Students on the Non-cognitive Variables

Hypothesis 7 examined whether or not there is a significant difference between the African-American and Caucasian subgroups on any non-cognitive variable. Sub-hypotheses 7A-7H are listed, followed by a discussion of the results of the analyses.

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Hypothesis 7

There is no significant difference between the African-American and Caucasian subgroups on any single non-cognitive variable.

Hypothesis 7A—There is no significant difference between the African-American and Caucasian subgroups on “positive self-concept.”

Hypothesis 7B—There is no significant difference between the African-American and Caucasian subgroups on “realistic self appraisal.”

Hypothesis 7C—There is no significant difference between the African-American and Caucasian subgroups on “ability to understand and deal with racism.”

Hypothesis 7D—There is no significant difference between the African-American and Caucasian subgroups on “preference toward long-range goals.”

Hypothesis 7E—There is no significant difference between the African-American and Caucasian subgroups on “availability of a strong support person.”

Hypothesis 7F—There is no significant difference between the African-American and Caucasian subgroups on “demonstrated community service.”

Hypothesis 7G—There is no significant difference between the African-American and Caucasian subgroups on “leadership experience.”

Hypothesis 7H—There is no significant difference between the African-American and Caucasian subgroups on “knowledge gained in a field.”

Sub-hypotheses 7A through 7H were all retained. Table 33 reports the results of the analyses for sub-hypotheses 7A-7H. There was no significant difference between African-American students and Caucasian students on any of these noncognitive...
### TABLE 33

**COMPARISON OF ETHNICITY ON THE NON-COGNITIVE VARIABLES**

<table>
<thead>
<tr>
<th>Non-Cognitive Variables</th>
<th>Means</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>African-American</td>
<td>Caucasian</td>
<td>t</td>
<td>p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive self-concept</td>
<td>14.28</td>
<td>14.71</td>
<td>-1.00</td>
<td>.319</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Realistic self-appraisal</td>
<td>6.70</td>
<td>7.07</td>
<td>-1.37</td>
<td>.171</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to understand and deal with racism</td>
<td>13.30</td>
<td>14.04</td>
<td>-1.84</td>
<td>.067</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preference toward long-range goals</td>
<td>6.91</td>
<td>6.59</td>
<td>1.23</td>
<td>.220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of a strong support person or mentor</td>
<td>7.89</td>
<td>8.10</td>
<td>-0.89</td>
<td>.378</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrated community service</td>
<td>6.32</td>
<td>6.39</td>
<td>-0.30</td>
<td>.762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership experience</td>
<td>5.21</td>
<td>5.31</td>
<td>-0.47</td>
<td>.636</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge obtained in a field</td>
<td>3.49</td>
<td>3.74</td>
<td>-1.66</td>
<td>.100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
variables. However, in all but one variable, means of Caucasian students were somewhat higher than those of the African-American students. The mean for African-American students on “preference for long-range goals” was higher than the mean for Caucasian students.

Comparison of African-American and Caucasian Students on the Learning and Study Skills Variables

Hypothesis 8 examined whether or not there was a significant difference between the African-American and Caucasian subgroups on any learning and study-skills variable. Sub-hypotheses 8A through 8J are listed, followed by a discussion of the results of the analyses.

**Hypothesis 8**

*There is no significant difference between the African-American and Caucasian subgroups on any single learning and study skills variable.*

Hypothesis 8A—*There is no significant difference between the African-American and Caucasian subgroups on “attitude.”*

Hypothesis 8B—*There is no significant difference between the African-American and Caucasian subgroups on “motivation.”*

Hypothesis 8C—*There is no significant difference between the African-American and Caucasian subgroups on “time management.”*

Hypothesis 8D—*There is no significant difference between the African-American and Caucasian subgroups on “test anxiety.”*

Hypothesis 8E—*There is no significant difference between the African-American
and Caucasian subgroups on "concentration."

Hypothesis 8F—There is no significant difference between the African-American and Caucasian subgroups on "information processing."

Hypothesis 8G—There is no significant difference between the African-American and Caucasian subgroups on "main idea" comprehension.

Hypothesis 8H—There is no significant difference between the African-American and Caucasian subgroups on "study aids."

Hypothesis 8I—There is no significant difference between the African-American and Caucasian subgroups on "self-testing."

Hypothesis 8J—There is no significant difference between the African-American and Caucasian subgroups on "test-taking."

The results of the t tests for sub-hypotheses 8A through 8J are reported in Table 34. Once again, there was little significant difference between African-American students and Caucasian students on the individual learning and study-skills variables. All sub-hypotheses except for 8H were retained. There was no significant difference between African-American students and Caucasian students on the following noncognitive variables: Attitude, motivation, time management, test anxiety, concentration, information processing, main idea, self-testing, and test-taking. Hypothesis 8H was rejected. There was a significant difference found between the African-American students and Caucasian students on the study aids. The mean study-aids score for African-American students was significantly lower than the mean for Caucasian students.
### Table 34

**Comparison of Ethnicity on the Learning and Study Skills Variables**

<table>
<thead>
<tr>
<th>Learning and Study-Skills Variables</th>
<th>Means</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>African-American</td>
<td>Caucasian</td>
<td>t</td>
</tr>
<tr>
<td>Attitude</td>
<td>32.43</td>
<td>30.98</td>
<td>1.50</td>
</tr>
<tr>
<td>Motivation</td>
<td>29.40</td>
<td>30.23</td>
<td>-.92</td>
</tr>
<tr>
<td>Time management</td>
<td>24.08</td>
<td>23.14</td>
<td>.98</td>
</tr>
<tr>
<td>Test anxiety</td>
<td>25.96</td>
<td>25.35</td>
<td>.60</td>
</tr>
<tr>
<td>Concentration</td>
<td>25.74</td>
<td>24.77</td>
<td>.98</td>
</tr>
<tr>
<td>Information Processing</td>
<td>26.28</td>
<td>26.89</td>
<td>-.71</td>
</tr>
<tr>
<td>Main idea</td>
<td>17.43</td>
<td>18.17</td>
<td>-1.20</td>
</tr>
<tr>
<td>Study aids</td>
<td>22.04</td>
<td>24.21</td>
<td>-2.36</td>
</tr>
<tr>
<td>Self-testing</td>
<td>25.47</td>
<td>25.70</td>
<td>-.28</td>
</tr>
<tr>
<td>Test-taking</td>
<td>28.13</td>
<td>28.31</td>
<td>-.19</td>
</tr>
</tbody>
</table>

*significant.

**Comparison of African-American and Caucasian Students on the Outcome Measures**

Hypothesis 9 examined whether or not there was a significant difference between the African-American and Caucasian subgroups on any outcome variable. Sub-hypotheses 9A through 9C are listed, followed by a discussion of the results of the analyses.
Hypothesis 9

There is no significant difference between the African-American and Caucasian subgroups on the outcome variables.

Hypothesis 9A—There is no significant difference between the African-American and Caucasian subgroups on self-concept.

Hypothesis 9B—There is no significant difference between the African-American and Caucasian subgroups on attendance.

Hypothesis 9C—There is no significant difference between the African-American and Caucasian subgroups on GPA.

As Table 35 indicates, two of the three means of the outcome variables vary significantly between African-American and Caucasian students.

<table>
<thead>
<tr>
<th>Outcome Variables</th>
<th>Means</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>African-American</td>
<td>Caucasian</td>
</tr>
<tr>
<td>Self-concept</td>
<td></td>
<td>14.28</td>
<td>14.71</td>
</tr>
<tr>
<td>Attendance</td>
<td></td>
<td>.777</td>
<td>.862</td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td>1.69</td>
<td>2.57</td>
</tr>
</tbody>
</table>

*significant.
Sub-hypothesis 9A was retained. There was no significant difference found between the African-American students and Caucasian students on self-concept. The mean self-concept score for African-American students was not significantly different from the mean for Caucasian students.

Sub-hypothesis 9B was rejected. There was a significant difference found between the African-American students and Caucasian students on class attendance. The mean percentage of scheduled classes attended by African-American students was significantly lower than for Caucasian students.

Sub-hypothesis 9C was rejected. There was a significant difference found between the African-American students and Caucasian students on GPA. The mean GPA of African-American students was significantly lower than for Caucasian students.

Profile of African-American and Caucasian Students

Hypotheses 10 through 14 examined whether or not there was any linear combination of the variable groups which significantly discriminated between African-American and Caucasian students. These hypotheses were tested by discriminant analysis.

Hypothesis 10

*There is no linear combination of demographic/situational variables which significantly discriminates between African-American and Caucasian students.*

One discriminant function was identified in the analysis. The test of significance of the one discriminant function yielded a chi-square of 17.734 with 8 degrees of freedom.
and \( p = .0233 \). Thus, this function was significant. This function was defined by three variables, and, therefore, included those variables whose discriminant function coefficients were at least half of the largest coefficient. Table 36 shows the standardized discriminant function coefficients of the variables, and their rank in the discriminant function. This function was defined by lack of family support, financial difficulties, and transportation difficulties.

**TABLE 36**

**STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS FOR DEMOGRAPHIC VARIABLES BY ETHNICITY**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients by Ethnicity</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.03560</td>
<td>(8)</td>
</tr>
<tr>
<td>Gender</td>
<td>-.24469</td>
<td>(6)</td>
</tr>
<tr>
<td>Dependent Children</td>
<td>.26564</td>
<td>(4)</td>
</tr>
<tr>
<td>Work Hours</td>
<td>-.25703</td>
<td>(5)</td>
</tr>
<tr>
<td>Financial Need</td>
<td>.58921</td>
<td>2</td>
</tr>
<tr>
<td>Study Environment</td>
<td>.07768</td>
<td>(7)</td>
</tr>
<tr>
<td>Transportation</td>
<td>.37112</td>
<td>3</td>
</tr>
<tr>
<td>Family Support</td>
<td>-.61243</td>
<td>1</td>
</tr>
</tbody>
</table>

The mean for the African-American group was .50753 and for the Caucasian group was -.23747. Therefore, a student with financial difficulties, transportation
problems, and lack of family support for attending college was more likely to be African-America than Caucasian.

Hypothesis 10 was rejected. There was a linear combination of the demographic variables that significantly discriminated between African-American and Caucasian students.

Hypothesis 11

*There is no linear combination of academic variables which significantly discriminates between African-American and Caucasian students.*

This hypothesis was tested by discriminant analysis. High-school GPA was excluded from the analysis, as only 94 cases had HS GPA's available. The discriminant analysis was conducted on the other three academic variables. One discriminant function was identified in the analysis. The test of significance of the one discriminant function yielded a chi-square of 28.925 with 3 degrees of freedom and \( p = .0000 \). Thus, this function was significant. This function was defined by three variables, and, therefore, included those variables whose discriminant function coefficients were at least half of the largest coefficient. Table 37 shows the standardized discriminant function coefficients of the variable. This function was defined by positive Mathematics, Reading, and English sub-scores.

The mean for the Caucasian group was .34413 and for the African-American group was -.66017. Therefore, a student with higher Mathematics, Reading, and English scores was more likely to be Caucasian than African-American.
TABLE 37

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS FOR ACADEMIC VARIABLES BY ETHNICITY

<table>
<thead>
<tr>
<th>Academic variables</th>
<th>Coefficients by Ethnicity</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>.26972</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td>.52207</td>
<td>1</td>
</tr>
<tr>
<td>Reading</td>
<td>.38293</td>
<td>2</td>
</tr>
</tbody>
</table>

Hypothesis 11 was rejected. There was a linear combination of the academic variables that significantly discriminated between African-American and Caucasian students.

Hypothesis 12

There is no linear combination of non-cognitive variables which significantly discriminates between African-American and Caucasian students.

The test of significance of the one discriminant function yielded a chi-square of 11.824 with 8 degrees of freedom and $p = .1592$. There was no linear combination of the noncognitive variables which significantly discriminated between African-American and Caucasian students. Thus, Hypothesis 12 was retained.

Hypothesis 13

There is no linear combination of learning and study-skills variables which significantly discriminates between African-American and Caucasian students.
One discriminant function was identified in the analysis. The test of significance of the one discriminant function yielded a chi-square of 21.618 with 10 degrees of freedom and $p = .0172$. Thus, this function was significant. This function was defined by five variables, and, therefore, included those variables whose discriminant function coefficients were at least half of the largest coefficient. Table 38 shows the standardized discriminant function coefficients of the five variables. This function was defined by positive motivation, study aids, and test-taking; and negative attitude and self-testing.

### TABLE 38

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS FOR LEARNING AND STUDY-SKILLS VARIABLES BY ETHNICITY

<table>
<thead>
<tr>
<th>LASSI Subscales</th>
<th>Coefficients by Ethnicity</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>-.85259</td>
<td>1</td>
</tr>
<tr>
<td>Motivation</td>
<td>.62947</td>
<td>3</td>
</tr>
<tr>
<td>Time management</td>
<td>-.24735</td>
<td>(8)</td>
</tr>
<tr>
<td>Test anxiety</td>
<td>-.20467</td>
<td>(9)</td>
</tr>
<tr>
<td>Concentration</td>
<td>-.26021</td>
<td>(7)</td>
</tr>
<tr>
<td>Information Processing</td>
<td>.03110</td>
<td>(10)</td>
</tr>
<tr>
<td>Main idea</td>
<td>.38072</td>
<td>(6)</td>
</tr>
<tr>
<td>Study aids</td>
<td>.77761</td>
<td>2</td>
</tr>
<tr>
<td>Self-testing</td>
<td>-.49571</td>
<td>4</td>
</tr>
<tr>
<td>Test-taking</td>
<td>.43954</td>
<td>5</td>
</tr>
</tbody>
</table>
The mean for the Caucasian group was .26387 and for the African-American group was -.55263. In the univariate t tests done to test Hypotheses 8A-8J, it should be noted that only study aids showed a significant difference between African-American and Caucasian students. These seeming discrepancies must be explained by pointing out that it was the combination of variables that was significant in the discriminant function coefficients. Therefore, a student with lower attitude and self-testing sub-scores and higher study aids, motivation, and test-taking sub-scores, was more likely to be Caucasian than African-American.

Hypothesis 13 was rejected. There was a linear combination of the learning and study-skills variables that significantly discriminated between African-American and Caucasian students.

**Hypothesis 14**

*There is no linear combination of demographic/situational, academic, non-cognitive, and learning and study-skills variables which significantly discriminates between African-American and Caucasian students.*

One discriminant function was identified in the analysis (high-school GPA was excluded from the analysis, as only 94 cases had high-school GPA’s available). The test of significance of the one discriminant function yielded a chi-square of 68.639 with 29 degrees of freedom and \( p = .0000 \). Thus, this function was significant. This function was defined by five variables, and, therefore, included those variables whose discriminant function coefficients were at least half of the largest coefficient. Table 39 shows the standardized discriminant function coefficients of the five variables. This function was
TABLE 39
STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS FOR COMBINED VARIABLES BY ETHNICITY

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients by Ethnicity</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.08598</td>
<td>(20)</td>
</tr>
<tr>
<td>Gender</td>
<td>-.05745</td>
<td>(25)</td>
</tr>
<tr>
<td>Dependent children</td>
<td>.05450</td>
<td>(26)</td>
</tr>
<tr>
<td>Work hours</td>
<td>.20169</td>
<td>(12)</td>
</tr>
<tr>
<td>Financial need</td>
<td>-.07467</td>
<td>(23)</td>
</tr>
<tr>
<td>Study environment</td>
<td>.15686</td>
<td>(14)</td>
</tr>
<tr>
<td>Transportation</td>
<td>-.28052</td>
<td>(7)</td>
</tr>
<tr>
<td>Family support</td>
<td>-.07548</td>
<td>(22)</td>
</tr>
<tr>
<td>English</td>
<td>-.02644</td>
<td>(28)</td>
</tr>
<tr>
<td>Mathematics</td>
<td>.71402</td>
<td>2</td>
</tr>
<tr>
<td>Reading</td>
<td>.58414</td>
<td>3</td>
</tr>
<tr>
<td>Positive self-concept</td>
<td>-.08795</td>
<td>(19)</td>
</tr>
<tr>
<td>Realistic self-appraisal</td>
<td>.26337</td>
<td>(9)</td>
</tr>
<tr>
<td>Ability to understand and deal with racism</td>
<td>.23100</td>
<td>(10)</td>
</tr>
<tr>
<td>Preference toward long-range goals</td>
<td>-.43659</td>
<td>5</td>
</tr>
<tr>
<td>Availability of a strong support person</td>
<td>.12719</td>
<td>(16)</td>
</tr>
<tr>
<td>Demonstrated community service</td>
<td>-.10774</td>
<td>(17)</td>
</tr>
<tr>
<td>Leadership experience</td>
<td>-.22110</td>
<td>(11)</td>
</tr>
<tr>
<td>Knowledge obtained in a field</td>
<td>.15061</td>
<td>(15)</td>
</tr>
<tr>
<td>Attitude (toward school)</td>
<td>-.03798</td>
<td>(27)</td>
</tr>
<tr>
<td>Motivation</td>
<td>.06878</td>
<td>(24)</td>
</tr>
<tr>
<td>Time management</td>
<td>.09002</td>
<td>(18)</td>
</tr>
<tr>
<td>Test anxiety</td>
<td>-.72237</td>
<td>1</td>
</tr>
<tr>
<td>Concentration</td>
<td>-.08231</td>
<td>(21)</td>
</tr>
<tr>
<td>Information processing</td>
<td>-.32060</td>
<td>(6)</td>
</tr>
<tr>
<td>Main idea</td>
<td>-.02357</td>
<td>(29)</td>
</tr>
<tr>
<td>Study aids</td>
<td>.56168</td>
<td>4</td>
</tr>
<tr>
<td>Self-testing</td>
<td>-.17465</td>
<td>(13)</td>
</tr>
<tr>
<td>Test-taking</td>
<td>.27777</td>
<td>(8)</td>
</tr>
</tbody>
</table>
defined by negative LASSI-test anxiety, and by a positive Mathematics score. Reading score, LASSI-study aids, and preference for long-range goals.

The mean for the Caucasian group was .60851 and for the African-American group was -1.20407. Therefore, a student with lower scores for LASSI-test anxiety, and higher scores for Mathematics, Reading, LASSI-study aids, and a preference for long-term goals, was more likely to be Caucasian than African-American.

Hypothesis 14 was rejected. There was a linear combination of the predictor variables that significantly discriminated between African-American and Caucasian students.

Comparison of Successful and Unsuccessful Students on Demographic Variables

This section compared successful and unsuccessful students on the demographic variables. Hypothesis 15 examined whether or not there was a significant difference between successful and unsuccessful students on any demographic variable. Sub-hypotheses 15A-15H are listed followed by a discussion of the results of the analyses.

**Hypothesis 15**

*There is no significant difference between successful and unsuccessful students on any single demographic/situational variable.*

Hypothesis 15A—*There is no significant difference between successful and unsuccessful students on age.*

Hypothesis 15D—*There is no significant difference between successful and unsuccessful students on number of dependent children.*
Hypothesis 15E: *There is no significant difference between successful and unsuccessful students on hours worked per week.*

*t* tests were performed for the interval variables to determine whether any demographic variables significantly differentiated between successful (GPA >= 2.00) and unsuccessful (GPA < 2.00) student outcomes. The *t*-test results are reported in Table 40. Age, number of dependent children, and hours worked per week did not significantly differentiate between successful and unsuccessful students. Sub-hypotheses 15A, 15D, and 15E were retained for all groups.

### TABLE 40

**COMPARISON OF ACADEMIC SUCCESS ON THE DEMOGRAPHIC VARIABLES**

<table>
<thead>
<tr>
<th>Academic Variables</th>
<th>Means</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Successful</td>
<td>Successful</td>
<td><em>t</em></td>
<td><em>p</em></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>23.32</td>
<td>23.67</td>
<td>-.31</td>
<td>.755</td>
</tr>
<tr>
<td>African-American</td>
<td>24.65</td>
<td>23.27</td>
<td>.59</td>
<td>.555</td>
</tr>
<tr>
<td>Caucasian</td>
<td>22.10</td>
<td>23.73</td>
<td>-1.42</td>
<td>.159</td>
</tr>
<tr>
<td>Number of dependent children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>.68</td>
<td>.69</td>
<td>-.08</td>
<td>.934</td>
</tr>
<tr>
<td>African-American</td>
<td>.96</td>
<td>.69</td>
<td>.84</td>
<td>.404</td>
</tr>
<tr>
<td>Caucasian</td>
<td>.38</td>
<td>.68</td>
<td>-1.91</td>
<td>.060</td>
</tr>
<tr>
<td>Hours worked per week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>19.80</td>
<td>20.42</td>
<td>-.26</td>
<td>.793</td>
</tr>
<tr>
<td>African-American</td>
<td>17.00</td>
<td>20.15</td>
<td>-.71</td>
<td>.483</td>
</tr>
<tr>
<td>Caucasian</td>
<td>22.31</td>
<td>21.08</td>
<td>.40</td>
<td>.691</td>
</tr>
</tbody>
</table>

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Several of the demographic/situational variables were categorical and were examined using chi-square analyses. These variables include gender, ethnicity, financial need, study environment, transportation, and family support.

Hypothesis 15B—There is no significant difference between successful and unsuccessful students on gender.

Hypothesis 15C—There is no significant difference between successful and unsuccessful students on ethnicity.

Hypothesis 15F—There is no significant difference between successful and unsuccessful students on financial need.

Hypothesis 15G—There is no significant difference between successful and unsuccessful students on study environment.

Hypothesis 15H—There is no significant difference between successful and unsuccessful students on student transportation.

Hypothesis 15I—There is no significant difference between successful and unsuccessful students on family support for student goals.

Chi-square analyses were performed for the categorical variables to determine whether any demographic variables significantly differentiated between successful (GPA \( \geq 2.00 \)) and unsuccessful (GPA \( < 2.00 \)) student outcomes. The analyses were run for the total student sample, and for the African-American and Caucasian subsamples. The results are reported in Table 41. The chi-square analysis could not be completed for "family support" for the Caucasian sample, because there was only one row in the analysis.
TABLE 41

CHI-SQUARE FOR SUCCESSFUL/NON-SUCCESSFUL SEMESTER GPA AND GENDER, ETHNICITY, FINANCIAL NEED, STUDY ENVIRONMENT, TRANSPORTATION, AND FAMILY SUPPORT

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Minimum Expected Cell Frequency</th>
<th>Value</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>24.616</td>
<td>2.91939</td>
<td>1</td>
<td>.08752</td>
</tr>
<tr>
<td>African-American</td>
<td>9.811</td>
<td>2.53961</td>
<td>1</td>
<td>.11102</td>
</tr>
<tr>
<td>Caucasian</td>
<td>10.090</td>
<td>1.72214</td>
<td>1</td>
<td>.18942</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>7.832</td>
<td>8.58067</td>
<td>2</td>
<td>.01370*</td>
</tr>
<tr>
<td>Financial Need</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>14.173</td>
<td>.47271</td>
<td>1</td>
<td>.49174</td>
</tr>
<tr>
<td>African-American</td>
<td>8.340</td>
<td>2.45259</td>
<td>1</td>
<td>.11733</td>
</tr>
<tr>
<td>Caucasian</td>
<td>5.477</td>
<td>3.84024</td>
<td>1</td>
<td>.05004</td>
</tr>
<tr>
<td>Study Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>15.891</td>
<td>4.86067</td>
<td>1</td>
<td>.02748*</td>
</tr>
<tr>
<td>African-American</td>
<td>5.500</td>
<td>1.03769</td>
<td>1</td>
<td>.30836</td>
</tr>
<tr>
<td>Caucasian</td>
<td>6.631</td>
<td>1.50054</td>
<td>1</td>
<td>.22059</td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>8.130</td>
<td>1.82466</td>
<td>1</td>
<td>.17676</td>
</tr>
<tr>
<td>African-American</td>
<td>4.500</td>
<td>2.14987</td>
<td>1</td>
<td>.14258</td>
</tr>
<tr>
<td>Caucasian</td>
<td>2.018</td>
<td>.00000</td>
<td>1</td>
<td>1.00000</td>
</tr>
<tr>
<td>Family Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>2.217</td>
<td>7.96808</td>
<td>1</td>
<td>.00476*</td>
</tr>
<tr>
<td>African-American</td>
<td>2.000</td>
<td>2.43750</td>
<td>1</td>
<td>.11846</td>
</tr>
</tbody>
</table>

*significant coefficient.
**no data.
Gender did not differentiate between successful and unsuccessful student outcomes for any of the groups. Successful students were not more likely to be male or female.

There was a significant difference between successful and unsuccessful student outcomes based on ethnicity. For purposes of the chi-square analysis, the variable was grouped as follows: African-American = 1, Caucasian = 2, Others = 3. Forty-nine percent of the African-American students were successful, 71% of the Caucasian students were successful, and 52% of the “other” ethnic groups were successful.

Financial need did not differentiate between successful and unsuccessful student outcomes for any of the groups. Successful and unsuccessful students did not have significantly different levels of financial need.

Study environment differentiated between successful and unsuccessful student outcomes for the total sample only. Eighty-two percent of the successful sample reported a place to study at home, while 68% of the unsuccessful sampled reported having a place to study at home. There was no significant difference between successful and unsuccessful student outcomes based on having a place to study at home in the Caucasian sample or the African-American student sample.

Transportation problems did not differentiate between successful and unsuccessful student outcomes for any of the groups. Successful and unsuccessful students did not have significantly different levels of transportation problems.

Family support differentiated between successful and unsuccessful student outcomes for the total sample. None of the successful students reported a lack of family
support, but 9\% of the unsuccessful students reported a lack of family support. There was no significant difference between successful and unsuccessful student outcomes based on family support in the African-American sample. A chi-square analysis could not be done for the Caucasian sample, since none reported a lack of family support.

Thus, sub-hypotheses 15C, 15G, and 15I were rejected for the total sample. All other sub-hypotheses were retained.

**Comparison of Successful and Unsuccessful Students on Academic Variables**

Hypothesis 16 examined whether or not there was a significant difference between successful and unsuccessful students on any academic variable. Sub-hypotheses 6A through 6D are listed, followed by a discussion of the results of the analyses.

**Hypothesis 16**

*There is no significant difference between successful and unsuccessful students on any single academic variable.*

Hypothesis 16A—*There is no significant difference between successful and unsuccessful students on English placement test scores.*

Hypothesis 16B—*There is no significant difference between successful and unsuccessful students on Mathematics placement test scores.*

Hypothesis 16C—*There is no significant difference between successful and unsuccessful students on Reading placement test scores.*

Hypothesis 16D—*There is no significant difference between successful and unsuccessful students on high-school grade point average (GPA).*
\( t \) tests were performed to determine whether the academic variables significantly differentiated between successful (GPA >= 2.00) and unsuccessful (GPA < 2.00) student outcomes. The \( t \)-test results are reported in Table 42. For “English,” “Mathematics,” “Reading,” and “High-School GPA,” the mean scores for successful students were significantly higher than for unsuccessful students.

### TABLE 42

**COMPARISON OF ACADEMIC SUCCESS ON THE ACADEMIC VARIABLES**

<table>
<thead>
<tr>
<th>Academic Variables</th>
<th>Not Successful</th>
<th>Successful</th>
<th>( t )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>40.0469</td>
<td>43.3168</td>
<td>-3.60</td>
<td>.000*</td>
</tr>
<tr>
<td>African-American</td>
<td>38.2500</td>
<td>40.5200</td>
<td>-1.38</td>
<td>.175</td>
</tr>
<tr>
<td>Caucasian</td>
<td>41.1875</td>
<td>45.1970</td>
<td>-4.01</td>
<td>.000*</td>
</tr>
<tr>
<td><strong>Mathematics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>38.4615</td>
<td>42.1100</td>
<td>-3.68</td>
<td>.000*</td>
</tr>
<tr>
<td>African-American</td>
<td>36.2000</td>
<td>38.4800</td>
<td>-1.56</td>
<td>.125</td>
</tr>
<tr>
<td>Caucasian</td>
<td>39.7097</td>
<td>44.1846</td>
<td>-3.40</td>
<td>.001*</td>
</tr>
<tr>
<td><strong>Reading</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>12.6388</td>
<td>13.8310</td>
<td>-2.64</td>
<td>.009*</td>
</tr>
<tr>
<td>African-American</td>
<td>11.7640</td>
<td>12.6680</td>
<td>-1.05</td>
<td>.300</td>
</tr>
<tr>
<td>Caucasian</td>
<td>13.5031</td>
<td>14.6492</td>
<td>-2.49</td>
<td>.015*</td>
</tr>
<tr>
<td><strong>High School GPA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>2.4966</td>
<td>2.7721</td>
<td>-2.23</td>
<td>.028*</td>
</tr>
<tr>
<td>African-American</td>
<td>2.3132</td>
<td>2.3453</td>
<td>-.18</td>
<td>.857</td>
</tr>
<tr>
<td>Caucasian</td>
<td>2.7195</td>
<td>2.9141</td>
<td>-1.17</td>
<td>.247</td>
</tr>
</tbody>
</table>

*Significant.
In an examination of the subgroups, none of the academic variables significantly differentiated between successful and unsuccessful student GPA's for African-American students. "English, "Mathematics," and "Reading" mean scores for Caucasian students were significantly higher for successful students.

Thus, sub-hypotheses 16A, 16B, 16C, and 16D were rejected for the total sample and sub-hypotheses 16A, 16B, 16C were rejected for the Caucasian sub-sample. However, all sub-hypotheses were retained for the African-American sample.

Comparison of Successful and Unsuccessful Students on Non-cognitive Variables

Hypothesis 17 examined whether or not there was a significant difference between successful and unsuccessful students on any non-cognitive variable. Sub-hypotheses 17A through 17H are listed, followed by a discussion of the results of the analyses.

**Hypothesis 17**

*There is no significant difference between successful and unsuccessful students on any single non-cognitive variable.*

Hypothesis 17A—*There is no significant difference between successful and unsuccessful students on "positive self-concept."*

Hypothesis 17B—*There is no significant difference between successful and unsuccessful students on "ability to understand and deal with racism."*

Hypothesis 17C—*There is no significant difference between successful and unsuccessful students on "realistic self appraisal."*

Hypothesis 17D—*There is no significant difference between successful and*
unsuccessful students on "preference toward long range goals."

Hypothesis 17E—There is no significant difference between successful and unsuccessful students on "availability of a strong support person."

Hypothesis 17F—There is no significant difference between successful and unsuccessful students on "demonstrated community service."

Hypothesis 17G—There is no significant difference between successful and unsuccessful students on "leadership experience."

Hypothesis 17H—There is no significant difference between successful and unsuccessful students on "knowledge gained in a field."

\( t \) tests were performed to determine whether the non-cognitive variables significantly differentiated between successful (GPA \( \geq 2.00 \)) and unsuccessful (GPA < 2.00) student outcomes. The \( t \)-test results are reported in Table 43.

Only two variables significantly differentiated between successful and unsuccessful students in the total sample. The mean scores for "understands and deals with racism" and "leadership experience" were significantly higher for successful students. None of the variables were significant for the African-American sample.

In the Caucasian sample, 5 of the 8 variables were significantly differentiated between successful and unsuccessful students. "Realistic self-appraisal" was significantly lower for successful students. For "deals with racism," "preference for long-range goals," "leadership experience," and "knowledge obtained in a field," the mean scores for successful Caucasian students were significantly higher than for unsuccessful students.


<table>
<thead>
<tr>
<th>Non-Cognitive Variables</th>
<th>Means</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Successful</td>
<td>Successful</td>
<td>$t$</td>
</tr>
<tr>
<td>Positive self-concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>14.2029</td>
<td>14.6552</td>
<td>-1.16</td>
</tr>
<tr>
<td>African-American</td>
<td>14.1852</td>
<td>14.3846</td>
<td>-.28</td>
</tr>
<tr>
<td>Caucasian</td>
<td>14.2188</td>
<td>14.9114</td>
<td>-1.29</td>
</tr>
<tr>
<td>Realistic self-appraisal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>7.2319</td>
<td>6.7931</td>
<td>1.78</td>
</tr>
<tr>
<td>African-American</td>
<td>6.7778</td>
<td>6.6154</td>
<td>.33</td>
</tr>
<tr>
<td>Caucasian</td>
<td>7.6563</td>
<td>6.8354</td>
<td>2.58</td>
</tr>
<tr>
<td>Understands and deals with racism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>13.1014</td>
<td>13.9483</td>
<td>-2.25</td>
</tr>
<tr>
<td>Caucasian</td>
<td>13.1875</td>
<td>14.3924</td>
<td>-2.37</td>
</tr>
<tr>
<td>Preference toward long-range goals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>6.6087</td>
<td>6.7672</td>
<td>-6.8</td>
</tr>
<tr>
<td>African-American</td>
<td>7.0741</td>
<td>6.7308</td>
<td>.74</td>
</tr>
<tr>
<td>Caucasian</td>
<td>6.000</td>
<td>6.8228</td>
<td>-2.71</td>
</tr>
<tr>
<td>Available strong support person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>8.1449</td>
<td>7.9655</td>
<td>.87</td>
</tr>
<tr>
<td>African-American</td>
<td>8.0000</td>
<td>7.7692</td>
<td>.54</td>
</tr>
<tr>
<td>Caucasian</td>
<td>8.0938</td>
<td>8.1013</td>
<td>-.03</td>
</tr>
<tr>
<td>Demonstrated community service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>6.4348</td>
<td>6.3707</td>
<td>.32</td>
</tr>
<tr>
<td>African-American</td>
<td>6.3333</td>
<td>6.3077</td>
<td>.08</td>
</tr>
<tr>
<td>Caucasian</td>
<td>6.3438</td>
<td>6.4051</td>
<td>-.21</td>
</tr>
<tr>
<td>Leadership experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>5.0145</td>
<td>5.3793</td>
<td>-1.99</td>
</tr>
<tr>
<td>African-American</td>
<td>4.9259</td>
<td>5.5000</td>
<td>-1.52</td>
</tr>
<tr>
<td>Caucasian</td>
<td>4.9375</td>
<td>5.4557</td>
<td>-2.14</td>
</tr>
<tr>
<td>Knowledge obtained in a field</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>3.4493</td>
<td>3.6810</td>
<td>-1.71</td>
</tr>
<tr>
<td>African-American</td>
<td>3.4815</td>
<td>3.5000</td>
<td>-0.08</td>
</tr>
<tr>
<td>Caucasian</td>
<td>3.4688</td>
<td>3.8481</td>
<td>-2.01</td>
</tr>
</tbody>
</table>
Therefore, sub-hypotheses 17C and 17G were rejected for the total sample. All sub-hypotheses were retained for the African-American sample. Sub-hypotheses 17B, 17C, 17D, 17G, and 17H were rejected for Caucasian students.

It should be noted that for “attitude,” the mean difference in the African-American group was greater than for the Caucasian sample. However, due to a smaller African-American sample (53), this difference failed to attain statistical significance.

Comparison of Successful and Unsuccessful Students on Learning and Study-Skills Variables

Hypothesis 18 examined whether or not there was a significant difference between successful and unsuccessful students on any learning and study-skills variable. Sub-hypotheses 18A through 18J are listed, followed by a discussion of the results of the analyses.

Hypothesis 18

There is no significant difference between successful and unsuccessful students on any single learning and study-skills variable.

Hypothesis 18A—There is no significant difference between successful and unsuccessful students on “attitude.”

Hypothesis 18B—There is no significant difference between successful and unsuccessful students on “motivation.”

Hypothesis 18C—There is no significant difference between successful and unsuccessful students on “time management.”

Hypothesis 18D—There is no significant difference between successful and
unsuccessful students on "test anxiety."

Hypothesis 18E—There is no significant difference between successful and unsuccessful students on "concentration."

Hypothesis 18F—There is no significant difference between successful and unsuccessful students on "information processing."

Hypothesis 18G—There is no significant difference between successful and unsuccessful students on "main idea" comprehension.

Hypothesis 18H—There is no significant difference between successful and unsuccessful students on "study aids."

Hypothesis 18I—There is no significant difference between successful and unsuccessful students on "self-testing."

Hypothesis 18J—There is no significant difference between successful and unsuccessful students on "test-taking."

t tests were performed to determine whether the learning and study-skills variables significantly differentiated between successful (GPA >= 2.00) and unsuccessful (GPA < 2.00) student outcomes. The t-test results are reported in Table 44.

Six of the 10 variables significantly differentiated between successful and unsuccessful students in the total sample. The mean scores for "attitude," "motivation," "test anxiety," "concentration," "main idea," and "test-taking" were significantly higher for successful students. These same variables significantly differentiated between successful and unsuccessful students in the Caucasian sample.
TABLE 44

COMPARISON OF ACADEMIC SUCCESS ON THE LEARNING AND STUDY SKILLS VARIABLES

<table>
<thead>
<tr>
<th>Learning &amp; Study Skills Variables</th>
<th>Means</th>
<th></th>
<th></th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Successful</td>
<td>Successful</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
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<tr>
<td>Concentration</td>
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<tr>
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<td></td>
<td></td>
</tr>
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<td>Main idea</td>
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<td></td>
</tr>
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<td>18.9615</td>
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<tr>
<td>Study aids</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>23.5517</td>
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<td>24.9688</td>
<td>23.8987</td>
<td>0.94</td>
<td>.350</td>
<td></td>
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<tr>
<td>Self-testing</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>25.4203</td>
<td>25.8103</td>
<td>0.49</td>
<td>.625</td>
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<td>0.02</td>
<td>.982</td>
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<tr>
<td>Test-taking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All students</td>
<td>26.0435</td>
<td>29.5000</td>
<td>-4.12</td>
<td>.000*</td>
<td></td>
</tr>
<tr>
<td>African-American</td>
<td>26.0741</td>
<td>30.2692</td>
<td>-2.64</td>
<td>.011*</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>25.7188</td>
<td>29.3544</td>
<td>-3.44</td>
<td>.001*</td>
<td></td>
</tr>
</tbody>
</table>

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In the African-American sample, 4 of the 10 variables significantly differentiated between successful and unsuccessful students. "Test anxiety," "concentration," "main idea," and "test-taking" were significantly higher for successful than for unsuccessful students.

Therefore, sub-hypotheses 18A, 18B, 18D, 18E, 18G, and 18J were rejected for the total sample and for the Caucasian sample. Sub-hypotheses 18D, 18E, 18G, and 18J were rejected for the African-American sample.

Profile of Successful and Unsuccessful Students

Hypotheses 19 through 23 examined whether or not there was any linear combination of the variable groups which significantly discriminated between successful and unsuccessful students. These hypotheses were tested by discriminant analysis.

**Hypothesis 19**

*There is no linear combination of demographic/situational variables which significantly discriminates between successful and unsuccessful students.*

This hypothesis was tested by discriminant analysis. Five of the variables (gender, financial need, study environment, transportation, and family support) were dichotomous variables, and were thus assigned the integer values of "0" and "1" for analysis purposes. Ethnicity was the sixth nominal variable to be included in the analysis. However, only two ethnic categories were included (Caucasian and African-American) in the analysis, so that ethnicity could be coded as a dummy variable, with integer values for each group (African-American = "1" and Caucasian = "2"). Therefore, only 160 cases
were included in this analysis.

One discriminant function was identified in the analysis. The test of significance of the one discriminant function yielded a chi-square of 20.201 with 9 degrees of freedom and \( p = .0167 \). Thus, this function was significant. This function was defined by four variables, thus including those variables whose discriminant function coefficients were at least half of the largest coefficient. Table 45 shows the standardized discriminant function coefficients of the four variables. This function was defined by ethnicity, gender, family support, and study environment.

### Table 45

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients by Semester GPA</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.12230</td>
<td>(8)</td>
</tr>
<tr>
<td>Gender</td>
<td>.48803</td>
<td>2</td>
</tr>
<tr>
<td>Dependent Children</td>
<td>.26092</td>
<td>(5)</td>
</tr>
<tr>
<td>Work Hours</td>
<td>-.06543</td>
<td>(9)</td>
</tr>
<tr>
<td>Financial Need</td>
<td>-.20678</td>
<td>(6)</td>
</tr>
<tr>
<td>Study Environment</td>
<td>.34775</td>
<td>4</td>
</tr>
<tr>
<td>Transportation</td>
<td>-.20350</td>
<td>(7)</td>
</tr>
<tr>
<td>Family Support</td>
<td>.54084</td>
<td>1</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.42903</td>
<td>3</td>
</tr>
</tbody>
</table>
The mean for the unsuccessful GPA group was -.50789 and for the successful group was .27348. Therefore, an unsuccessful student was more likely to be African-American, male, lack an adequate study environment, and lack family support.

Hypothesis 19 was rejected. There was a linear combination of the predictor variables that significantly discriminated between successful and unsuccessful students.

**Hypothesis 20**

*There is no linear combination of academic variables which significantly discriminates between successful and unsuccessful students.*

This hypothesis was tested by discriminant analysis. High-school GPA was excluded from the analysis, as only 94 cases had high-school GPA’s available. The discriminant analysis was conducted on the other three academic variables. One discriminant function was identified in the analysis. The test of significance of the one discriminant function yielded a chi-square of 13.912 with 3 degrees of freedom and \( p = .003 \). Thus, this function was significant. This function was defined by two variables. The second variable (English) was included because its discriminant function coefficient was at least half of the largest coefficient. Table 46 shows the standardized discriminant function coefficients of the variables. This function was defined by positive Mathematics and English subscores.

The mean for the successful GPA group was .24214 and for the unsuccessful group was -.37666. Therefore, an unsuccessful student was more likely to have lower Mathematics and English scores.
Hypothesis 20 was rejected. There was a linear combination of the academic variables that significantly discriminated between successful and unsuccessful students.

**Hypothesis 21**

*There is no linear combination of non-cognitive variables which significantly discriminates between successful and unsuccessful students.*

The test of significance of the one discriminant function yielded a chi-square of 13.285 with 8 degrees of freedom and $p = .1024$. There was no linear combination of the noncognitive variables which significantly discriminated between successful and unsuccessful students. Thus, Hypothesis 21 was retained.

**Hypothesis 22**

*There is no linear combination of learning and study-skills variables which significantly discriminates between successful and unsuccessful students.*

One discriminant function was identified in the analysis. The test of significance
of the one discriminant function yielded a chi-square of 28.558 with 10 degrees of freedom and $p = .0015$. Thus, this function was significant. This function was defined by three variables, thus including those variables whose discriminant function coefficients were at least half of the largest coefficient. Table 47 shows the standardized discriminant function coefficients of the three variables. This function was defined by positive motivation, negative time management, and positive test anxiety.

**TABLE 47**

<table>
<thead>
<tr>
<th>LASSI Subscales</th>
<th>Coefficients by Ethnicity</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>-.06168</td>
<td>(9)</td>
</tr>
<tr>
<td>Motivation</td>
<td>.67581</td>
<td>1</td>
</tr>
<tr>
<td>Time management</td>
<td>-.54956</td>
<td>2</td>
</tr>
<tr>
<td>Test anxiety</td>
<td>.37255</td>
<td>3</td>
</tr>
<tr>
<td>Concentration</td>
<td>.32571</td>
<td>(4)</td>
</tr>
<tr>
<td>Information processing</td>
<td>-.15023</td>
<td>(8)</td>
</tr>
<tr>
<td>Main idea</td>
<td>.17923</td>
<td>(7)</td>
</tr>
<tr>
<td>Study aids</td>
<td>.05567</td>
<td>(10)</td>
</tr>
<tr>
<td>Self-testing</td>
<td>-.26138</td>
<td>(5)</td>
</tr>
<tr>
<td>Test-taking</td>
<td>.20982</td>
<td>(6)</td>
</tr>
</tbody>
</table>
The mean for the successful group was .32000 and for the unsuccessful group was -.53796. In the univariate $t$ tests done to test Hypotheses 8A-8J, it should be noted that "time management" did not significantly differentiate between successful and unsuccessful students. This seeming discrepancy must be explained by pointing out that it is the combination of variables that is significant in the discriminant function coefficients. Therefore, a student with higher motivation and test anxiety subscores, and a lower time management subscore, was more likely to be a successful than an unsuccessful student.

Hypothesis 22 was rejected. There was a linear combination of the learning and study-skills variables that significantly discriminated between successful and unsuccessful students.

**Hypothesis 23**

*There is no linear combination of demographic/situational, academic, non-cognitive, and learning and study-skills variables which significantly discriminates between successful and unsuccessful students.*

One discriminant function was identified in the analysis. Only two ethnic categories were included (Caucasian and African-American) in the analysis, so that ethnicity could be coded as a dummy variable, with integer values for each group (African-American = "1" and Caucasian = "2"). Additionally, high-school GPA was removed from the analysis, since only 94 cases had high-school GPA available. Therefore, 140 cases were included in this analysis. The test of significance of the one discriminant function yielded a chi-square of 49.190 with 30 degrees of freedom and
$p = .0150$. Thus, this function was significant. This function was defined by six variables, thus including those variables whose discriminant function coefficients were at least half of the largest coefficient. Table 48 shows the standardized discriminant function coefficients of the six variables. This function was defined by positive family support, positive test anxiety, positive concentration, gender (female), positive English scores, and negative reading scores.

The mean for the successful student group was .53516 and for the unsuccessful group was -.90566. In the univariate $t$ tests done to test Hypotheses 2A-2D, it should be noted that reading was positively associated with student success. This seeming discrepancy must be explained by pointing out that it is the combination of variables that is significant in the discriminant function coefficients. Therefore, a successful student was more likely to be female, have family support, experience test anxiety, be able to concentrate, and have higher English but lower reading scores.

Hypothesis 23 was rejected. There was a linear combination of the predictor variables that significantly discriminated between successful and unsuccessful students.
<table>
<thead>
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<th>Variables</th>
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<tr>
<td>Ethnicity</td>
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<td>(9)</td>
</tr>
<tr>
<td>Dependent children</td>
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<td>(21)</td>
</tr>
<tr>
<td>Work hours</td>
<td>-.24441</td>
<td>(8)</td>
</tr>
<tr>
<td>Financial need</td>
<td>-.02994</td>
<td>(25)</td>
</tr>
<tr>
<td>Study environment</td>
<td>.05727</td>
<td>(22)</td>
</tr>
<tr>
<td>Transportation</td>
<td>.05167</td>
<td>(23)</td>
</tr>
<tr>
<td>Family support</td>
<td>.58224</td>
<td>1</td>
</tr>
<tr>
<td>English</td>
<td>.29021</td>
<td>6</td>
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<tr>
<td>Mathematics</td>
<td>.21911</td>
<td>(10)</td>
</tr>
<tr>
<td>Reading</td>
<td>-.31244</td>
<td>5</td>
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<tr>
<td>Positive self-concept</td>
<td>-.00924</td>
<td>(29)</td>
</tr>
<tr>
<td>Realistic self-appraisal</td>
<td>-.12518</td>
<td>(19)</td>
</tr>
<tr>
<td>Ability to understand and deal with racism</td>
<td>.13622</td>
<td>(17)</td>
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<tr>
<td>Preference toward long-range goals</td>
<td>.02215</td>
<td>(27)</td>
</tr>
<tr>
<td>Availability of a strong support person</td>
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<tr>
<td>Demonstrated community service</td>
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<td>(11)</td>
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<td>Leadership experience</td>
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<tr>
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<td>(15)</td>
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<td>Motivation</td>
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<td>Test anxiety</td>
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<td>Concentration</td>
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<td>Information processing</td>
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<tr>
<td>Main idea</td>
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<tr>
<td>Study aids</td>
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<td>(14)</td>
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<tr>
<td>Self-testing</td>
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<td>(13)</td>
</tr>
<tr>
<td>Test-taking</td>
<td>-.09912</td>
<td>(20)</td>
</tr>
</tbody>
</table>
CHAPTER 5

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

Summary

Retention has long been one of the most studied issues in higher education. Accurate enrollment and retention projections support both program planning and budgeting at the institution. As college populations have become increasingly diverse, the study of enrollment and retention patterns has become more complex, to reflect the differences found in those diverse student populations. This information is equally important to colleges interested in identifying and providing services for students at risk of dropping out.

This diversity is particularly apparent for a community college, whose mission it is to serve the educational and training needs of the community in which it resides. This necessitates that each institution have a clear understanding of the issues related to the retention of its students, by identifying the characteristics of their own unique student populations.

Attrition data support that while minority enrollments have risen, the attrition rate for African-American students is often significantly higher than the average attrition rate for the college. And, unlike patterns of retention for Caucasian students, even when
cognitive abilities are controlled for, the disparity remains.

This was a short-term longitudinal research study of students enrolled during the Winter 1998 term at Lake Michigan College, a comprehensive community college. It utilized descriptive and correlational techniques to describe the characteristics of Caucasian and African-American students and their relationship to self-attributions, academic behaviors, and academic outcomes. This research focused on the following questions:

1. What cluster of non-cognitive characteristics described the entire student population? What cluster of non-cognitive characteristics described the African-American population? What cluster of non-cognitive characteristics described the Caucasian population?

2. What cluster of non-cognitive characteristics described the successful student? What cluster of non-cognitive characteristics described the successful African-American population? What cluster of non-cognitive characteristics described the successful Caucasian population?

3. Was there a relationship between selected demographic variables and (a) self-concept, (b) academic behaviors, and (c) academic achievement?

4. Was there a relationship between selected academic variables and (a) self-concept, (b) academic behaviors, and (c) academic achievement?

5. Was there a relationship between selected personality and affect variables and (a) self-concept, (b) academic behaviors, and (c) academic achievement?

6. Was there a relationship between student learning and study skills and (a) self-
concept, (b) academic behaviors, and (c) academic achievement?

Three outcome variables were examined in this study. Self-concept was examined as an outcome variable, to examine the relationship between the selected variables and a student's self-perception (it was also analyzed as an independent variable, to study its effect on attendance and GPA). Attendance was examined as a measure of in-class behaviors related to academic success. Class and semester GPA's were examined as a measure of academic achievement and persistence within the semester.

Two instruments were used to collect data, as well as a student data questionnaire, and information obtained from the Lake Michigan College student database. One of the instruments, The Learning and Study Strategies Inventory, measured levels of learning and study strategies and methods. The Inventory measured 10 components: Attitude, motivation, time management, anxiety, concentration, information processing, selecting main ideas, study aids, self-testing, and test strategies. The other instrument included in this study was Tracey and Sedlacek's Non-Cognitive Questionnaire. This questionnaire measured eight components: Positive self-concept, ability to understand and deal with racism, realistic self-appraisal, preference toward long-range goals rather than toward short-term or immediate gratification, availability of a strong support person or mentor, demonstrated community service, successful leadership experience, and knowledge obtained in a field. Selected academic variables were also examined as independent variables. These included high-school GPA and placement scores in writing, math, and reading. Certain demographic variables were also examined as independent variables: Age, sex, ethnicity, number of dependent children, work hours, financial difficulties, a
place to study at home, transportation, and family support.

There were 185 students in the final sample. There were 53 African-Americans, 111 Caucasians, and 21 students of other ethnic backgrounds. Test instruments were distributed and completed within selected classes during the 3rd and 4th weeks of the semester, after the official period to add and drop classes was over.

**Findings and Discussion**

Twenty-three null hypotheses and 95 related sub-hypotheses were tested. The findings and discussion are organized by the research questions outlined at the beginning of this chapter. Hypotheses are grouped accordingly.

**Demographic Variables and Student Outcomes**

*Was there a relationship between selected demographic variables and (a) self-concept, (b) attendance, and (c) academic achievement?*

Hypothesis 1: *There is no significant relationship between the demographic/situational variables and each student outcome (self-concept, attendance, GPA).*

Nine demographic/situational variables were examined to determine if there was any relationship between these variables and self-concept, attendance, and GPA. Each demographic variable was examined individually to determine whether or not there was a significant relationship between the variable and the selected student outcomes. The demographic/situational variables were then examined as a group to determine whether
there was a significant relationship between them as a group and self-concept, attendance, and GPA.

**Age, Number of Dependent Children, Hours Worked per Week**

Overall, there were few significant relationships found between the demographic variables and self-concept, attendance, and GPA. Of the three demographic/situational variables that were interval measures (age, number of dependent children, and hours worked per week), the only significant relationship was between age and self-concept. That is, there was an inverse relationship between age and self-concept. However, since this correlation accounted for only about 3% of the variance, its significance was slight.

It should be noted, however, that Grosset (1991) found, in her study of student persistence in the community college, that older students' positive sense of readiness for academia (as measured by a self-assessment of study skills) was the most important factor in their persistence. Therefore, to the extent that lower self-assessment of study skills might be reflected in a student's general self-concept, lower self-concept among older students is worth noting.

There was no significant relationship found between the number of dependent children a student had and the selected outcomes. This may indicate that while some students are adversely affected by family responsibilities, for others it increases commitment to persist at the college at which they are enrolled, since options for study elsewhere might be more limited for someone with family responsibilities. This is supported by other research findings, which are mixed regarding family responsibility and
student persistence. For some students, family responsibilities may detract from their studies (Moss & Young, 1995). Yet Grosset (1991) found family responsibility inversely correlated with student persistence.

There was also no significant relationship found between hours worked per week and the outcomes. This is contrary to reports in the literature that the more hours students worked, the less likely they were to persist (Bers & Smith, 1991).

**Gender, Financial Need, Student Transportation**

Several demographic variables were found to have no significant relationship with the outcome variables. These demographic variables included gender, financial need, and student transportation.

**Ethnicity**

There was no significant relationship between ethnicity and self-concept. The chi-square statistic was significant for attendance and ethnicity, but 33% of the cells in the cross-tab analysis had an expected frequency of <5, thus invalidating the results. There was a significant relationship between GPA and ethnicity. This has been supported by a variety of data sources (Giles-Gee, 1989; McCauley, 1988; Sedlacek & Brookes, 1976; Tracey & Sedlacek, 1987a), and is, in fact, one of the issues this research attempts to address.

Specifically, Caucasian students in this sample had significantly better attendance records and significantly higher GPA’s. In the African-American sample, only 26% attended class 86% or more of the time (compared to 65% of Caucasian students). The
relationship between class attendance and GPA might certainly account for a lower average GPA among African-American students.

**Study Environment**

There was no significant relationship between study environment ("a place to study at home") and self-concept, or between study environment and attendance. However, there was a significant relationship found between study environment and GPA. Students with a place to study at home had significantly higher GPA’s than those who did not have a good study environment. In Bean and Metzner’s study (1995), they found that for nontraditional students, academic achievement is a measure of both academic and social experiences at the institution and the student’s external environment. When the student’s external environment does not afford them a place to study, it seems logical that this would affect their academic achievement.

**Family Support**

Only 6 students in the sample reported that their family does not support their attending college. This made statistical tests of significance for this hypothesis invalid. However, 5 out of 6 students whose family did not support their attending college did not, in fact, successfully complete the semester. Research that has examined family support has found that families that provide emotional support increase a student’s psychological well-being (Kenny & Perez, 1996), and increase student motivation (Solís, 1995). It may be, therefore, that lack of family support adversely impacted the students’ sense of well-
being and motivation to continue. Little wonder, then, that 5 out of 6 of them did not successfully complete the semester.

**The Grouped Demographic/situational Variables**

The examination of the demographic/situational variables as a group revealed little that the tests of individual variables did not uncover. The linear combination of two of the demographic variables, age and gender, yielded a multiple correlation with self-concept. There was a relationship between age, gender, and self-concept. A younger, female student was more likely to have a higher self-concept than other students. While some of these variables have been identified in the literature as related to self-concept, the associations were weak in this sample. The relationship of these combined variables on self-concept, therefore, was a weak one.

The linear combination of age, financial difficulties, and family support yielded a multiple correlation with attendance. The older the student, the less financial difficulties and the more family support, the better the student’s attendance. The support of a student’s family made it more likely he/she would continue to attend classes; conversely, a lack of family support may discourage a student from attending classes, or make it difficult for them to attend classes. While financial difficulties alone were not significantly related to a student’s attendance, without family support those difficulties might become overwhelming. This has been supported by the literature. While many studies linked finances and retention, most found that finances had an indirect effect on a student’s academic experience, perhaps by affecting their attendance (Cabrera et al., 1992; Quiroga, 1996; Ryland et al., 1994). Launier (1997) found that money shortages,
or problems and worries about money, were inversely correlated with the student’s emotional stress balance. Perhaps when family support, in these situations, is not present, the combined effect adversely affects the student’s academic success. Therefore, Hypothesis 1 was rejected for attendance. There was a significant relationship between these variables. A female student with fewer financial difficulties and more family support was more likely to attend classes.

In a similar fashion, the linear combination of four of the demographic variables, gender, financial difficulties, a place to study at home, and family support, yielded a multiple correlation with GPA. Similar to the linear combination of variables related to attendance, this linear combination adds “a place to study at home” into the profile of conditions that affect overall GPA. Clearly these factors that relate to attendance are also directly or indirectly (by effects on attendance) related to GPA. In addition to the three variables discussed above, “a place to study at home” was also related to academic success.

**Academic Variables and Student Outcomes**

*Was there a relationship between selected academic variables and (a) self-concept, (b) attendance, and (c) achievement?*

Hypothesis 2: *There is no significant relationship between academic variables and each student outcome.*

Four academic variables were examined to determine if there was any relationship between the variables and self-concept, attendance, and GPA. These variables were examined first individually then as a group.
As expected, there appears to be a relationship between academic variables and the outcomes. While individually small, 10 of the 12 correlation coefficients were statistically significant. The highest correlation with self-concept was high-school GPA, which accounted for 24% of the variance. Prior positive educational experiences appear to be related to a student’s self-concept, a finding that makes intuitive sense. English, Mathematics, and Reading placement scores were also related to self-concept, accounting for 9%, 8%, and 7% of the variance, respectively. While these relationships indicate a relationship between ability (as measured by placement scores) and self-concept, the stronger relationship with self-concept comes from actual academic success, as measured by the correlation between high-school GPA and self-concept. Several researchers (Gerardi, 1990; House, 1993a, 1993b; Megerian, 1994; Sicherer, 1995) have noted the relationship between self-concept and academic success, and made the point that higher levels of self-concept predict academic success. Perhaps a higher self-concept results from higher high-school GPA’s. However, it is also plausible that a person’s higher concept of himself or herself positively affects their GPA.

The correlations between attendance and the academic variables were low, though statistically significant. Mathematics accounted for 4%, and high-school GPA for 6% of the variance. It does not appear that attendance is related in any significant way to academic preparation.

The correlations between the academic variables and semester GPA were somewhat low, though statistically significant. English scores accounted for 11%,
Mathematics scores accounted for 11%, Reading for 6%, and high-school GPA for 12% of the variance. These findings are important, not because of the relationships between the academic variables and semester GPA, but because of the relatively weak relationship between them. High-school GPA is often used as a predictor of college success, and class placement tests in English, Mathematics, and Reading are given for the purpose of appropriate class placement of students into classes for which they have the basic skills to successfully complete. This supports the contention of many researchers who have studied the successful retention of non-traditional students, and have found that academic preparation does not necessarily predict successful academic performance and retention of non-traditional students (Lichtman et al., 1989; McCauley, 1988; Sedlacek & Adams-Gaston, 1992; Tracey & Sedlacek, 1985; Young & Sowa, 1992).

The Grouped Academic Variables

The analysis of the academic variables as a group uncovered no new relationships between the dependent and outcome variables. These analyses were tested by multiple linear regression analysis. No combination of the academic variables significantly predicted self-concept. The inclusion of no other variable significantly increased the correlation of high-school GPA with self-concept. The zero-order correlation between high-school GPA and self-concept was the only significant relationship. The higher the high-school GPA, the higher the student’s self-concept.

No combination of academic variables significantly predicted attendance. As with the zero-order correlations, there appeared to be no relationship between a person’s academic preparation and his or her attendance at classes.
As with attendance, the inclusion of no other variable significantly increased the correlation of Mathematics with GPA. The zero-order correlation between Mathematics and GPA was the only significant relationship. The higher the Mathematics scores, the higher was the GPA. Perhaps Mathematics scores are more related to attendance and academic success because, to be mathematically knowledgeable, even more so than English and Reading, requires skills that are generally learned in a classroom.

Non-cognitive Variables and Student Outcomes

Hypothesis 3—There is no significant relationship between non-cognitive variables and each student outcome.

Eight non-cognitive variables have been found to have good predictive validity for grades (Tracey & Sedlacek, 1984). These eight dimensions were found to be better at predicting academic success among minority students than the traditional academic measures, i.e., SAT or ACT scores, high-school GPA. These findings have been replicated in a variety of studies, though not all studies have supported Tracey and Sedlacek’s findings (Arbona & Novy, 1990). These dimensions were assessed in this study using Tracey and Sedlacek’s questionnaire, the Non-Cognitive Questionnaire (NCQ). The variables were examined to determine if there was a relationship between each non-cognitive variable and the selected outcome variables, as Tracey and Sedlacek predict.

Surprisingly, there was little overall relationship found between these eight non-cognitive variables and the selected outcomes. Only three of the seven remaining NCQ categories (the “positive self-concept” scale from the NCQ was utilized in this study as an
outcome variable) significantly correlated with self-concept. “Ability to understand and deal with racism” accounted for 3% of the variance. “preference for long-range goals” about 4%, and “knowledge obtained in a field” accounted for 13% of the variance. Similarly, only one of the eight NCQ and Attendance correlation coefficients was statistically significant. “Knowledge obtained in a field” accounted for only 3% of the variance. Two subscales significantly correlated with GPA, though the correlations were quite small. “Leadership experience” and “knowledge obtained in a field” each accounted for 3% of the variance.

**The Grouped Non-cognitive Variables**

The relationship between the group of non-cognitive variables and self-concept was tested by multiple linear regression analysis. The linear combination of three of the demographic variables—knowledge obtained in a field, preference toward long-range goals, and realistic self-appraisal—yielded a multiple correlation with self-concept. Thus, the hypothesis was rejected for self-concept. There was a significant relationship between these variables. The greater the knowledge obtained in a field, a preference toward long-range goals, and a realistic self-appraisal, the higher the student’s self-concept.

The relationship between non-cognitive variables and attendance was tested by multiple linear regression analysis. The inclusion of no other variable significantly increased the correlation of leadership experience with attendance. The zero-order correlation of leadership experience and attendance was the only significant relationship. Hypothesis 3 was rejected for attendance. This finding may suggest that the more
leadership responsibility a student has had, the more likely he or she is to attend classes. This may suggest that responsibility in one area might encourage responsibility for class attendance. However, although the hypothesis was rejected at the .05 alpha level, such a small correlation means that this finding contributes little to the study.

The relationship between non-cognitive variables and GPA was tested by multiple linear regression analysis, using the stepwise method in SPSS. The zero-order correlation of "leadership experience" and GPA was the only significant relationship. Hypothesis 3 was rejected for GPA. There was a significant relationship between these variables. The more leadership experience a student has had, the higher a student's GPA.

This measure of leadership experiences may relate to how the student approaches tasks in his or her life. Perhaps the tendency to take charge is also present in his or her attitude toward college. While this correlation is also small, it may indicate that while many other factors affect a student's outcome in college, their attitude about what they are doing also impacts their success (Tracey & Sedlacek, 1987a).

Learning and Study-Skills Variables and Student Outcomes

Was there a relationship between the learning and study-skills variables and (a) self-concept, (b) attendance, and (c) academic achievement?

Hypothesis 4—There is no significant relationship between learning and study-skills variables and each student outcome.

Learning and Study Skills and Self-concept

Nine of the 10 learning and study-skills variables showed a significant
relationship to self-concept, though only 5 of the 10 correlation coefficients accounted for 10% or more of the variance. Motivation and main idea each accounted for 14% of the variance. Concentration accounted for 12% of the variance, attitude for 11% of the variance, and test-taking for 10% of the variance. Self-testing, test anxiety, information processing, and study aids, while statistically significant, each accounted for less than 10% of the variance.

**Learning and Study Skills and Attendance**

The learning and study-skills variables appeared to have little or no relationship to students' attendance patterns. Only motivation was significantly correlated with attendance, and that correlation, while statistically significant, accounted for only 3% of the variance.

**Learning and Study Skills and GPA**

Six of the 10 learning and study-skills variables were significantly correlated with semester GPA. Motivation and main idea accounted for 10% and 11% of the variance, respectively. The test-taking and GPA correlation coefficient accounted for about 8% of the variance. Test anxiety and concentration accounted for about 6% of the variance, and attitude for only about 3% of the variance.

What stood out among these variables was that students who were both motivated to study, who knew how and what to study, and who knew how to take tests had better GPA's than those students who were either not motivated to study or did not know how to pick out important information to study or did not know how to take tests.
The Grouped Learning and Study Skills

The relationship between learning and study-skills variables and self-concept was tested by multiple linear regression analysis, using the stepwise method in SPSS. The linear combination of two of the LASSI variables, motivation and main idea (selecting main ideas and recognizing important information), yielded a multiple correlation with self-concept. Hypothesis 4 was rejected for self-concept. There was a significant relationship between these variables. The more a student felt motivated and able to identify main ideas and recognized important information when studying, the higher the student’s self-concept.

No combination of the learning and study-skills variables significantly predicted attendance. The inclusion of no other variable significantly increased the correlation of motivation with attendance. The zero-order correlation between motivation and attendance was the only significant relationship. Hypothesis 4 was rejected for attendance. The higher the motivation scores, the greater was the attendance.

The relationship between learning and study-skills variables and GPA was tested by multiple linear regression analysis, using the stepwise method in SPSS. The linear combination of two of the LASSI variables, motivation and main idea (selecting main ideas and recognizing important information), yielded a multiple correlation with GPA. Hypothesis 4 was rejected for GPA. There was a significant relationship between these variables. The more a student felt motivated and able to identify main ideas and recognized important information when studying, the higher the student’s semester GPA.

Motivation clearly was related to self-concept, attendance, and GPA. What is not
as clear is the nature of the relationship. It is easy to imagine that motivated students are more likely to attend classes and to successfully complete their coursework. However, the relationship between motivation and self-concept might be more complex. Perhaps motivation to succeed in college improves a student’s self-concept. It may be, however, that the higher a student’s self-concept, the more motivated that student will be to succeed in college. Or perhaps there are other factors that increase both levels of self-concept and levels of motivation.

Comparison of African-American and Caucasian Students on Demographic Variables

Was there a significant difference between African-American and Caucasian students on any single demographic variable?

Hypothesis 5—There is no significant difference between the African-American and Caucasian subgroups on any single demographic/situational variable.

Hypothesis 5 examined whether or not there was a significant difference between the African-American and Caucasian subgroups on any demographic/situational variable.

The three demographic/situational variables that were interval measures (age, number of dependent children, and hours worked per week) were analyzed using t tests to determine any significant differences between the African-American and Caucasian students. There were no significant differences found between African-American and Caucasian students on these variables.

The seven categorical demographic variables were examined using chi-square analyses. These variables included gender, ethnicity, financial need, study environment,
transportation, and family support. There was a significant difference found between African-American and Caucasian students in financial need, transportation, and family support. There was no significant difference found between African-American and Caucasian students on gender and study environment. African-American students were more likely to have financial difficulties, difficulties with transportation, and less family support. Both financial difficulties (Cabrera et al., 1992) and family support (Solís, 1995) have been found to have an indirect effect on retention.

*Was there a linear combination of the demographic/situational variables which significantly discriminated between African-American and Caucasian students?*

Hypothesis 10 - *There is no linear combination of demographic/situational variables which significantly discriminates between African-American and Caucasian students.*

One discriminant function was identified in the analysis. This function was defined by lack of finances, transportation, and family support. Therefore, a student with financial difficulties, transportation problems, and lack of family support for attending college was more likely to be African-American than Caucasian. As mentioned above, both financial difficulties (Cabrera et al., 1992) and family support (Solís, 1995) have been linked to retention. These differences add to the problems that African-American students must deal with in order to attend classes.

**Comparison of African-American and Caucasian Students on the Academic Variables**

*Was there a significant difference between African-American and Caucasian*
students on any academic variable?

Hypothesis 6—There is no significant difference between the African-American and Caucasian subgroups on any single academic variable.

$t$ tests were performed on the four academic variables to determine any significant differences between the African-American and Caucasian students.

A couple of points should be noted about these mean scores. In English and Mathematics, the mean for African-American students was below the cutoff for admittance to regular college classes without first successfully completing remedial courses in English and Mathematics. The average African-American student must, therefore, complete remedial courses prior to admittance to most regular college courses. The mean high-school GPA for African-American students was significantly lower than the mean for Caucasian students. While it might be that this finding speaks of the high-school education and general ability levels of the students in each group, it may also be that students, particularly African-American students, with higher scores are more likely to attend a 4-year college or university. Many universities heavily recruit minority students in the area with good academic records.

Was there a linear combination of academic variables which significantly discriminated between African-American and Caucasian students?

Hypothesis 11—There is no linear combination of academic variables which significantly discriminates between African-American and Caucasian students.

One discriminant function was identified in the analysis. (High-school GPA was excluded from the analysis, as only 94 cases had high-school GPA’s available.) This
function was defined by all three remaining variables. This function was defined by positive Mathematics, Reading and English subscores.

Therefore, a student with a higher Mathematics, Reading and English scores was more likely to be Caucasian than African-American. Thus, a randomly selected student with low Mathematics, Reading, and English subscores was more likely to be African-American than Caucasian.

Hypothesis 11 was rejected. There was a linear combination of the academic variables that significantly discriminated between African-American and Caucasian students.

Comparison of African-American and Caucasian Students on the Non-cognitive Variables

Was there a significant difference between African-American and Caucasian students on the non-cognitive variables?

Hypothesis 7—There is no significant difference between the African-American and Caucasian subgroups on any single non-cognitive variable.

Hypothesis 7 was retained for all the non-cognitive variables. There was no significant difference between African-American students and Caucasian students on any of these non-cognitive variables. This finding was particularly puzzling, in light of the research (Sedlacek & Brookes, 1976; Tracey & Sedlacek, 1984, 1987a) that found that certain non-cognitive variables were related to academic success, particularly for minority students. The Non-Cognitive Questionnaire was developed to measure those non-cognitive variables associated with post-secondary student retention, particularly for
minority students.

Perhaps the similarity between African-American and Caucasian students reflects on the community college population. The non-traditional measures associated with minority retention might also reflect the non-traditional makeup of students who attend community colleges.

Null Hypothesis 12—There is no linear combination of non-cognitive variables which significantly discriminates between African-American and Caucasian students.

When examined as a group, there was no linear combination of the non-cognitive variables which significantly discriminated between African-American students and Caucasian students. Thus, Hypothesis 12 was retained.

Comparison of African-American and Caucasian Students on the Learning and Study-Skills Variables

Were there any significant differences between African-American and Caucasian subgroups on any learning and study-skills variables?

Hypothesis 8—There is no significant difference between the African-American and Caucasian subgroups on any single learning and study-skills variable.

There was no significant difference between African-American students and Caucasian students on the following learning and study-skills variables: Attitude, motivation, time management, test anxiety, concentration, information processing, main idea, self-testing, and test. The only significant difference was found between the African-American students and Caucasian students on the study aids. The mean study-aids score for African-American students was significantly lower than the mean for
Caucasian students. This variable examines the degree to which students use support techniques or materials to help them learn and remember new information.

Hypothesis 13—There is no linear combination of learning and study-skills variables which significantly discriminates between African-American and Caucasian students.

One discriminant function was identified in the analysis. This function was defined by five variables. Three variables were positive: motivation, study aids, and test-taking. Two variables were negative: attitude and self-testing. Therefore, a student with higher motivation, study aids, and test-taking subscores and lower attitude and self-testing subscores was more likely to be Caucasian than African-American. Hypothesis 13 was rejected. There was a linear combination of the learning and study-skills variables that significantly discriminated between African-American and Caucasian students.

This finding presents a somewhat contradictory profile of a student. This Caucasian student was less interested in college than his or her African-American counterpart, yet was more motivated to work at it. This Caucasian student was more apt to use support techniques and materials to help him or her learn and remember new information than his or her African-American counterpart, yet was less inclined to review and prepare for classes and tests. This Caucasian student also reported having test-taking skills. Perhaps this describes a Caucasian student who, while not very interested in college, understands the importance of the training received there and was thus motivated to work hard enough to succeed. To do this, students learn how to prepare for classes and
tests because they are able to learn more efficiently by mastering study skills, and thus need less time to prepare for classes and tests.

Comparison of African-American and Caucasian Students on the Outcome Measures

Was there any significant difference found between African-American and Caucasian subgroups on the outcome variables?

Hypothesis 9—There is no significant difference between the African-American and Caucasian subgroups on the outcome variables.

Hypothesis 9 was retained for self-concept. There was no significant difference found between the African-American students and Caucasian students on self-concept. The level of positive self-concept was the same for African-American and Caucasian students.

Hypothesis 9 was rejected for attendance. There was a significant difference found between the African-American students and Caucasian students on class attendance. The mean percentage of scheduled classes attended by African-American students was significantly lower than for Caucasian students.

Hypothesis 9 was also rejected for semester GPA. There was a significant difference found between the African-American students and Caucasian students on GPA. The mean GPA of African-American students was significantly lower than for Caucasian students. The mean GPA for African-American students was 1.70, while the mean GPA for Caucasian students was 2.51. This is a particularly important difference,
since a GPA of 1.70 is below the level acceptable for graduation. Additionally, most universities will not accept transfer credit for classes below a 2.00 GPA.

Comparison of African-American and Caucasian Students on Combined Demographic/situational, Academic, Non-cognitive, and Learning and Study-Skills Measures

Was there any significant difference found between African-American and Caucasian subgroups on the combined variables?

Hypothesis 14—There is no linear combination of demographic/situational, academic, non-cognitive, and learning and study-skills variables which significantly discriminates between African-American and Caucasian students.

One discriminant function was identified in the analysis (high-school GPA was excluded from the analysis, as only 94 cases had high-school GPA’s available). The one discriminant function was significant. This function was defined by two negative and three positive variables. It was defined by negative LASSI-test anxiety and negative “preference for long-range goals.” It was also defined by a positive Mathematics score, Reading score, and LASSI-study aids. Hypothesis 14 was rejected. There was a linear combination of the predictor variables that significantly discriminated between African-American and Caucasian students.

Therefore, a student who entered college with higher Mathematics and Reading scores, who was not so interested in long-range goals, who was less anxious about test-taking, and who knew how to utilize study aids was more likely to be Caucasian than African-American. As discussed elsewhere, higher Mathematics and Reading scores indicate the relative difference in academic preparation of the two groups, but do not
explain that difference. It may be that African-American students with better academic preparation have been recruited to 4-year colleges. It may reflect differences in the education provided at those secondary schools that the majority of the African-American students attended. It may reflect socioeconomic differences that influence the emphasis on preparation for higher education.

| Comparison of Successful and Unsuccessful Students on the Demographic Variables |

Were there any significant differences between successful and unsuccessful students on the demographic variables?

Hypothesis 15—There is no significant difference between successful and unsuccessful students on any single demographic/situational variable.

$t$ tests were performed for the interval variables (age, number of dependent children, and hours worked per week) in this group to determine whether any demographic variables significantly differentiated between successful (GPA $\geq 2.00$) and unsuccessful (GPA $< 2.00$) student outcomes. Age, number of dependent children, and hours worked per week did not significantly differentiate between successful and unsuccessful students.

Several of the demographic/situational variables were categorical and were examined using chi-square analyses to determine whether these demographic variables significantly differentiated between successful (GPA $\geq 2.00$) and unsuccessful (GPA $< 2.00$) student outcomes. These variables included gender, ethnicity, financial need, study environment, transportation, and family support ("family support" could not be
completed for the Caucasian sample, because there was only one row in the analysis).

For the total sample, there was no significant difference between successful and unsuccessful student outcomes based on gender. However, 55% of the males were successful, while 67% of the females were successful. There was also no statistically significant difference based on gender in the African-American and Caucasian samples. Still, the differences between male and female students are worth noting in those sampled. There was a 12% difference between successful males and females in the total sample and the Caucasian sample, but in the African-American sample the difference jumped to 23%, with females once again being more successful. Approximately two-thirds of the African-American males in the sample were not successful. Successful students had better study environments and better family support. These factors have been found to have an indirect affect on student persistence in college (Cabrera et al., 1992; Solís, 1995).

Hypothesis 19—There is no linear combination of demographic/situational variables which significantly discriminates between successful and unsuccessful students.

The discriminant function was significant. This function was defined by four variables. It was defined by ethnicity, gender, family support, and study environment.

Therefore, an unsuccessful student was more likely to be African-American, male, lack family support, and lack a place to study. Hypothesis 19 was rejected. There was a linear combination of the predictor variables that significantly discriminated between successful and unsuccessful students.

This finding has been mirrored in numerous attrition studies that place African-
American students at a higher risk of attrition than their non-minority counterparts, even when controlling for academic factors (Tinto, 1975; Tracey & Sedlacek, 1985). The attrition rate of African-American students at Lake Michigan College, especially African-American males, was one of the problems that prompted this study. This finding indicates problems in the environment for African-American male students. In their social environment they do not receive support, and their living environment is not conducive to studying.

Comparison of Successful and Unsuccessful Students on the Academic Variables

Were there any significant differences between successful and unsuccessful students on the academic variables?

Hypothesis 16—There is no significant difference between successful and unsuccessful students on any single academic variable.

$t$ tests were performed to determine whether the academic variables significantly differentiated between successful (GPA $\geq 2.00$) and unsuccessful (GPA $< 2.00$) student outcomes. For English, Mathematics, Reading, and high-school GPA, the mean scores for successful students were significantly higher than for unsuccessful students.

However, in an examination of the subgroups, none of the academic variables significantly differentiated between successful and unsuccessful student GPA’s for African-American students. This supports the findings of many studies that have found that academic preparation, as measured by these traditional tests, does not adequately predict retention of minority and other non-traditional students (Lichtman et al., 1989;

English, Mathematics, and Reading mean scores for Caucasian students were significantly higher for successful students. Similar aptitude scores, as measured by ACT and SAT, have consistently shown predictive validity for traditional college students (Lichtman et al., 1989).

Thus, the hypothesis was rejected for English, Mathematics, Reading, and high-school GPA for the total sample. English, Mathematics, and Reading were rejected for the Caucasian sub-sample. All hypotheses were retained for the African-American sample.

Null Hypothesis 20—There is no linear combination of academic variables which significantly discriminates between successful and unsuccessful students.

The discriminant analysis was conducted on three academic variables (high school GPA was excluded in the analysis). The discriminant function was significant. This function was defined by two variables. This function was defined by positive Mathematics and English subscores.

Therefore, a successful student was more likely to have higher Mathematics and English scores. Hypothesis 20 was rejected. There is a linear combination of the academic variables that significantly discriminated between successful and unsuccessful students. Certainly, for college populations in general, these basic aptitudes have been found to be predictive of college success (Lichtman et al., 1989). Of course, this finding examines the students as a whole, and not specific subpopulations.
Comparison of Successful and Unsuccessful Students on the Non-cognitive Variables

Were there any significant differences between successful and unsuccessful students on the non-cognitive variables?

Hypothesis 17—There is no significant difference between successful and unsuccessful students on any single non-cognitive variable.

$t$ tests were performed to determine whether the non-cognitive variables significantly differentiated between successful (GPA $\geq 2.00$) and unsuccessful (GPA $< 2.00$) student outcomes. Only two variables significantly differentiated between successful and unsuccessful students in the total sample. The mean scores for “understands and deals with racism” and “leadership experience” were significantly higher for successful students. None of the variables were significant for the African-American sample. However, in the Caucasian sample, 5 of the 8 variables significantly differentiated between successful and unsuccessful students. “Realistic self-appraisal” was significantly lower for successful students. For “deals with racism,” “preference for long-range goals,” “leadership experience,” and “knowledge obtained in a field,” the mean scores for successful Caucasian students were significantly higher than for unsuccessful students.

These findings are surprising, given that the variables on the Non-Cognitive Questionnaire (Tracy & Sedlacek, 1984) were identified as characteristics that are associated with academic success, particularly for African-American and other minority students. However, this study finds that, ironically, the variables on the NCQ were more predictive for the Caucasian students than the African-American students in the sample.

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One explanation might be that the early studies that led to the development of the NCQ were based on 4-year residential university students (Sedlacek & Brookes, 1976; Tracey & Sedlacek, 1984). Tracey and Sedlacek (1987a) pointed out that student attitudes and expectations at matriculation were related to graduation 5 or 6 years later, and these attitudes were better measured by the non-cognitive dimensions of the NCQ than by academic measures of ability. Perhaps the Caucasian students at Lake Michigan College more nearly fit the model of the non-traditional student described in the research, than do the African-American students at the college. This may also begin to explain a similar finding in Arbona and Novy's 1990 study. They found these non-cognitive variables more predictive of White student persistence than of Black or Mexican American student persistence.

It should be noted that for "leadership experience", the mean difference in the African-American group was greater than for the Caucasian sample. However, due to a smaller African-American sample (53), this difference failed to attain statistical significance.

Null Hypothesis 21—There is no linear combination of non-cognitive variables which significantly discriminates between successful and unsuccessful students.

The test of significance of the one discriminate function was significant. There was no linear combination of the non-cognitive variables which significantly discriminated between successful and unsuccessful students. Thus, Hypothesis 21 was retained. Though several of the variables were significant for the Caucasian sub-group, since the discriminant analysis was calculated on the entire sample, it was not surprising
that no linear combination of variables that discriminated between the two groups of students was found.

Comparison of Successful and Unsuccessful Students on the Learning and Study-Skills Variables

Were there any significant differences between successful and unsuccessful students on the learning and study-skills variables?

Null Hypothesis 18—There is no significant difference between successful and unsuccessful students on any learning and study-skills variable.

$t$ tests were performed to determine whether the learning and study-skills variables significantly differentiated between successful (GPA $\geq 2.00$) and unsuccessful (GPA $< 2.00$) student outcomes. Six of the 10 variables significantly differentiated between successful and unsuccessful students in the total sample. The mean scores for “attitude,” “motivation,” “test anxiety,” “concentration,” “main idea,” and “test-taking” were significantly higher for successful students. These same variables significantly differentiated between successful and unsuccessful students in the Caucasian sample.

In the African-American sample, 4 of the 10 variables were significantly higher for successful students. “Test anxiety,” “concentration,” “main idea,” and “test-taking” significantly differentiated between successful and unsuccessful students. Additionally, “attitude” and “motivation” scores were higher for successful students than for non-successful students, though the difference was not statistically significant for those two variables.

Clearly, the learning and study skills as measured in the Learning and Study Skills
Inventory are important predictors of academic success. As Weinstein (1987) pointed out, these learning and study strategies include both thought processes and behaviors "that contribute significantly to success in post-secondary educational and training settings" (p. 2). Academic measures have been traditionally used as a predictor for academic success. However, the importance of learning and study skills helps to explain why measures of academic preparation are, by themselves, not enough to predict the academic success of students. Rowser (1997) found that students, both Caucasian and African-American, felt that they needed study-skills preparation in order to be successful in college, even though they perceived their academic preparation as adequate.

Null Hypothesis 22—There is no linear combination of learning and study-skills variables which significantly discriminates between successful and unsuccessful students.

The one discriminant function identified in the analysis was significant. This function was defined by three variables. This function was defined by positive motivation, positive test anxiety, and negative time management. In other words, a successful student was motivated but felt that he or she had problems with time management. This student also experienced test anxiety.

This is one of the most curious findings in this study. In the univariate analysis, many of the learning and study-skills variables significantly differentiated between successful and unsuccessful students. This finding suggests that those variables can be described by the relationship of motivation, test anxiety, and lack of time management. Perhaps this describes the student who is motivated to succeed, and whose behaviors reflect that motivation. It is possible that with that desire to succeed also comes fears of
not succeeding. This might prompt these same students to worry about how they manage their time and worry that the time they have to devote to their schoolwork will not be sufficient. It might also prompt anxiety during testing. As reflected in the demographic information about the student sample, many have families and jobs that require time—time that cannot, therefore, be devoted to study.

Hypothesis 22 was rejected. There was a linear combination of the learning and study-skills variables that significantly discriminated between successful and unsuccessful students.

Comparison of Successful and Unsuccessful Students on Combined Demographic/Situational, Academic, Non-cognitive, and Learning and Study-Skills Measures

*Was there any significant difference found between successful and unsuccessful students on the combined variables?*

Null Hypothesis 23—*There is no linear combination of demographic/situational, academic, non-cognitive, and learning and study-skills variables which significantly discriminates between successful and unsuccessful students.*

The one discriminant function identified in the analysis was significant. This function is defined by six variables: positive family support, positive test anxiety, positive concentration, gender (female), positive English scores, and negative reading scores. While this analysis was statistically significant, the lack of cases in the analysis in relation to the variables used in the analysis, makes this finding possibly unreliable.
Conclusions

Based on the reported findings of this study, the following conclusions were drawn about the following categories: (1) the relationships between the dependent variables and the outcome variables, (2) comparisons of African-American and Caucasian student samples on the selected variables, and (3) comparisons of successful and unsuccessful student samples on the selected variables.

Relationships Between the Dependent Variables and the Outcome Variables

1. There were few relationships found between the demographic variables and the outcome measures (self-concept, class attendance, and semester GPA). Age was inversely related to levels of self-concept. The younger the student, the higher his or her self-concept. Family support and ethnicity were positively related to attendance. Family support, ethnicity, and study environment were related to semester GPA. When examined as a group, age and gender had a significant effect on self-concept. Age, financial difficulties, and family support were related to attendance. Gender, financial difficulties, a place to study at home, and family support had a significant effect on semester GPA.

2. The academic variables were related to student outcomes. Self-concept was positively related to high-school GPA, English scores, Mathematics scores, and Reading scores. There was a positive relationship between high-school GPA, English scores, and Mathematics scores and attendance. There was a positive relationship between high-school GPA, English scores, Mathematics scores, and Reading scores, and semester GPA.
When the academic variables were examined as a group, high-school GPA had a significant effect on self-concept, and high-school GPA had a significant effect on semester GPA.

3. There were few relationships found between the non-cognitive variables and the outcome measures (self-concept, class attendance, and semester GPA), and the relationships that were found were statistically significant, but weak. There was a relationship between self-concept and the following non-cognitive variables: "ability to understand and deal with racism," "preference for long range goals," and "knowledge obtained in a field." There was a relationship between "knowledge obtained in a field" and attendance. There was a relationship between semester GPA and the following non-cognitive variables: "leadership experience" and "knowledge obtained in a field." When the non-cognitive variables were examined as a whole, there was a relationship between self-concept and "knowledge obtained in a field," "preference toward long-range goals," and "realistic self appraisal." There was a positive relationship between "leadership experience" and attendance, and between "leadership experience" and semester GPA.

4. The learning and study-skills variables were related to student outcomes. Self-concept was related to all the learning and study-skills variables studied except for "time management." "Motivation" was positively related to attendance. "Motivation," "main idea," "test-taking," "test-anxiety," "concentration," and "attitude" were positively related to semester GPA. When the learning and study-skills variables were examined as a whole, "motivation" and "main idea" were related to self-concept. "Motivation" was also
related to attendance. There was a positive relationship between semester GPA and “motivation” and “main idea.”

Comparisons of African-American and Caucasian Student Samples on the Selected Variables

5. African-American students are more likely to have financial difficulties, difficulties with transportation, and less family support than the Caucasian students in the sample. When the variables were examined as a whole, a student with transportation problems, financial difficulties, and less family support was more likely to be African-American than Caucasian.

6. The means for the three placement test scores (Reading, English, and Mathematics) and high-school GPA were significantly lower for African-American than for Caucasian students in the sample. When the academic variables were examined as a whole, a student with higher Mathematics, Reading, and English scores was more likely to be Caucasian than African-American.

7. There was no significant difference between African-American students and Caucasian students on the non-cognitive variables examined in this study.

8. The only significant difference between the African-American and Caucasian students in the sample on the learning and study-skills variables was with “study aids”: Caucasian students had higher scores on “study aids.” When the learning and study-skills variables were examined as a group, a student with higher “motivation” levels, higher “study aids” scores, high test-taking scores, and lower “attitude” and “self-test” scores was more likely to be Caucasian than African-American.
9. There were significant differences between African-American and Caucasian students in the sample on two of the three outcome measures. There was no significant difference between African-American and Caucasian students in the sample on self-concept. However, for class attendance and semester GPA, the scores were significantly higher for Caucasian than for African-American students.

10. When all the variables were examined as a group, a student with higher Mathematics and Reading scores, who is less anxious about test-taking, who knows how to utilize study aids, and has a preference for long-term goals was more likely to be Caucasian than African-American.

Comparisons of Successful and Unsuccessful Student Samples on the Selected Variables

11. A successful student (semester GPA of 2.00 or better) was more likely to be Caucasian, have a good study environment, and family support. There was no difference found between successful and unsuccessful African-American and Caucasian subgroups on these variables. When all the variables were examined as a group, successful students were more likely to be Caucasian, female, and have family support and a good study environment.

12. A successful student had higher English, Mathematics, and Reading scores than an unsuccessful student. When the variables were examined as a whole, successful students had higher Mathematics and English scores. A successful Caucasian student had higher English, Mathematics, and Reading scores than an unsuccessful student. There was no difference found between successful and unsuccessful African-American students.
on the academic variables.

13. A successful student was more likely to "understand and deal with racism" and have successful "leadership experience." A successful Caucasian student had a less "realistic self-appraisal," "dealt better with racism," had a "preference for long-range goals," had successful "leadership experience," and "knowledge obtained in a field." There was no difference found between successful and unsuccessful African-American students on the non-cognitive variables.

14. A successful student was more likely to have a positive "attitude," be more "motivated," have more "test anxiety," have higher levels of "concentration," understand "main ideas" in studying, and have better "test-taking" skills. The same was true of the sample of Caucasian students. Successful African-American students had higher levels of "test-anxiety," better "concentration," understanding "main ideas," and "test-taking" skills. When the variables were examined as a whole, a successful student was one with positive motivation, test anxiety, and negative time management.

**Implications**

This study examined several factors and their relationship to the success of community college students. These factors included selected demographic/situational factors, academic factors, non-cognitive variables, and learning and study-skills variables. Community college student "success" was defined as students who completed the semester with a semester GPA of 2.00 or better. Self-concept and attendance patterns were also examined as outcome variables, to determine how the chosen factors were related to them.
First, this study examined several factors and their relationship to the self-concept, attendance, and semester GPA's of community college students. Second, the differences between African-American and Caucasian students on these variables were examined. Third, the differences between successful and non-successful students on these variables were considered.

**Implications of Relationships Between Dependent Variables and Outcomes**

This study found that self-concept was most strongly related to the following variables: age; academic ability (high-school GPA, English scores, Mathematics scores, Reading scores); several non-cognitive measures (the ability to deal with racism, preference for long-range goals, knowledge obtained in a field); and a variety of learning and study skills. Younger students, students with higher high-school GPA's and college placement scores, and students whose attitudes, prior experiences and study skills prepared them for college were the students more likely to have higher levels of self-concept. Older students, students with less academic preparation, students with poor attitudes, a lack of prior experience, and weak learning and study skills, were more likely to have lower levels of self-concept. To the extent that a student’s self-concept creates negative self-statements about their chances of success, and increases anxiety about their academic performance, a lower self-concept could handicap the very students who need to positively approach their education. This should be addressed in advising students. While students’ negative views of themselves and their abilities sometimes prompt them to be more conscientious in their studies, they can also create debilitating anxiety that
interfere with studying and test-taking. Workshops that are designed to improve a student's self-concept, as well as workshops that teach study-skills strategies, might be one way of addressing this finding. Many students who, for multiple reasons, did not do well in high school have gone on to excel in college classes. Student advising and student workshops that teach a student to realistically appraise their abilities may increase that student's self-concept.

Attendance was included as an outcome in this study as one indication of whether the student was actively engaged in the educational process. Other measures (time spent studying, active vs. passive participation in classes) would have helped to paint a more complete picture of student involvement in their studies, but would have been difficult to measure. And, certainly, students cannot be actively involved in their education if they do not attend classes (excluding distance-learning courses, of course). Two demographic variables (family support, ethnicity), academic variables (high-school GPA, English scores, Mathematics scores), two non-cognitive variables (knowledge obtained in a field, leadership experience), and one learning and study-skills variable (motivation), were related to attendance. Students with family support, who were older, who had less financial difficulties, whose academic background and life experiences prepared them for college, and who were positively motivated toward college were more likely to attend classes. Students without family support, who were younger, who had financial difficulties, who were less prepared academically for college, who were not motivated to pursue a college education were less likely to attend classes. It is not surprising that many
of the same variables that were related to attendance were also related to the students’ semester GPA’s.

Semester GPA was related to the following variables: demographic variables (family support, ethnicity, study environment, gender, financial difficulties), academic variables (high-school GPA, English scores, Mathematics scores, Reading scores), non-cognitive variables (knowledge obtained in a field, leadership experience), and learning and study-skills variables (motivation, main idea, test-taking, test-anxiety, concentration, attitude). Students who were Caucasian females, who had family support, a place to study, and who did not have financial difficulties were more likely to have a higher GPA. These students were more likely to be academically prepared for college, have positive attitudes toward college, be motivated to succeed at college, and have the necessary learning and study skills to do the academic work.

While family support is not something that either the student or college staff can necessarily control, where it is possible, families should be made aware of the important role they play in their family member’s education. Many students have family responsibilities that can often interfere with class attendance, when other family members are not there to help lessen the student’s responsibilities. As this study showed, it is not the number of dependents or hours worked that makes the difference in achievement. It is family support. Family support, after all, can lessen the effects of other situations in a student’s life. Another factor related to semester GPA was whether or not the student had a place to study. The student’s home environment must either afford a place and time to
study, or the student needs to be free to spend time in an environment where he or she is able to study.

Lack of financial worries was positively related to semester GPA. Finances often have an indirect effect on student achievement. As this study showed, this cannot be simply explained by pointing to more hours worked. Perhaps the anxiety associated with having financial difficulties makes it difficult for students to focus on studies. Programs that address the academic needs of at-risk students would do well to address their financial needs as well.

Higher high-school GPA's and placement scores were related to both attendance and semester GPA. Certainly students who are academically prepared for college are more likely to succeed. The relationship between high-school GPA and attendance points to the fact that if a student had the academic behaviors in high school necessary to achieve, those behaviors are more likely to exist in college. The same student characteristics that led to student achievement in high school are those characteristics that will assist the student in being successful at college. While college students cannot go back and change their academic preparation, college faculty and staff can make sure that students with weak academic backgrounds are made aware of the importance of class attendance as a necessary prerequisite to success in college.

While motivation is perhaps a more difficult concept to instill, interventions that assist students in goal-setting might prove useful in increasing motivation to attend classes and complete the work necessary to be successful in those classes. Given that motivation is the process of initiating and sustaining behaviors to achieve certain goals,
then strategies that will increase a student's determination to achieve their chosen goals ought to also increase those behaviors that are necessary to achieve those goals.

The importance of learning and study skills was evident in this study. Student self-concept is enhanced, attendance is better, and GPA’s are higher when students possess adequate learning and study skills. Freshman orientation classes and study-skills classes can provide an opportunity to provide training in these areas. This is especially important in a community college environment, where students are often first-generation college students whose high-school experiences did not prepare them for the college environment. Student mentors who are successful students themselves might be another avenue for sharing information about the study skills and behaviors of a successful student. Counselors and associated student services staff could also provide these additional supports to students by facilitating student support groups, if the College maintains the staff necessary to provide those additional support services to students.

Implications of Differences Between Caucasian and African-American Students

When the demographic/situational variables were examined for each group, African-American students were more likely to have financial difficulties, transportation problems, and a lack of family support. While these factors may not directly affect their success as students, each of these has been found to have an indirect effect on student success by increasing the stressors the student must contend with, in addition to the stresses of college.

The three placement test scores and high-school GPA were significantly higher
for the Caucasian students than the African-American students in the sample. As
discussed elsewhere, these measures do not predict success for the African-American
student, as they do for other student populations. However, given that the average
placement test scores for the African-American students were below the cutoff for
admittance into regular college classes, it does mean that many must complete
developmental education classes before admittance into regular college classes. Of
course, these classes are required for more than just African-American students.
However, it does mean that African-American students are more likely to have their
educational program extended by at least a semester, while they complete the required
developmental classes. Attrition from developmental classes is higher than for most
regular college classes, which compounds the problem. Students, regardless of their
ethnicity, may require more supportive measures as developmental education students, in
order to keep them from dropping out of college. These services, or lack of them, would,
therefore, have a greater effect on African-American students than on Caucasian students.

There were no significant differences between African-American students and
Caucasian students on the non-cognitive variables examined in this study, and the only
significant difference between the two groups on the learning and study-skills variables
was on “study aids.”

There were two significant differences between the two groups on the outcome
measures. Both class attendance and semester GPA’s were significantly higher for
Caucasian students. The implications of the differences in class attendance may be one
of the most simple, yet significant, points made in this study. While, as previously
discussed, many variables affect the attendance patterns of students, the bottom line between a student’s success and failure in a course might rest on attendance. While attendance does not automatically ensure success, the lack of attendance certainly contributes to student failure and attrition from college.

Implications of Differences Between Successful and Unsuccessful Students

While these measures might seem similar to those that looked at the relationship between the dependent variables and semester GPA, these measures looked specifically at the differences between successful and unsuccessful students. This look at significant differences between these two groups does not focus on how well a student did (an “A” in a class versus a “B” or “C”), but instead asks the question, “Do students who maintain at least a ‘C’ average differ in significant ways from those who do not maintain at least a ‘C’ average?” This measure is important because of its affect on financial aid, student status (“regular” versus “probationary”), graduation, and the transferability of student credits. All these factors play a part in students’ decisions to remain in school.

Most of the factors discussed above as being related to semester GPA also distinguished between successful and unsuccessful students. Successful students were more likely to be female, Caucasian, and have a good study environment and family support. Successful students had higher English, Mathematics, and Reading scores. Successful students were more likely to “understand and deal with racism.” Successful students had more positive attitudes, were more motivated, experienced test-anxiety but also had better test-taking skills. They were better able to concentrate while studying, and
understand the main ideas of what they were studying.

This profile confirms what most know: Successful students have financial and social support; they are academically prepared for college; they can deal with social issues (such as racism) within the college environment; they are motivated to be successful, worry about their performance, but have the ability to study and perform well on tests. Since females are more likely to be successful than are males, and Caucasian students are more likely to be successful than other students, it might also suggest that this profile is more likely to describe female students rather than male students, and Caucasian students rather than minority students. Therefore, preceding suggestions made regarding interventions to address these issues (student mentoring, study-skills classes, orientation classes, student support groups) might be particularly helpful if they were targeted to specific groups.

There were few differences to the above findings when the analyses were run for Caucasian students. However, a couple of the differences are worth noting. For the Caucasian student sub-sample, only financial need (of the demographic/situational variables) significantly differentiated between successful and unsuccessful students. Ironically, most of the non-cognitive variables identified in the literature as factors that were predictors of minority student success instead differentiated between successful and unsuccessful Caucasian students. Those factors included realistic self-appraisal, deals better with racism, has a preference for long-range goals, has positive leadership experiences, and has knowledge obtained in a specific field of learning.

When the analyses were run for the African-American students, the only variables
found to discriminate between successful and unsuccessful students were four of the learning and study-skills variables (test-anxiety, concentration, understanding main ideas, and test-taking skills). Another finding specifically focused on African-American males. Discriminant analyses of the demographic/situational variables suggested that an unsuccessful student was more likely to be African-American, male, and lack family support. As reported earlier (Table 48) only about one in three African-American male students was successful (as defined by semester GPA). This study falls short of being able to explain this lack of success for African-American males.

The findings reported in this study, unfortunately, can more easily point to variables that do not seem to distinguish between success and failure for African-American students, than to identify those factors that do distinguish between the successful and unsuccessful African-American student. As mentioned previously, while Caucasian students' academic preparation significantly differentiates between successful and unsuccessful students, the same is not true for African-American students. Certain demographic variables that distinguish between successful and unsuccessful students in the general population do not distinguish between successful and unsuccessful African-American students. Even the non-cognitive variables identified in the literature as better predictors of academic success among minority students than other measures did not differentiate between successful and unsuccessful African-American students.

These differences between the entire sample and the African-American sub-sample might be partially explained by noting that the sample size of the African-American sub-sample was only 53, and thus would require greater differences to be
statistically significant. However, an examination of the means of successful and unsuccessful African-American students shows that the above explanation is only partially correct. One finding that was not covered by the existing hypotheses in this study was the difference in attendance patterns between successful and unsuccessful African-American students. Successful students attended approximately 85% of their classes, while unsuccessful students attended only 69% of the time.

Based on these findings, interventions that are targeted to the African-American student population might focus on learning and study-skills training. Student mentors who serve as role models could emphasize the behaviors of a successful student, including attendance and active participation in classes.

**Recommendations for Further Study**

The following recommendations for further study are based on the reported results and related conclusions of this research:

1. Additional research with a larger sample size of African-American students would assist in the study of those factors that affect the retention of African-American students. For purposes of further examination of these variables, this sample should include an equal proportion of male and female students. This would help to confirm whether the results of this study regarding the African-American students were in part due to the small sample size.

2. A qualitative study that provided an in-depth focus on African-American students might lead to the discovery of other variables more related to their success than those examined in this study.
3. Additional research should focus on the gender differences noted in this study. This study could evaluate the differences between successful and unsuccessful male and female students, and focus on the identification of variables that describe the successful male student and the successful female student.

4. A study that focused on current programs designed to address some of the retention issues noted in this study would be helpful to determine if such programs contribute in any significant way to the characteristics that determine student success.
APPENDIX A

PARTICIPANT CONSENT FORM
PARTICIPANT CONSENT FORM

The purpose of this research is to better describe the characteristics of Lake Michigan College Caucasian and African-American students. It will also examine the characteristics that affect students' academic self-concept, academic behaviors, and outcomes.

The study will be conducted with selected classes during the Winter, 1998 semester at Lake Michigan College. The proposed data-gathering techniques will include the following: 1) two questionnaires completed by each student, 2) attendance and grade data collected from the instructor, and 3) demographic information obtained from the student information database.

This research will be supervised by Dr. Frederick Kosinski from the Educational and Counseling Psychology department in the School of Education. Names of participants will be withheld in the final report and will not be disclosed at any time, to ensure anonymity.

It is expected that this research will provide some insight into factors affecting the academic success and retention of Caucasian and African-American community college students.

If you have any questions, please call Denise Scameheorn at (616) 683-2346 or Dr. Frederick Kosinski at (616) 471-3466.

Any participant is free at any time to terminate this consent, and withdraw from participating without any further obligation.

______________________________________________________________
I, ____________________________________________, hereby consent to participate in the project described above. I have read and understood this statement.

Date________________________ Signature__________________________________
1. How much education do you expect to get during your lifetime?
   1. Some classes, but less than an associate's degree
   2. Associate's degree
   3. Bachelor's degree (or equivalent)
   4. 1 or 2 years of graduate or professional study (Master's degree)
   5. Doctoral degree such as M.D., Ph.D., etc.

2. Please list three goals that you have for yourself right now:
   1. 
   2. 
   3. 

3. About 50% of university students typically leave before receiving a degree. If this should happen to you, what would be the most likely cause?
   1. Absolutely certain that I will obtain a degree
   2. To accept a good job
   3. To enter military service
   4. It would cost more than my family could afford
   5. Marriage
   6. Disinterest in study
   7. Lack of academic ability
   8. Insufficient reading or study skills
   9. Other (please specify) ________________________________

4. Please list three things that you are proud of having done:
   1. 
   2. 
   3. 

5. How many hours per week do you work? ______

6. Do you have a good place to study at home? _____ Yes _____ No

7. Do you have problems with transportation to the College? _____ Yes _____ No

8. My family supports my decision to attend College. _____ Yes _____ No

9. How many dependent children under the age of 18 currently live with you? ______
Please indicate the extent to which you agree or disagree with each of the following items. Respond to the statements below with your feelings at present or with your expectations of how things will be. Write the number of your response to the left of each item.

1 = Strongly agree  
2 = Agree  
3 = Neutral  
4 = Disagree  
5 = Strongly Disagree

10. The College should use its influence to improve social conditions in the State.
11. It should not be very hard to get a B (3.0) average at Lake Michigan College.
12. I get easily discouraged when I try to do something and it doesn't work.
13. I am sometimes looked up to by others.
14. If I run into problems concerning school, I have someone who would listen to me and help me.
15. There is no use in doing things for people, you only find that you get it in the neck in the long run.
16. In groups where I am comfortable, I am often looked to as leader.
17. I expect to have a harder time than most students at Lake Michigan College.
18. Once I start something, I finish it.
19. When I believe strongly in something, I act on it.
20. I am as skilled academically as the average student at Lake Michigan College.
21. I expect I will encounter racism at Lake Michigan College.
22. People can pretty easily change me even though I thought my mind was already made up on the subject.
23. My friends and relatives don't feel I should go to college.
24. My family has always wanted me to go to college.
25. If course tutoring is made available on campus at no cost, I would attend regularly.
26. I want a chance to prove myself academically.
27. My high school grades don't really reflect what I can do.
28. Please list groups belonged to and/or offices held in high school or in your community.

29. Your father's occupation: ____________________________
30. Your mother's occupation: ____________________________
31. Your race is:   ____ Black (African-American)   ____ American Indian (Alaskan Native)
                 ____ White (not of Hispanic origin)  ____ Other
                 ____ Asian (Pacific Islander)

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APPENDIX C

LEARNING AND STUDY SKILLS INVENTORY
Directions

The Learning and Study Strategies Inventory (LASSI) is designed to gather information about learning and study practices and attitudes. On the two forms at right, which you pull out to begin the LASSI, you will find 77 statements related to learning and studying. You are to read each statement and then mark a response according to the following key:

• Not at all typical of me
• Not very typical of me
• Somewhat typical of me
• Fairly typical of me
• Very much typical of me

To help you decide which responses to mark, we would like to explain what is meant by each term.

By Not at all typical of me, we do not necessarily mean that the statement would never describe you, but that it would be true of you only in rare instances. Mark an a for this response.

By Not very typical of me, we mean that the statement generally would not be true of you. Mark a b for this response.

By Somewhat typical of me, we mean that the statement would be true of you about half the time. Mark a c for this response.

By Fairly typical of me, we mean that the statement would generally be true of you. Mark a d for this response.

By Very much typical of me, we do not necessarily mean that the statement would always describe you, but that it would be true of you almost all the time. Mark an e for this response.

Please completely darken the appropriate letter. For example, darken the d if you feel that the statement is fairly typical of you.

a b c d e

Try to rate yourself according to how well the statement describes you, not in terms of how you think you should be or what others do. There are no right or wrong answers to these statements. Please work as quickly as you can without being careless and please complete all the items.

Both of the forms at right, along with the Directions booklet are two-part, carbonless forms. Take care not to stack any of the forms on top of the other when writing since it would damage the forms below.

After reading the directions, tear out both two-part forms at right and set this booklet aside. The forms contain the statements you will respond to. This booklet contains information which will be used after you complete the LASSI.

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Scoring Directions

After responding to statements 1-77, you may begin the scoring process. Peel off pages 2 and 3 of the inventory. These are the pages you marked with your answers. When the pages are removed, you will then see pages 4 and 5 of the inventory. These pages contain copies of the responses you made to the LASSI statements. Notice that each item is accompanied by a number you darkened and a three-letter code, such as ANX. You will use the code for each item as well as your answer to that item in calculating and plotting your scores.

To calculate your scores for the LASSI, you will need to add the numbers that have been darkened for each of the 10 different scales. Write the darkened number for each scale item in the appropriate space below.

For example, look at the first scale, labeled ATT below. The first item number for the ATT scale is item #5. Go to page 4 and find item #5. Copy the darkened number, in this example the number 3 (e.g. 1 2 3 4 5), into the space above item (5) on this page. Now find the next item for that scale, item #14. Write the darkened number from page 4 in the space provided.

Do this for all items for the ATT scale. Then carefully add the numbers and write the total at the far right in the space provided. You will use these numbers again so please double check your work carefully.

Now finish copying the darkened numbers for each item for all the scales below. Don’t forget to add the numbers for each scale.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Item Numbers</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATT</td>
<td>(5) (14) (18) (29) (38) (45) (51) (69)</td>
<td></td>
</tr>
<tr>
<td>MOT</td>
<td>(10) (13) (16) (28) (33) (41) (49) (56)</td>
<td></td>
</tr>
<tr>
<td>TMT</td>
<td>(3) (22) (36) (42) (48) (58) (66) (74)</td>
<td></td>
</tr>
<tr>
<td>ANX</td>
<td>(1) (9) (25) (31) (35) (54) (57) (63)</td>
<td></td>
</tr>
<tr>
<td>CON</td>
<td>(6) (11) (39) (43) (46) (55) (61) (68)</td>
<td></td>
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<td>INP</td>
<td>(12) (15) (23) (32) (40) (47) (67) (76)</td>
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<td>SMI</td>
<td>(2) (8) (60) (72) (77)</td>
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<tr>
<td>STA</td>
<td>(7) (19) (24) (44) (50) (53) (62) (73)</td>
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<tr>
<td>SFT</td>
<td>(4) (17) (21) (26) (30) (37) (65) (70)</td>
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<tr>
<td>TST</td>
<td>(20) (27) (34) (52) (59) (64) (71) (75)</td>
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</tbody>
</table>
CAUTION - There should be nothing between this two-part form and your desktop.

Very much typical of me
Fairly typical of me
Somewhat typical of me
Not very typical of me
Not at all typical of me

1. I worry that I will flunk out of school.
2. I am able to distinguish between more important and less important information during a lecture.
3. I find it hard to stick to a study schedule.
4. After a class, I review my notes to help me understand the information.
5. I don't care if I finish school as long as I find a husband/wife.
6. I find that during lectures I think of other things and don't really listen to what is being said.
7. I use special study helps, such as italics and headings, that are in my textbook.
8. I try to identify the main points when I listen to lectures.
9. I get discouraged because of low grades.
10. I am up-to-date in my class assignments.
11. Problems outside of school - being in love, financial difficulties, conflict with parents, etc. - cause me to neglect my school work.
12. I try to think through a topic and decide what I am supposed to learn from it rather than just read it over when studying.
13. Even when study materials are dull and uninteresting, I manage to keep working until I finish.
14. I feel confused and undecided as to what my educational goals should be.
15. I learn new words or ideas by visualizing a situation in which they occur.
16. I come to class unprepared.
17. When preparing for an exam, I create questions that I think might be included.
18. I would rather not be in school.
19. My underlining is helpful when I review text material.
20. I do poorly on tests because I find it hard to plan my work within a short period of time.
21. I try to identify potential test questions when reviewing my class material.
22. I only study when there is the pressure of a test.
23. I translate what I am studying into my own words.
24. I compare class notes with other students to make sure my notes are complete.
25. I am very tense when I study.
26. I review my notes before the next class.
27. I am unable to summarize what I have just heard in a lecture or read in a textbook.
28. I work hard to get a good grade, even when I don't like a course.
29. I often feel like I have little control over what happens to me in school.
30. I stop periodically while reading and mentally go over or review what was said.
31. Even when I am well prepared for a test, I feel very anxious.
32. When I am studying a topic I try to make everything fit together logically.
33. I talk myself into believing some excuse for not doing a study assignment.
34. When I study, I have trouble figuring out just what to do to learn the material.
35. When I begin an examination, I feel pretty confident that I will do well.
36. When it comes to studying, procrastination is a problem for me.
37. I check to see if I understand what the instructor is saying during the lecture.
38. I do not care about getting a general education, I just want to get a good job.
39. I am unable to concentrate well because of restlessness or moodiness.  a b c d e
40. I try to find relationships between what I am learning and what I already know.  a b c d e
41. I set high standards for myself in school.  a b c d e
42. I end up "cramming" for almost every test.  a b c d e
43. I find it hard to pay attention during lectures.  a b c d e
44. I key in on the first and/or last sentences of most paragraphs when reading my text.  a b c d e
45. I only study the subjects I like.  a b c d e
46. I am distracted from my studies very easily.  a b c d e
47. I try to relate what I am studying to my own experiences.  a b c d e
48. I make good use of daytime study hours between classes.  a b c d e
49. When work is difficult I either give up or study only the easy parts.  a b c d e
50. I make drawings or sketches to help me understand what I am studying.  a b c d e
51. I dislike most of the work in my classes.  a b c d e
52. I have trouble understanding just what a test question is asking.  a b c d e
53. I make simple charts, diagrams, or tables to summarize material in my courses.  a b c d e
54. Worrying about doing poorly interferes with my concentration on tests.  a b c d e
55. I don't understand some course material because I don't listen carefully.  a b c d e
56. I read textbooks assigned for my classes.  a b c d e
57. I feel very panicky when I take an important test.  a b c d e
58. When I decide to study, I set aside a specific length of time and stick to it.  a b c d e
59. When I take a test, I realize I have studied the wrong material.  a b c d e
60. It is hard for me to decide what is important to underline in a text.  a b c d e
61. I concentrate fully when studying.  a b c d e
62. I use the chapter headings as a guide to identify important points in my reading.  a b c d e
63. I get so nervous and confused when taking an examination that I fail to answer questions to the best of my ability.  a b c d e
64. I memorize grammatical rules, technical terms, formulas, etc., without understanding them.  a b c d e
65. I test myself to be sure I know the material I have been studying.  a b c d e
66. I put off studying more than I should.  a b c d e
67. I try to see how what I am studying would apply to my everyday living.  a b c d e
68. My mind wanders a lot when I study.  a b c d e
69. In my opinion, what is taught in my courses is not worth learning.  a b c d e
70. I go over homework assignments when reviewing class materials.  a b c d e
71. I have difficulty adapting my studying to different types of courses.  a b c d e
72. Often when studying I seem to get lost in details and "can't see the forest for the trees."  a b c d e
73. When they are available, I attend group review sessions.  a b c d e
74. I tend to spend so much time with friends that my coursework suffers.  a b c d e
75. In taking tests, writing themes, etc. I find I have misunderstood what is wanted and lose points because of it.  a b c d e
76. I try to interrelate themes in what I am studying.  a b c d e
77. I have difficulty identifying the important points in my reading.  a b c d e
The chart below is used to interpret the scores you calculated on page 2 of this booklet. Each column of the table below is labeled using the three-letter codes. Copy your scores from page 2 into the space provided for each scale. Find your score on the scale directly above each scale code and place an X over this number. Do this for each scale.

For example, if your ATT score was 29, find the number 29 on the set of numbers just above the ATT scale name and place an X over the 29, as shown in the example below.

40  31
35  30
30  X
25  

If you cannot find your exact score, place an X over the next lowest number. When you have finished all 10 scale scores, connect the X’s to see your learning and study strategies profile.

The columns on the far left and far right of the chart show percentiles. You can use these percentiles to look at your scores in relation to other college students answering the same items.

Each of the three-letter codes indicates a category of learning and study strategies or methods. The meanings of the codes are:

ATT • attitude and interest
MOT • motivation, diligence, self-discipline, and willingness to work hard
TMT • use of time management principles for academic tasks
ANX • anxiety and worry about school performance
CON • concentration and attention to academic tasks
INP • information processing, acquiring knowledge, and reasoning
SMI • selecting main ideas and recognizing important information
STA • use of support techniques and materials
SFT • self testing, reviewing, and preparing for classes
TST • test strategies and preparing for tests.
I have reviewed your December 19, 1997 request to incorporate survey information received from some of our LMC students in your doctoral research.

Your proposal appears well designed to elicit data of value both for your dissertation and to the College. Your assurance of confidentiality for students who participate in the research, and your assurance that the study will be explained to participants are essential elements and are considered conditions of the authorization to conduct the research.

Please consider this memo an official authorization for you to conduct the investigation as proposed, with the following additional conditions:

1. Class sections which you are personally responsible for teaching cannot be used for surveys.

2. Student participation in the project cannot be used in any manner to influence a grade.

3. The results of the investigation will be shared with LMC.

Best wishes in your undertaking of this important study. If I can be of assistance, please let me know.

cc:  Dr. Pappas  
     Dr. Larson
December 21, 1997

818 Philip Rd.
Niles, MI 49120

The Human Subjects Research Board
Andrews University
Berrien Springs, MI 49103

To Whom It May Concern:

I am requesting approval from the Human Subjects Research Board to conduct my research at Lake Michigan College, Benton Harbor, MI. I understand that my research qualifies as exempt under the code of Federal Regulations because it is a research project to be conducted in established or commonly accepted educational setting, involving normal educational practices.

I have read the Andrews University summary of the research protocol and am aware of my responsibility to the human population on which I will be conducting my research. I am enclosing a brief description of my research, taken from Chapters 1 and 3 of my actual proposal, which has been approved by my dissertation committee in the School of Education.

With your approval, my research will be conducted during the Winter, 1998 semester at Lake Michigan College. The semester runs from January to May, 1998. The documents related to this research (consent forms, questionnaires, records) will be kept in a locked file in my office at Lake Michigan College for a period of three years, after which I will destroy them.

Thank you for your consideration regarding this matter.

Sincerely yours,

Denise Scameheorn
November 21, 1997

Dr. William Sedlacek
University of Maryland
Shoemaker Building
College Park, MD 20742-8111

Dear Dr. Sedlacek:

I am currently completing my dissertation proposal to examine the non-cognitive predictors of academic "behaviors" and outcomes at Lake Michigan College (LMC). I am primarily concerned in examining the differences between our African-American and Caucasian student populations. LMC is a comprehensive community college located in Benton Harbor, Michigan.

I am employed at LMC as a full-time faculty member in the psychology department. I am a Ph.D. candidate in Educational Psychology at Andrews University, Berrien Springs, MI.

From my research regarding the Non-Cognitive Questionnaire, I am very interested in obtaining a copy of the test and manual. Enclosed is the $20 to cover the costs.

I would also like your permission to use the questionnaire in my research. I look forward to your reply.

Sincerely,

Denise Scameheon
818 Philip Rd.
Niles, MI 49120
(616) 683-2346

Denise Scameheon
818 Philip Rd.
Niles, MI 49120
(616) 683-2346

You have my permission to use the NCOQ (modified as needed) in my research. Good luck. Send me a copy of your final report.
January 18, 1998

TO: Wayne Root

FROM: Denise Scameheorn

RE: Research project

Thank you for agreeing to help me conduct my research! I’m hopeful that this project will provide us with more information about some of the cognitive and non-cognitive variables that affect our students’ success. As I told you, I’m particularly interested in the variables that most affect the success of our African-American students, as compared to Caucasian students.

This project involves the following data:

1. **SURVEY DATA FROM STUDENTS.** There are two surveys and a permission slip for students to fill out. The permission slip and a one-page survey are inside the LASSI survey booklet. Please have students complete all three and return them to you the way they were distributed to them (with the permission slip and one-page survey inside the LASSI survey).

   Please assure students that their surveys are not going to be examined individually. The results will only be examined as part of a larger group. Please let me know as soon as you’ve administered the surveys, and I’ll come and pick them up from you. I will need to get an overall student count by ethnicity from those students that completed the surveys, so that if I need to enlarge my sample I recruit other classes as soon as possible.

2. **ATTENDANCE AND GRADE DATA FROM YOU.** At the end of the semester, I will need attendance records and grade data from you. I am going to look at percentages in the following categories:

   • attendance (percentage of classes attended)
   • assignment grades - if given in your class (overall percentage)
   • percentage of assignments not completed
   • test grades - if given in your class (overall percentage)
   • percentage of tests not taken

   If you don’t mind copying your grade-book records, I’ll do all the calculating for those percentages. If you’d rather share the information with me in some other way, that’s fine as well. I can work out the individual details with you toward the end of the semester.

Thank you once again. I OWE YOU!
REFERENCE LIST


200


VITA

Denise Marie Scameheorn

WORK EXPERIENCE

1985 to present    Lake Michigan College
1997 to present    Psychology faculty
1990 to 1997       Director of Institutional Research
1986 to 1990       Counselor/Director of Career Development
1985 to 1986       Career Development Program Coordinator (grant-funded)

1977 to 1984       Private Industry Council
1983 to 1984       Director of Intake, Assessment & Referrals
1979 to 1983       Career Exploration/Employability Skills Program Director
1977 to 1979       Career Counselor

EDUCATION

2001    Andrews University
         Berrien Springs, Michigan
         PhD in Educational Psychology

1977    Andrews University
         Berrien Springs, Michigan
         MA in Counseling

1975    Andrews University
         Berrien Springs, Michigan
         BA in Music