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Cognitive, Personality, And Demographic Attributes Of Student Change

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COGNITIVE AND NON-COGNITIVE PREDICTORS OF ACADEMIC SUCCESS FOR CONDITIONALLY ADMITTED STUDENTS AT INDIANA STATE UNIVERSITY

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by

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CERTIFICATE OF APPROVAL

DOCTORAL DISSERTATION

This is to certify that the Doctoral Dissertation of

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ABSTRACT

This was a quantitative method research study that looked at conditionally-admitted students at Indiana State University, a mid-sized public institution. The study's purpose was to find factors that could be used to predict the success of conditionally-admitted students.

Quantitative analyses tested the predictive capability of a combination of eight cognitive and non-cognitive variables, some that have traditionally been used to predict success in college (high school grade point average, high school class rank, standardized test scores) and some that have not (motivation, attitude, gender, ethnicity, and geographic region). The study's eight variables together accounted for 14% of the variance in conditionally-admitted students' 1st semester grade point average. The independent variable SAT score was the only significant contributor to the prediction of 1st semester grade point average.

Based on the correlation statistics, the ANOVA results, and the results of the multiple regression analyses the number of predictor variables was reduced to two, high school grade point average and SAT score, and the analyses were run again in an effort to find a significant predictive model. The two variables accounted for 7.7% of the variance in conditionally-admitted students' 1st semester grade point average, and both variables were significant contributors to the prediction model.

While it had been hoped to find a combination of traditional and non-traditional factors that were predictors of conditionally-admitted student success, the results of this

study showed that of the eight variables, the traditionally used factors of high school grade point average and SAT score were the best predictors in this instance.

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INTRODUCTION

As it enters the 21st century higher education is faced with a variety of challenges, including but not restricted to; changes in student demographics, decreasing state and federal support, higher operating expenses, and an increasing number of competitors in the higher education market. Not only is the number of institutions of higher education increasing, but the focus of some of the new institutions is not what might be considered "traditional." Levine (2001) refers to some of these new education providers as "click" (totally online) or "brick and click" (a combination of online and traditional residential) universities. These institutions make it possible to earn a college degree without leaving the comforts of home. As a result, it is becoming harder for some of the mid-sized "brick" institutions to find students, and many colleges and universities are faced with maintaining student enrollments by taking less qualified students, or are having to accept declining enrollments and the problems that may result.

In addition to the situations that are arising for colleges and universities because of the challenges mentioned above, higher education has also come under increased scrutiny from several different interest groups. Students, parents, and government officials have all indicated a desire for colleges and universities to be more accountable for their operations because of concerns over increasing tuition costs and the quality of

the higher education experience. In response, some institutions are making an effort to become more accountable to their various stakeholders and have begun to look for ways to function more efficiently and effectively, while still maintaining their identity and fulfilling their academic mission.

Two areas that institutions of higher education and government officials have focused attention on are the admissions process and retention of students. In fact, two of the goals established for the current reauthorization of the Higher Education Act are to enhance the quality of and access to postsecondary education, and to create a reporting system on retention and completion to be used for accountability purposes (United States Department of Education [U.S.D.O.E.], 2003).

Access is considered to be one of the most important features of higher education in the United States today, but even though it's an important feature, it does not mean that all colleges and universities must have an "open door" policy. Most institutions have academic requirements and standards that must be met for admission. The admissions process used by higher education to determine which applicants are admitted is generally the same from institution to institution with very little variation; a prospective student fills out an application, pays a fee, submits requested materials such as a high school transcript and standardized test scores, and an admissions officer reviews the information to make the decision to admit or deny admission.

While the admissions process may be fundamentally the same from institution to institution, the types of students chosen for admission vary greatly; some colleges and universities are more selective than others. This selectivity in admissions makes retaining students easier for some institutions than it is for others, and at those institutions that are

less selective, retention has become an increasingly important issue. Because of the increased focus on accountability, it is important that institutions of higher education make every reasonable attempt to provide assistance and services to help students succeed and be retained. This should be done not only because of the increased attention that is being given to student success and retention, but also because high retention and graduation rates should be a part of every institution's educational mission. In addition, high retention and graduation rates are good publicity for colleges and universities; those institutions that exhibit high retention and graduation rates will be able to attract more and better students, and it is more cost effective for institutions to maintain enrollment by retaining students already enrolled than to continuously have to recruit ever-increasing numbers of new freshmen.

In an effort to maintain enrollments while at the same time maintaining the quality of the student body and increasing retention, colleges and universities may need to look for other factors to use in the admissions process to help determine not only which applicants have the best chance of success, but which applicants are more "at-risk" for failure and in need of more assistance once admitted. This study will attempt to find a factor or combination of traditionally and non-traditionally used factors that can predict the academic performance of conditionally-admitted students.

Problem of the Study

The problem of the study is to assess traditional and non-traditional factors that might help determine the chances of success or failure of conditionally-admitted students at Indiana State University (ISU). The study will attempt to answer the following research questions:

1. Are high school grade point average (GPA), class standing, and standardized test scores (cognitive factors) and motivation, attitude, gender, race, and Indiana Association of Public School Superintendents (IAPSS) region (non-cognitive factors), or some combination of these factors, a valid predictor of conditionally-admitted student grade point averages at ISU?
2. Are select cognitive factors and non-cognitive factors valid predictors of the total number of 1st semester credit hours completed by conditionally-admitted students at ISU?
3. Are select cognitive factors and non-cognitive factors valid predictors of the percent of 1st semester credit hours completed by conditionally-admitted students at ISU?

Purpose of the Study

The primary purpose of the study is to obtain information that might enable the admissions staff and the staff of the Academic Opportunity Program (AOP) to better identify conditionally-admitted students who are the most "at-risk" at ISU. The results of this study could lead to the use of new criteria to evaluate incoming freshman and help identify those most in need of support services at ISU, or remediation that they could receive at other institutions, such as Ivy Tech State College or Vincennes University, before matriculating to ISU.

A secondary purpose of the study is to expand the literature base on conditionally-admitted students. Assessing the preparedness of students entering higher education and identifying those students most in need of academic support has become an important

topic for colleges and universities to address. There has been a great deal of research on factors other than the ones traditionally used in the admissions process and to identify at-risk students, and whether those factors are valid predictors of college success. Hopefully this study will add to that information base.

Admissions counselors and academic advisors that work with students (once they are admitted) have historically used cognitive factors such as high school GPA, high school class rank, and standardized test scores to identify students who may be in need of academic support. While this method has been somewhat successful, it has not explained why students with low high school GPAs, low high school class ranks, and low test scores have been successful in college. It has also not explained why students with good academic statistics in high school have failed in college.

It is hoped this study will find factors other than those traditionally used that can better evaluate students' academic abilities and identify those students who are in need of additional academic support if they are to be successful.

Sources of Data

The sources of data in this study are the following:

1. Two hundred twenty-six male and female students admitted conditionally to ISU beginning in the fall semester 2002 who attended the Sycamore Advantage Program (SAP) in June 2002.
2. An assessment of the non-cognitive variables of motivation, attitude, race, gender, and IAPSS region as they pertain to college GPA, the percent of credit hours completed, and total credit hours completed.

3. An assessment of the cognitive variables of high school GPA, high school class rank, and standardized test scores as they pertain to college GPA, percent of credit hours completed, and total credit hours completed.
4. The discriminant function analysis procedure to analyze the data.
5. The multiple regression analysis procedure to analyze the data.

Limitations

The following are limitations of the study:

1. Inference may be made only for conditionally-admitted students at ISU.
2. There may be other factors which affect academic success that were not measured.
3. The accuracy of the instrument used to measure motivation and attitude may impact the validity of the results.
4. The honesty of the respondents on the LASSI may impact the validity of the study.

Assumptions

1. There are measurable differences between successful and non-successful conditionally-admitted students.
2. Each student will answer the questions on the LASSI to the best of his or her ability.
3. There are more factors that can be used to explain success or failure in college other than high school GPA, class rank, and standardized test scores.

Chapter 2

LITERATURE REVIEW

This literature review is divided into three sections. Section one looks at historical changes that have occurred in the admissions process and in enrollment in higher education, the increased competition among institutions of higher education for students, changes in student preparedness and demographics, and current admissions practices in higher education. Section two looks at theories of student persistence such as Astin's Student Involvement Theory (1999) and Tinto's Student Integration Model (1987), as well as work done by Bandura (1988) and others on students' self concepts and motivations and the effect they may have on academic performance. Section three looks at admissions practices at ISU, the conditional admissions program and student support programs at ISU, changes in the conditionally-admitted student population, and assessments that have been designed to measure student traits in an educational setting.

Historical Changes in Admissions

The college admissions process has undergone several transformations since the founding of Harvard, the first institution of higher education in the United States, in 1636. These changes have resulted in the process used today at most colleges and universities. Prior to the mid-1800s, college presidents individually interviewed each applicant and a great emphasis was placed on knowledge of the classical languages and

moral character. Religious denominational considerations and the personal bias of the college president resulted in a great disparity in admission standards and practices between institutions (Cremin, 1964). By the mid-1800s, faculty had begun to take over the process of admissions, but there was still a great deal of inconsistency in admission requirements, not only between institutions but even between departments within an institution (Linn, 1989). In the late 1800s, colleges and universities began to try and establish standardized admission requirements, but because American education was so decentralized and high school requirements were so widely varied the standards were often tailored to fit the local high school curriculum (Lazerson, 2001).

In the 1890s, colleges and universities recommended a standard curriculum for all high schools designed to prepare students for college, and in 1895, ten universities collaborated to create the North Central Association (NCA), whose purpose was to provide for the uniformity of curriculum and standards in education (Cabrera & Burkum, 2001). This allowed institutions to utilize a more standardized admissions process that encompassed students from all areas of the country, not just the local region.

In 1900, the College Entrance Examination Board (CEEB) was established and the first "entrance examinations" for applicants were administered at the fourteen private institutions that formed the College Board. That year, 973 college applicants wrote 7,889 papers for the first exams, the purpose of which was to test knowledge of specific subjects but not to determine an applicant's scholastic aptitude (Linn, 1989). Later, in the 1920s, the Scholastic Aptitude Test (SAT) was developed for the purpose of assessing an applicant's ability to be successful in college, and it has become one of the leading standardized tests used by college admissions offices to evaluate applicants. The test was

modeled after IQ tests developed by Binet and was derived from the Army Alpha test designed by Brigham, a Princeton University psychologist. It was "designed to measure aptitude, or innate mental ability" and was given to approximately 8,000 college applicants in 1926 (Gose & Selingo, 2001). Harvard University found a use for it as a scholarship test in the 1930s (Lemann, 2002), but the SAT became *the* test used to assess students' aptitude in 1940 when the University of California system began to require it for all its college applicants (Gose & Selingo). Since then the SAT's popularity has continued to grow: prior to World War II the test was given to only five to ten thousand people a year (Lemann), but the number now taking it has grown to over two million (College Board, 2003).

In the late 1950s, another standardized test, the ACT Assessment, was developed by the American College Testing (ACT) Program, Inc. According to the ACT website, the test's purpose is "to assess students' general educational development and their ability to complete college-level work." The ACT has also become widely popular and was administered to over 1,100,000 students in 2002 (www.act.org/aap/index/html).

Most college admissions offices place a great deal of importance on standardized test scores, but as the number and the type of students taking the SAT and ACT have increased and diversified, the average scores for both tests have begun to decline. In a 1961 study of the SAT, Wilks (1961) concluded that changes in the educational environment in the twenty years preceding his report had led to a major change in the SAT test-taking population. Wilks report states that "college admission officers need assurance that trends in mean SAT scores reliably reflect trends in academic quality of admitted students." To maintain this assurance, the sections of the SAT are "equated" and

"scaled" back to previous forms of the test in hopes that the test will remain constant and that the changes in scores reflect changes in the academic aptitude of the test takers.

SAT scores experienced their greatest decline during the period of 1963 to 1980, with a fifty point drop in mean verbal scores and a thirty point drop in mean math scores (Dorans, 2002). Great emphasis has been and is still placed on state and national averages of the SAT: Former Secretary of Education Bill Bennett stated that he believes the decline in SAT scores is an indication of the poor job being done by public education in some areas of the country. What he glossed over in his criticism of public education is the fact that in states with high SAT averages, only about 9% of eligible students are taking the test, while in states with low SAT averages nearly 70% of eligible students are taking it. Also, the overall number of high school students taking the test has steadily increased, and indications are the more students who take the test, the lower the average. Finally, even though Bennett believes the declining scores are an indicator of the job being done by the public education system; developers of the SAT have repeatedly stated they were not trying to design a tool to measure school effectiveness when they created the test (Houston, 1994).

Changes in Students

After World War II higher education experienced a great influx of students as many former servicemen took advantage of the Serviceman's Readjustment Act of 1944, more popularly known as the G.I. Bill. The G.I. Bill was an effort to keep returning servicemen from flooding the job market after World War II. Through it, money was made available to them for college. The program was a great success: from 1945 to 1949 around 2,200,000 ex-soldiers enrolled in college rather than return immediately to the

workforce (Freeland, 1992), further increasing and diversifying the participants in higher education.

Throughout the 1950s and 60s, college enrollments continued to rise, increasing from 2.3 million in 1950 to 8.5 million in 1970. Not only did enrollments increase during this time, but there was also a shift in away from private colleges and universities towards public institutions. In 1950 the percent of students enrolled in public and private institutions was split approximately fifty-fifty. By 1970, however, enrollment in public institutions accounted for 75% of the total enrollment in higher education (Trow, 1988).

Since 1970, the college student population has changed a great deal in many ways. That year about one fourth (27%) of the college student population was age twenty-five or older; by 2002, 40% of the college student population was twenty-five or older. During the same period, part-time enrollment also increased, from 32% to 40% (National Center of Educational Statistics [NCES], 2004). Today's student population is made up of a greater number of "non-traditional" students who are working more hours and enrolling in fewer classes.

In the book *When Hope and Fear Collide* (Levine & Cureton, 1998), the authors discuss other ways that today's college students are unlike their predecessors, pointing out changes in their attitudes caused by the changes in average student age and enrollment status. Levine and Cureton's research indicates that today's incoming freshmen are from much different backgrounds both academically and socioeconomically than the freshmen of twenty years ago, and they compare the changes taking place in students today to those changes that occurred in the United States during the Industrial Revolution.

Among changes in attitude, they discuss an increase in the consumer mentality exhibited by students in higher education. Today's older students who are enrolled part-time in classes want their institution to operate more like a business, which is different from the relationship that undergraduates have traditionally had with their colleges and universities. Another change being caused by the increased consumerism on college campuses is in the political environment. The authors state that while students' power in governance in higher education has increased, there has been a decreasing desire on the part of the students to become involved. The 1978 Student Affairs Survey showed that undergraduates were voting in campus elections on average at a rate of 26 to 30 %, but by 1997 the average voting rate had declined to 11 to 15 % (Levine & Cureton, 1998).

Levine and Cureton also point out a change in students' desire for autonomy. At the same time that the decrease in student interest in campus governance was occurring, there was an increase in the desire for student autonomy. The authors believe this again illustrates the increased consumerism in today's students, they expect from higher education what they expect from any business they patronize: give us what we want with as few hassles and headaches as possible.

Keller (2001) addresses changes in student demographics that he feels are also affecting higher education in *The New Demographics of Higher Education*. He states that colleges and universities keep a close watch on the U.S. Bureau of Census projections. They keep track of the projected increases and decreases in the eighteen to 24 year-old populations, and then plan accordingly based on that information. He points out that while some states will enjoy an increase in high school graduates over the next several years, the increase will not be enjoyed nationwide. Arizona, California, Nevada,

and Texas are projected to have increases of around 40% in their eighteen to twenty-four-year-old populations from 1995 to 2015, while Iowa, Kentucky, Maine, and West Virginia may have decreases in the same age group over the same period of time. He also discusses changes that will impact higher education that may not be as easily recognized as the changes in the eighteen to twenty-four-year-old population, such as: changes in ethnic backgrounds in student populations, the increase in the non-traditional student population, and changes in family life.

Admissions Practices

While the factors of age and work status mentioned earlier are not usually considered in the higher education admissions process, there are several factors that can be and are taken into consideration in the general formula used by colleges and universities. The "top" factors that are considered in the process are: grades in college preparatory classes, grades in all courses, class rank, and standardized test scores. Other factors, considered "tip" factors, are: teacher/counselor recommendations, written essays or writing samples, and interview results. The 2003 National Association for College Admissions Counseling (NACAC) survey on trends gives a breakdown of how reporting institutions indicated the "top" factors were of "considerable importance" to them in the admissions process: grades in college preparatory courses were the most important (78% of the respondents), standardized test scores were next (61%), followed by GPA in all courses (54%), and finally, class rank (33%) (Hawkins, 2004).

High school GPA is determined by the grades the student earns in high school and is commonly measured on a 4.0 scale, although 6.0, 8.0, 11.0, 11+, 12.0, and 12+ scales are also used (D. Jordan, personal communication, March 6, 2003). Class rank is

typically expressed as a percent and is the student's position in his or her graduating class divided by the number of students in the class. SAT scores are the most common standardized test scores submitted by applicants to ISU, but nationally ACT scores are utilized as much as or more than the SAT (www.act.org/aap/index/html).

It has been debated whether factors such as race or socio-economic status should be considered in the process, and at nearly 20% of colleges and universities they are, but there is an increasing trend towards "color-blind" admissions where these things are not considered and more emphasis is placed on academic ability and achievement (Biskupic, 2003). Whatever factors are included in the formula, they are used by admissions offices in an attempt to admit the best qualified students, students who not only meet the standards for admission but have a realistic chance for success.

Adelman (1999) points out in *Answers in the Toolbox* that colleges whose admissions formulas emphasize standardized test scores, high school GPA, and class rank are more likely to have lower degree completion rates. However, he also studied the factors that contribute to degree completion and concluded that "academic variables are much more potent predictors of college completion" than social background variables. He states that there are psychological and personal reasons for student success, or the lack thereof, in education, but he concludes that these reasons are difficult to study Even so, there is a preponderance of research on non-cognitive variables and their effect on student success from researchers such as Pajares & Shunk (2001), Ting (2003), and Adams-Gaston & Sedlacek (1992), and it is possible that non-cognitive variables are becoming more of a factor and more important to consider.

In *How College Affects Students: Findings and Insights from 20 Years of Research,* Pascarella and Terenzini (1991) wrote

> If admissions decisions are based solely on applicants' academic credentials and their promise for successful grade performance, important opportunities to enroll students with special talents or gifts that would enrich the academic or interpersonal climate of the school may be lost...There is mounting evidence that traditional criteria are not the best predictors of college performance and retention for all students. (p. 649)

The level of an applicant's ability to succeed, which has long been based on cognitive measures, is possibly becoming more difficult for college admissions offices to assess. This could be in part due to the number of students applying to colleges, and to changes in the students themselves.

There are more students entering higher education now than at any other time in history. Not only are there more high school graduates applying for and entering college, but the number of non-traditional (older and part-time) students is also increasing (NCES, 2002). The number of high school seniors entering college climbed steadily from 1960 to 1990, rising from 758,000 to 1,420,000. The percent of high school seniors entering higher education increased from 45% to 60% during the same period, and since 1990 has ranged from 60 to 67%. Projections from the National Center of Education Statistics indicate that the number of high school graduates entering college will continue to climb for the next seven to eight years, and that total enrollment in higher education will approach 18,000,000 by the year 2012.

In spite of projections indicating a continued increase in potential students for higher education over the next several years, a concurrent increase in the number of colleges and universities (NCES, 2003) has made recruitment and admissions a highly competitive process for some institutions. In addition to an increase in competition, there is also concern over the preparedness of graduating high school seniors and non-traditional students. In *The Condition of Education 2004* (NCES, 2004), research indicates that while the same percent (28%) of freshmen students were enrolled in remedial courses in their first year of college each year for the period of 1995 to 2000, the percent of students remaining in remedial classes for a year or more during that period increased from 33% to 40%, indicating that students are taking longer to "catch on" to the level of college work and may not be as well prepared as students in the past.

Some colleges and universities address the under-preparedness of incoming students with "conditional" or "provisional" admissions programs. While these programs may or may not involve remediation, admitting and enrolling students through a conditional or provisional admission's program is usually contingent upon the students agreeing to meet set guidelines or to satisfy certain requirements (i.e. maintaining an acceptable GPA or agreeing to participate in academic support programs like tutoring and mentoring). These types of admissions programs allow institutions to admit students who, in the past, may not have been considered for admission to higher education. This has expanded the pool of potential students, helping some colleges and universities maintain or boost their enrollments.

For those colleges and universities that have provisional or conditional admissions programs, it is important that they attempt to admit students who have a realistic chance

of success. It is also important to provide these students with the support and services they need to help them succeed and continue as students. This should be done for ethical as well as fiscal reasons. Retaining students (i.e., keeping them enrolled, in good academic standing, and progressing toward a degree) has become an important issue at most colleges and universities. In addition to the focus on retention, graduation rates are being used as a measuring stick to determine the effectiveness of institutions and have been getting more attention, especially low graduation rates. The Committee on Education and the Workforce issued a press release on July 13, 2004 concerning low graduation rates, especially among minority and low income students. The release reinforced the desire for increased accountability from higher education concerning access and graduation rates.

Colleges and universities spend a great deal of energy to try and put a positive slant on low four- or six-year graduation rates. This process usually involves claims that providing access and having high graduation rates do not necessarily go together, and these claims may have some basis in fact. The Center for Equal Opportunity (CEO) conducted a study in 2001, and one of the conclusions reached was that students who gain admission to colleges and universities for reasons other than their academic preparation will have greater trouble earning their degrees than students who meet higher academic standards for admission (Lerner & Nagai, 2001).

Research on Student Persistence

The changes experienced by students as they go through college vary greatly, and events that affect one student in a positive manner may impact another student negatively. For years researchers have looked for ways to explain how students develop

as they progress through the educational experience and why some students are successful while others with similar characteristics are not. There are many theories that deal with student development resulting from involvement in higher education, and these theories often involve components that correlate to the motivation and the attitude of the student. While no one theory may be capable of explaining every situation that those working with students in higher education may encounter, when used in conjunction with current practices these theories may help colleges and universities gain a better understanding of what students are going through and help to develop interventions aimed at assisting students.

Astin's Theory of Student Involvement

Astin (1999) developed his theory of student involvement in response to his exasperation at the way he felt students were being treated in higher education. In his opinion, the various policies and programs at colleges and universities were at the input end of a "black box" (the student), and the GPA and standardized test scores that resulted from the policies and programs he regarded as the output end, with little being done to attempt to understand what happened to make some students successful and others fail. He believed there was a missing element that could be used to explain how the educational programs and policies at an institution were translated into achievement and development.

The theory Astin developed has five basic postulates:

1. Involvement refers to the investment of physical and psychological energy in various objects. The objects may be highly generalized (the student experience) or highly specific (preparing for a chemistry exam).

2. Regardless of its object, involvement occurs along a continuum; that is, different students manifest different degrees of involvement in a given object, and the same student manifests different degrees of involvement in different objects at different times.
3. Involvement has both quantitative and qualitative features. The extent of a student's involvement in academics, for instance, can be measured quantitatively (how many hours the student spends studying) and qualitatively (whether the student reviews and comprehends reading assignments or simply stares at the textbook and daydreams).
4. The amount of student learning and personal development associated with any educational program is directly proportional to the quality of student involvement in that program.
5. The effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement.

The Input-Environment-Output (I-E-O) Model developed and used by Astin to study student development is presented in Figure 1.

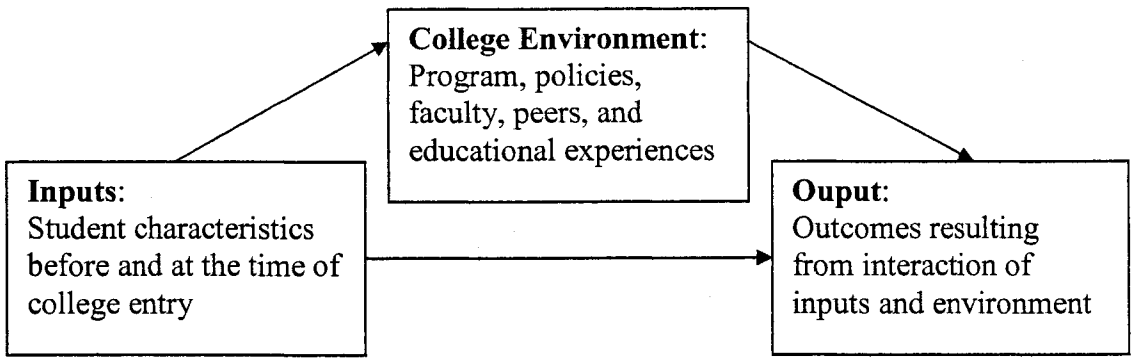

Figure 1. Astin's I-E-O Model

Astin's theory of student involvement resulted from a longitudinal study he conducted in an attempt to identify factors in the college environment that affected student persistence. The study indicated that the factors which showed a positive relationship to students remaining in college were factors that would also increase student involvement, factors such as: living in an on-campus residence, joining a fraternity, participating in sports, and participation in professor's undergraduate research projects. These activities decreased the chances of a student dropping out of school and, according to Astin, since his involvement theory focuses on the motivation and behavior of the student, institutional practices and policies can be judged by the degree of involvement they make available to students (Astin, 1999).

Tinto's Model of Student Retention

Vincent Tinto developed a model of retention for students in higher education with integration as its central theme. His theory states that whether a student is retained or drops out is strongly predicted by the amount of academic and social integration exhibited by the student (Tinto, 1975, 1987). Tinto's Student Integration Model is presented in Figure 2.

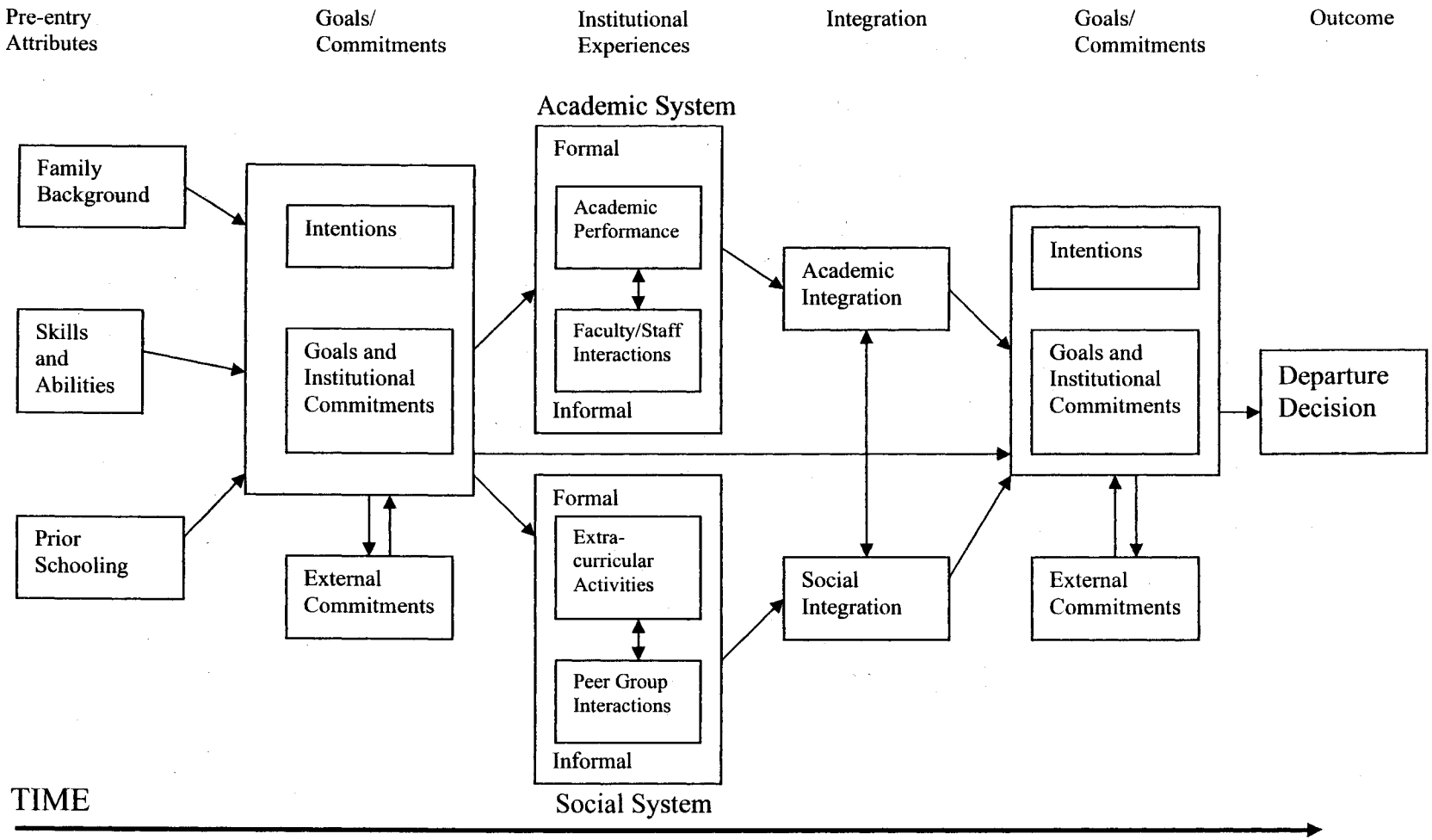

Figure 2: Tinto's Student Integration Model

It is Tinto's research that has led to the use of learning communities by many colleges and universities. In a learning community two or more classes are linked, and the instructors of the linked classes work together to integrate the topics of each and engage the students in activities both in and out of the classroom. Learning communities at ISU are defined as "an intentional restructuring of students' time, credit, and learning experiences, typically through the process of linking courses, which fosters more explicit and various connections (e.g. intellectual, personal, social) among students, among students and faculty, and among disciplines" (www.indstate.edu/fyp/LearningCommunities.htm).

ISU has developed eight goals for its learning communities (Hantzis & Guell, 1998), which are:

1. Introduce the students to the values of liberal studies, the diversity of ideas and people, and the nature and purposes of ISU's general education program.
2. Develop in first-year students the academic skills necessary for persistence and success as well as establishing the high expectations of university study.
3. Foster within students a sense of self and ability to establish academic and personal goals.
4. Develop students' critical thinking skills.
5. Develop each student's sense of a broader learning community through participation in co-curricular activities and service.

6. Develop in students an appreciation for diversity and multicultural perspective.
7. Develop students' connections with other students and faculty through meaningful interactions.
8. Develop within students a sense of Indiana State University as an educationally purposeful, open, just, disciplined, caring and celebrative community.

Tinto supports the development and use of learning communities as a way to more fully involve, or integrate, students, and increase their success. He sees the classroom as the place where the social and the academic meet, especially for commuter students who may only interact with faculty and other students in the classroom. His research showed that learning communities increased students' involvement with each other and the faculty both inside and outside of the classroom and as a result increased retention (Tinto, 1997).

Bandura: Self-efficacy

Bandura of Stanford University is one of the leading researchers in the area of self-efficacy, the belief one has in his or her ability to succeed, and has studied the subject extensively (Bandura, 1988). His theory proposes a social cognitive model of functioning that emphasizes the role that self-belief plays in cognition, motivation, and behavior (Pajares & Schunk, 2001).

In Bandura's self-efficacy theory, individuals possess certain characteristics that enable them to function. These characteristics are the abilities to: symbolize, engage in

forethought, learn vicariously, self-regulate actions and behavior, and make sense of experiences to alter thinking and behavior through self-reflection.

According to social cognitive theory, self-efficacy beliefs affect students' behavior in several ways:

1. By influencing students' choices, students tend to engage in tasks that they feel confident about and avoid those they don't.
2. By determining how long a student will persevere on a task and the effort they will expend.
3. By affecting a student's emotional responses.

Determining a level of self-efficacy would appear to be a good way to assess a student's chances for success, but measuring a student's self-efficacy correctly is important. Pajares (1996a) cautions that if self-efficacy instruments are going to be used to assess academic outcomes they must be domain, or task, specific. He advises against the use of assessments that measure global or generalized perceptions of competence, because these may not be useful when the measures are applied to a specific task or goal, such as succeeding academically.

Motivation Theories

Motivation is defined in Webster's *New Collegiate Dictionary* as "something that causes a person to act", and in the *Encyclopedia Britannica* as "forces acting either on or within a person to initiate behavior" (2005). The general consensus has long been that motivation is an internal state or condition (sometimes described as a need, desire, or want) that serves to activate or energize behavior and give it direction, and in early theories the factors involved in motivation were considered either biological "needs", as

in Maslow's Hierarchy of Needs (1943), or "drives", as in Hull's Drive-Reduction Theory (1943). But many researchers are now beginning to acknowledge that the factors that energize behavior are likely different from the factors that provide for its persistence (Huitt, 2001), and more recent research has led to the belief that motivation is not necessarily the result of "wired-in" needs or drives, but of experiential and situational factors (Greene, 2003).

There are two types of motivation: extrinsic and intrinsic. Pintrich and Schunk (1996) define extrinsic motivation as "motivation to engage in an activity as a means to an end," or in other words to earn some reward or recognition, while intrinsic motivation is "motivation to engage in an activity for its own sake," or working on a task because it is enjoyable. The degree to which motivation affects the success or failure of students is difficult to determine, but it is generally agreed upon that motivation (intrinsic more so than extrinsic) is an important element of education (Ryan & Deci, 2000).

Student motivation has a place in each of the educational and psychological theories developed by Astin, Tinto, and Bandura discussed above. In his theory, Astin defines involvement as "the quantity and quality of the physical and psychological energy that students invest in the college experience", and that together a student's physical actions (active participation through observable behaviors) and mental behaviors (through concentration, commitment, and motivation) define the level of involvement (Astin, 1999). Even though Tinto's studies stress that the greater a students involvement in academic life the greater the chance of persistence, in his "Student Integration Model" he emphasizes the need for compatibility between the institution's goals and the student's goals, motivation, and abilities (Tinto, 1975). And, the concept of self-motivation is

found in Bandura's (1988) function of self-regulatory mechanisms. In these mechanisms are found self-motivators that influence individuals to behave in self-directed ways. Bandura states that beliefs of self-efficacy regulate motivation by shaping aspirations and the outcomes that are expected to result from one's efforts, and that self-directed learning requires motivation on the part of the student. He considers the three main features of motivation to be: selection, activation, and sustained direction of behavior toward certain goals (Bandura).

Self concept-based motivation

In *A self concept-based model of work motivation* (Leonard, Beauvais, & Scholl, 1995), the authors looked for an updated, self concept-based model of motivation to explain the diversity of behavior found in organizational settings which they felt was not explained by traditional models.

1. In the paper the authors discussed five sources of motivation:
2. Intrinsic Process Motivation-the motivation comes from the work itself. The work is enjoyable and the individual feels rewarded simply by performing the task.
3. Instrumental motivation-the motivation comes from the belief that the behaviors engaged in will lead to certain (hopefully positive) outcomes.
4. External self concept-based motivation-the motivation is derived from attempting to meet the expectations of others, both to gain acceptance and status.
5. Internal self concept-based motivation-the motivation comes from the need of the individual to achieve higher levels of competency.

6. Goal internalization-the motivation comes from the adoption of attitudes and behaviors because their content is congruent with their value.

In the authors' model, feedback, both task and social, plays a major role in a person's self concept. Whether the self concept is perceived to be either high or low on any trait, competency, or value, it is the consistency of the feedback which determines the strength of these perceptions. The weaker the self concept, the greater the need for either task or social feedback, and thus the stronger the self concept-based motivation.

Vroom's Expectancy Theory

Vroom's expectancy theory of motivation consists of three main factors that attempt to explain how people rationally decide whether to be motivated to continue an activity. These factors are: valence, expectancy, and instrumentality. Valence is the value placed on the reward that results from the activity, expectancy is the belief that efforts are related to performance of the activity, and instrumentality is the belief that performing the activity will result in the reward. In Vroom's theory all three factors must be present, if even one of them does not exist in a situation then there is no motivation to perform the task (Vroom, 1964).

A great deal of research on motivation, its causes and affects, has been done in the educational setting as well as in the workplace. In fact, there has been so much attention given to motivation and education that the American Education Research Association created a special interest group entitled Motivation in Education. The stated mission of the Motivation in Education group is to advance research on motivational processes in education, particularly by exchanging ideas and perspectives, and by developing practices and interventions to improve learner motivation (Motivation in Education, 2005). The

organization's website contains links to several areas of interests dealing with motivation in education, including journals, graduate programs, and research centers.

Admissions at Indiana State University

Over a period of five years, from the fall semester 1997 to the fall semester 2002, enrollment at ISU rose from 10,970 students to 11,714, an increase of around 7%. This increase in students did not necessarily come easy, and much of it has been the result of increased enrollment in distance education courses and programs that work with students who would not be considered traditional college students. During the same five year period in which enrollment increased, the percent of new students admitted from the lower 50th percentile of their graduating class also increased, from 34% to 42%, while the percent of new students admitted from the upper 25th percentile decreased from 38% to 25% (Office of Strategic Planning, Institutional Research and Effectiveness [OSPIRE], 2003). These changes may be an indication of how competitive college admissions area is becoming and how the need to look at alternative admissions factors or standards is becoming more important.

ISU has had a conditional admissions program for "at risk" students since 1972, before the University had concerns about declining enrollments. The conditional admissions program's purpose is to provide those students deemed most in need or "at risk" with support services to help them be successful. Originally called the Learning Skills Center, the name of ISUs conditional admissions program was changed to the Academic Opportunity Program (AOP) in 1994. Students admitted to the AOP are offered and expected to make use of support services available from the Student Academic Services Center (SASC), services provided to them at no extra charge. These

services include tutoring, peer mentoring, and supplemental instruction. The students are tracked by the staff of the SASC and are contacted at various times during the school year to discuss their academic progress. Continued enrollment for a student in the AOP is based on their GPA, and they are allowed to declare a major after they have completed their first semester if they are in good academic standing.

Typically, AOP students rank in the lower 50th percentile of their graduating class. They also usually exhibit lower high school GPAs and standardized test scores than non-conditionally admitted freshmen. Students admitted conditionally are subject to the same retention guidelines as non-conditionally admitted students, but the conditionally-admitted students are tracked more closely and contacted more frequently.

Support Programs

Since 1994 the SASC has increased the number of support programs it offers to assist not only AOP students, but in the case of the tutoring program, any student admitted to ISU and enrolled in classes. Most colleges and universities offer some form of tutoring programs, some run by the institution and some run by individual departments. At ISU, tutoring is available for approximately 60% of the freshman level general education classes, and tutoring for upper level classes can be provided if the demand is great enough. The tutoring program utilizes peer tutors who are juniors and above and who meet certain academic standards. The tutors are hired and trained by the SASC, and they are paid by the Center so there is no charge to the students using the service. Brad Byers, the SASC Tutoring Coordinator, estimates that students who utilize tutoring will realize on average a quarter to half a letter grade increase in their GPA (B. Byers, personal communication January 18, 2005).

The SASC also provides a peer mentoring program for 1st semester freshman AOP students, and returning AOP students who have an overall ISU GPA less than 2.00 and are on academic probation. The 1st semester freshman AOP students are selected for the program through a combination of factors including high school GPA and class rank. Those students deemed most "at risk" are selected to participate in the mentoring program and assigned a mentor. Many of the mentors are former AOP students themselves who have been academically successful. Every fall semester approximately half of the incoming freshmen AOP students are selected for the mentoring program. Mentors meet with the students assigned to them on an individual basis once a week to review the student's progress and to discuss any problems the student may have, whether academic or not. Statistics support the continuation of the mentoring program; students who participate in the program earn on average a 1st semester GPA that is three to four tenths of a point higher than students who do not participate (Fowler, 2005).

A third program offered by the SASC, and the one most recently instituted by the Center, is supplemental instruction. Supplemental instruction was developed at the University of Missouri at Kansas City in 1973 (Hensen & Mack, 2003). Supplemental instruction at ISU is offered for classes that have been identified as "high risk". These classes typically have a high failure or withdrawal rate (30% or more). The supplemental instructors (SI's) are students who have taken the class in a previous semester and earned an A. The SI attends the class lectures and works with the professor in charge of the class to design a second lecture that is conducted by the SI one to two evenings each week. The program is available to any student enrolled in the class, and they may attend each supplemental instruction session or only the ones they feel they need to attend.

Changes in the AOP Population

From fall semester 1997 to fall semester 2002, the number of students in the AOP grew from 403 to 457. During the same period, the percent of AOP students ranking in the bottom 25th percentile of their graduating class increased from 24% to 40% (OSPIRE, 2003). As the number of AOP students increased and their average class rank decreased, the retention of AOP students from their first year to second year decreased, from 70% in 1997 to 58% in 2002 (Tincher, 2002). This decline in retention could in part be a result of the increase in the number of students admitted from below the 25th percentile and partly due to changes in the incoming AOP students themselves.

In spite of changes in the high school demographics of the AOP student population in recent years, the selection process used by the Admissions Office has not changed. There are several factors taken into consideration in making the admissions decision at ISU. These factors include, but may not be restricted to: high school GPA, high school class standing, ISTEP and standardized test scores, and the completion of Core 40 for Indiana residents. While the decision to admit is ultimately based on several criteria, high school class standing is the primary deciding factor in determining whether a student is admitted directly to a major or as an AOP student (D. Jordan, personal communication, March 6, 2003). As a general rule, students graduating in the upper half of their high school class are admitted unconditionally into their major and students graduating in the lower half are admitted conditionally into the AOP, if they are admitted at all.

As competition increases for students, ISU may need to come up with new ways to maintain or increase its student population, but at the same time not compromise the

quality of the student body by admitting students not qualified or capable of being successful. Finding ways to determine whether the students being admitted are capable of being retained is extremely important, and this should be especially true in the case AOP students. In *Toward Resiliency: At-Risk Students Who Make It to College*, Horn and Chen (1997) report the results of a study conducted by Kaufman and Chen that suggest there are certain student, parent, and peer engagement factors that distinguish successful at-risk students from their peers. If this is true and students that exhibit these factors can be identified during the admissions process, then perhaps more can be done to help them succeed.

Predicting Success

There have been several studies conducted to determine if there is a factor, or combination of factors, that could predict the potential for success in students entering college. Some of these studies have looked at cognitive factors. Examples of these are studies conducted by the College Board in 2000 and 2001, and by the Woodrow Wilson School of Public and International Affairs that looked at the predictive ability of the SAT (College Board, 2000, 2001; Rothstein, 1993). Other studies involving cognitive factors have looked at high school GPA and class rank (Perrin, 1991) and type of high school curriculum (Adelman, 1999) as predictors of success.

There have also been studies that researched non-cognitive factors and their predictive ability. Age, gender, race, and demographic region are just a few of the factors that have been looked at in other studies for their predictive ability for academic success (Adams-Gaston & Sedlacek, 1992; McGrath & Braunstein, 1997; Spitzer, 2000).

There are several assessments that have been developed to look at non-cognitive factors that may affect, and perhaps predict the success of college students. The Non-cognitive Questionnaire R-2 (NCQ R-2) was developed by Sedlacek and Ting (Sedlacek, 1989) to assess psychological aspects of students that influence college performance and measures eight non-cogitive dimensions: positive self-concept, realistic self-appraisal, support of academic plans, leadership, ability to deal with racism, long range goals, academic familiarity, and community involvement. The College Student Inventory (CSI) developed by Noel-Levitz (www.noellevitz.com/NLCOM) is used to identify areas where students may be at risk and may need to seek help. The five scales on the CSI are: academic motivation, social motivation, general coping skills, receptivity to support services, and initial impressions of the institution.

In light of the increase in the total number of AOP students and the number of AOP students ranking below the 25th percentile in their high school class, ISU needs to conduct research to see whether the traditional factors used in admissions decisions are adequate for this population. The purpose of this study is to look at the predictive ability that cognitive and non-cognitive factors have for conditionally-admitted students' success, measured in terms of their college GPA and percent of credit hours completed. The cognitive factors that will be studied are: high school class standing, high school GPA, and standardized test scores. The non-cognitive factors to be studied are motivation and attitude. This study will use quantitative methods to establish a regression formula using data gathered by the ISU Admissions Office and the Learning and Study Strategies Inventory (LASSI).

Chapter 3

PROCEDURE

The design of this study is to assess factors which predict whether conditionally-admitted students at ISU would be successful or not. The following procedures are discussed in this chapter: 1) Description of the sample, 2) Description of instruments used, 3) Method of data collection, 4) Treatment of data, 5) Analysis of data.

Description of Sample

The sample was obtained from the three hundred forty-seven students conditionally-admitted to ISU the fall semester of 2002. A total of two hundred and eighty-six of the conditionally-admitted students enrolled in classes, and conditionally-admitted students who enrolled in classes and attended the ISU Sycamore Advantage Program in June, 2002, a total of two hundred twenty-six, were administered the LASSI. The demographic breakdown of the enrolled, conditionally-admitted students who completed the LASSI was; 140 (62%) men, 86 (38%) women; 202 were classified as white (89%), 24 (11%) were classified as non-white; 93 (41%) of the students ranked in the lower 25th percentile of their high school graduating class, 124 (55%) of the students ranked between the 25th and 50th percentile, and nine (4%) of the students ranked above the 50th percentile.

Fifty-four students who completed the survey withdrew from school during the fall semester of 2002 and another twenty-eight were missing one or more of the other factors used in the study: high school GPA, class rank, standardized test scores, and IAPSS region. These eighty-two students were excluded from the study, resulting in one hundred forty-four students in the sample. The demographic breakdown of the sample was: 86 (60%) men, 58 (40%) women; 128 (89%) white, 16 (11%) non-white; 48 (34%) ranked below the 25th percentile, 94 (65%) ranked between the 25th and 50th percentile, and 2 (1%) ranked over the 50th percentile of their graduating class in high school.

Instrumentation

The LASSI was selected as an instrument because it assessed non-cognitive characteristics that have been correlated with the academic success of students. The LASSI was developed in 1986, at the University of Texas by Weinstein. Its purpose is to give meaningful and useful information to students about their study patterns and to improve student retention by providing a basis for remediation. It is administered to incoming AOP students who attend the University's summer orientation and registration program, Sycamore Advantage.

The LASSI is composed of 80 items which assess ten non-cognitive scales and takes fifteen to twenty minutes to complete in paper and pencil format. The responses are given on a 5 letter Likert type scale; a=not at all typical of me, e=very much typical of me. The ten, non-cognitive scales assessed are

- Attitude. Assesses how clear the students are about their own educational goals and how important or worthwhile school is to them.

- Motivation. Assesses students' diligence, self-discipline, and willingness to work hard.
- Time Management. Assesses students' use of time management principles for academic tasks and how well organized they are.
- Information Processing. Addresses several sub-areas, including the use of mental imagery, verbal elaboration, comprehension monitoring, and reasoning.
- Test Strategies. Assesses the students' approach to preparing for and taking tests.
- Anxiety. Measures the degree to which students worry about their performance and how easily discouraged they are.
- Concentration. Assesses students' ability to pay close attention to academic tasks, whether they are easily distracted.
- Selecting Main Ideas. Assesses students' ability to pick out important information for further study, i.e. can they identify key points in lectures and texts?
- Study Aids. Assesses the degree to which students create or use support techniques or materials to help them learn and remember new information.
- Self Testing. Assesses how well students monitor their comprehension, i.e. do they review the content of reading materials and before taking tests?

The LASSI is the result of nine years of research, development, and testing. Estimates of internal reliability for the ten scales measured by the LASSI range from .68 to .86, and test-retest correlations (after a four week period) range from .72 to .85. The LASSI User's Manual discusses a number of approaches that have been used to look at the validity of the instrument, including: comparing the scaled scores to others tests

measuring similar factors, validating the scales against actual performance measures, and repeated tests of user validity.

Method of Data Collection

For each student participating in the study, the ISU Office of Admissions and Registrar's Office provided the following information: high school GPA, high school rank, and standardized test scores. ACT scores were converted to SAT scores based on information provided by the Office of Admissions.

In addition, the Registrar's Office provided the following information on students' academic performance at ISU: semester GPAs, number of credit hours attempted, and number of credit hours completed.

Independent Variables

The independent variables consisted of three cognitive and five non-cognitive variables. The cognitive factors studied were: high school GPA, class standing, and standardized test scores. This information was obtained from application materials required for admission to the University. Students in the sample who were missing any of the three cognitive factors in their admission information were excluded from the study. The non-cognitive factors studied are student motivation, attitude, gender, race, and IAPSS region. Data on the non-cognitive factors of motivation and attitude was pulled from the LASSI (appendix A) and data on the non-cognitive factors of gender and race was retrieved from the BANNER student information system. The IAPSS divides the State of Indiana into eight geographic regions. Supplementary information on how the IAPSS divides the State, and what counties appear in each region is provided in Tables 1

and 2. The BANNER system was used to determine the county of origin of each student and that data was subsequently used to determine the IAPSS region of the student.

Table 1

IAPSS Structure by County

Region 1: Northwest-Fulton, Jasper, Lake, LaPorte, Marshall, Newton, Porter, Pulaski, Starke
Region 2: Northeast-Allen, Dekalb, Elkhart, Huntington, Kosciusko, LaGrange, Noble, Steuben, St. Joseph, Whitley
Region 3: North Central-Carroll, Cass, Clinton, Grant, Howard, Miami, Tipton, Wabash, White
Region 4: West Central-Clay, Fountain, Greene, Monroe, Montgomery, Morgan, Owen, Parke, Putnam, Sullivan, Tippecanoe, Vermillion, Vigo, Warren
Region 5: Central-Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Shelby
Region 6: East Central-Adams, Benton, Blackford, Delaware, Fayette, Henry, Jay, Madison, Randolph, Rush, Union, Wayne, Wells
Region 7: Southwest-Crawford, Daviess, Dubois, Gibson, Knox, Lawrence, Martin, Orange, Perry, Pike, Posey, Spencer, Vanderburgh, Warrick
Region 8: Southeast-Bartholomew, Brown, Dearborn, Decatur, Clark, Floyd, Franklin, Harrison, Jackson, Jefferson, Jennings, Ohio, Ripley, Scott, Switzerland, Washington

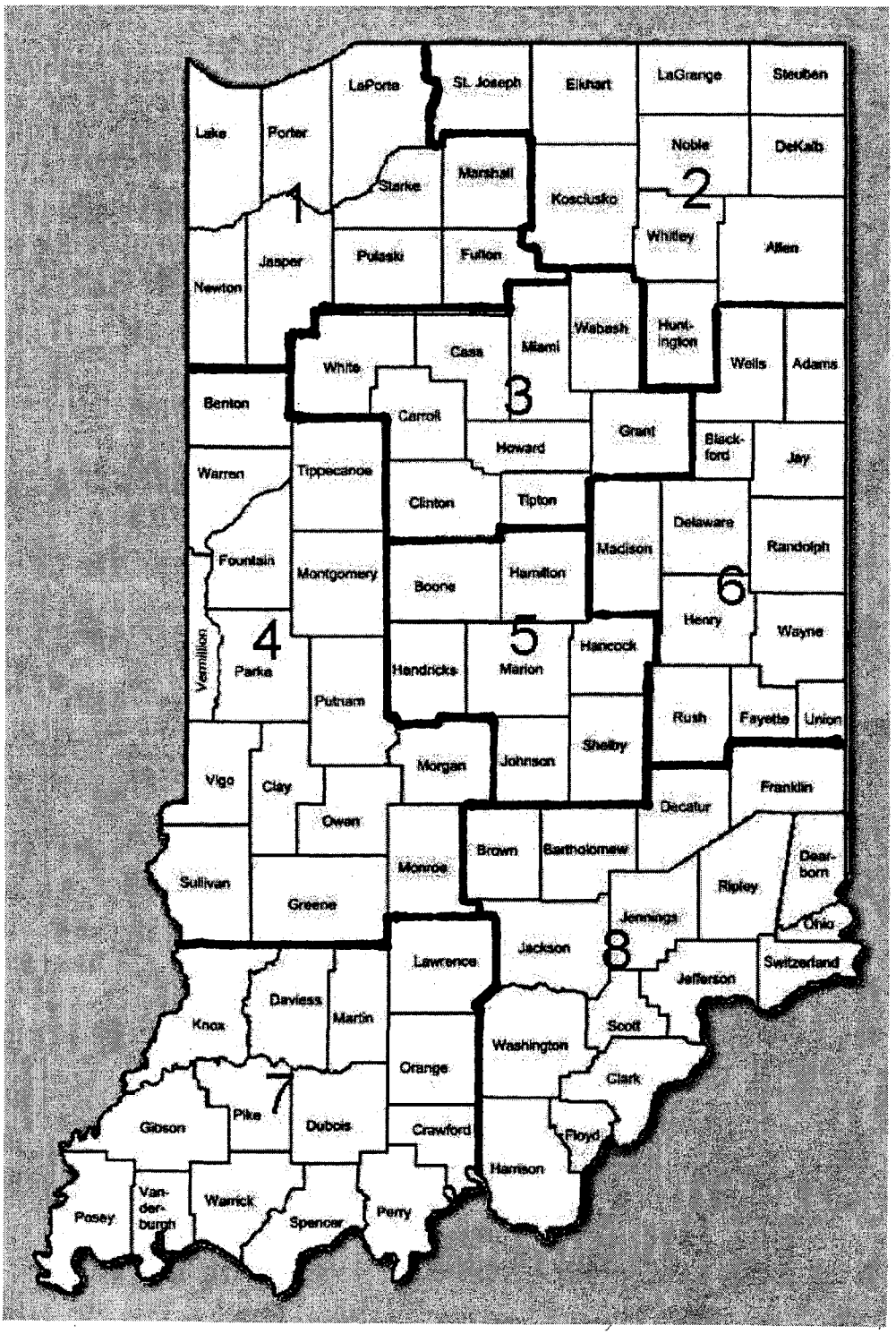

Figure 3: IAPSS Regions

Dependent Variables

The dependent variables are ISU GPA, percent of credit hours completed, and total credit hours completed at the end of the first semester. These were pulled from data files received from the Registrar's Office and the BANNER student information system on August 13th, 2003.

Data Analysis

Data collected from students' responses to the LASSI and admissions information was analyzed using simultaneous multiple regression. This method allows the researcher to assess the relationship between multiple independent variables and one dependent variable. The purpose of multiple regression is to explain the amount of variance in a dependent variable accounted for by each independent variable. The goal is "to select the fewest independent variables necessary to provide a good prediction of a dependent variable where each independent variable predicts a substantial and independent segment of the variability in the dependent variable" (Tabachnick & Fidell, 1989). The researcher ran a multiple regression analysis to see if any factor or combination of factors can be used as a predictor of student "success" and to develop a theory that has the greatest explanatory power.

A limitation to this study is the applicability of the results to other student populations: this study will look at only conditionally-admitted students at ISU. Other limitations are the time between the students taking the survey instrument in June and the start of the fall semester. The researcher will not be able to measure the affect that the experiences a student had after taking the survey in June and prior to beginning school in August might have had on their on their motivation and attitude before beginning classes

at ISU. Finally, the LASSI is not designed to be used to predict student success, it is a diagnostic instrument meant to identify areas that students may want to concentrate on to improve their skills.

Chapter 4

ANALYSIS OF DATA

Findings for Conditionally-Admitted Students

The purpose of this study was to investigate which cognitive and non-cognitive factors might be valid predictors of conditionally-admitted student success at Indiana State University (ISU). This chapter presents the results of the multiple regression analyses conducted to test the predictive capability of the factors chosen for the study.

The population of prospective subjects for this study consisted of 226 freshmen students conditionally-admitted into the Academic Opportunity Program (AOP). All of the students attended the ISU Sycamore Advantage Program (SAP) in the summer of 2002 and were administered the Learning and Study Strategies Inventory (LASSI). Of the 226 potential subjects who completed the LASSI, 82 were discarded: 54 students withdrew from the University before the end of their first semester and 28 students had incomplete information for one or more of the variables being used in the study. Reasons cited by students for withdrawing from the University included: academic difficulty, work conflicts, financial difficulty, health concerns, and "other". Information on the remaining 144 students (64% of the original 226) was used for the statistical analyses.

The non-cognitive, independent variables chosen for this study were: gender, ethnicity, the Indiana Association of Public School Superintendents (IAPSS) region of the student's high school, and the motivation and attitude scores collected from the LASSI. The cognitive, independent variables chosen were: high school grade point average (HSGPA), high school class rank, and Scholastic Aptitude Test (SAT) score. The dependent variables used to measure student success were: ISU GPA, percent of first semester credit hours completed, and total first semester credit hours completed.

In Table 2 a comparison of the means of HSGPA, SAT score, and first semester ISU GPA for fall 2002 non-AOP students, AOP students, and AOP students participating in the study are reported.

Table 2

Means and Standard Deviations of High School GPA, SAT Score, and First Semester ISU GPA for Fall 2002 Non-AOP Students, Fall 2002 AOP Students, and Subjects in the Study

Group	Number	MHSGPA	SD	MSAT Score	SD	MISUGPA	SD
Non-AOP Students	1733	3.01	.45	950	148.8	2.82	1.01
All AOP Students	286	2.28	.16	870	111.8	2.27	0.90
Subjects	144	2.26	.14	869	93.5	2.47	0.78

A comparison of the means of AOP students to non-AOP students reflects the differences between these two groups in academic performance in high school and after one semester at ISU. The mean HSGPA and SAT score of the AOP subjects participating

in the study compare favorably to the means of the entire AOP group and indicate that the subject group was a representative sample of the AOP population in the fall of 2002. Appendix Figures D1 and D2 present the distributions of HSGPA and ISUGPA for the subjects participating in the study and all non-AOP freshmen students from the fall semester 2002.

In Table 3 the means and standard deviations for the subject's HSGPA, SAT score, and ISU GPA broken down by ethnicity are reported.

Table 3

Mean High School GPA, SAT score, and ISU GPA by Ethnicity for Subjects in the Study

	Ethnicity	
	White	Non-white
Number	128	16
MHSGPA	2.26	2.29
SD	.15	.10
MSAT Score	873	829
SD	94	82
MISUGPA	2.44	2.59
SD	.82	.93

In Table 4 the means and standard deviations for the subject's high school GPA, SAT score, and ISU GPA broken down by gender are reported.

Table 4

Mean High School GPA, SAT Score, and ISU GPA by Gender for Subjects in the Study

	Gender	
	Male	Female
Number	86	58
Mean HSGPA	2.24	2.30
SD	.14	.14
Mean SAT Score	891	836
SD	91	87
Mean ISU GPA	2.44	2.51
SD	.82	.72

Table 5 presents the means and standard deviations for the subject's HSGPA, SAT score, and ISU GPA broken down by IAPSS region.

Table 5

Mean High School GPA, SAT Score, and ISU GPA by IAPSS Region for Subjects in the Study

	IAPSS Region							
	1	2	3	4	5	6	7	8
Number	18	9	7	37	40	7	14	12
MHSGPA	2.33	2.26	2.23	2.24	2.22	2.28	2.29	2.36
SD	.13	.14	.12	.13	.13	.07	.14	.21
MSAT Score	876	844	875	864	872	896	852	875
SD	114	81	67	111	89	68	76	79
MISU GPA	2.76	2.27	2.27	2.19	2.54	2.47	2.55	2.82
SD	.55	.72	.97	.84	.87	.89	.60	.38

Table 6 reports the data means and standard deviations of the subjects' high school GPA, SAT score, and ISU GPA broken down by gender for each IAPSS region.

Table 6

Mean High School GPA, SAT Score, and ISU GPA of Subjects by Gender for IAPSS Regions

Region	1		2		3		4	
Gender	M	F	M	F	M	F	M	F
Number	9	9	6	3	3	4	28	9
Mean HSGPA	2.33	2.33	2.23	2.32	2.13	2.31	2.22	2.28
SD	.13	.14	.17	.06	.09	.06	.12	.17
Mean SAT Score	907	847	827	880	913	848	894	774
SD	116	110	39	140	51	69	102	92
Mean ISUGPA	2.61	2.86	2.09	2.63	2.62	2.01	2.24	2.07
SD	.60	.50	.82	.33	.71	1.15	.91	.60
Region	5		6		7		8	
Gender	M	F	M	F	M	F	M	F
Number	22	18	4	3	8	6	6	6
Mean HSGPA	2.20	2.23	2.26	2.31	2.24	2.35	2.31	2.41
SD	.13	.13	.07	.08	.12	.16	.29	.07
Mean SAT Score	900	838	895	897	881	815	882	868
SD	92	75	94	23	66	77	90	73
Mean ISUGPA	2.57	2.51	2.24	2.79	2.60	2.49	2.80	2.83
SD	.96	.77	.94	.89	.46	.80	.35	.44

In table 7 the data means and standard deviations of the subjects' high school GPA, SAT score, and ISU GPA broken down by ethnicity for each IAPSS region are reported.

Table 7

Mean High School GPA, SAT Score, and ISU GPA of Subjects by Ethnicity for IAPSS Regions

Region	1		2		3		4	
Ethnicity	W	NW	W	NW	W	NW	W	NW
Number	15	3	6	3	5	2	36	1
Mean HSGPA	2.34	2.33	2.28	2.26	2.22	2.26	2.23	2.37
SD	.14	.06	.16	.15	.14	.04	.13	NA
Mean SAT Score	890	810	850	833	908	795	866	810
SD	113	115	99	40	43	35	113	NA
Mean ISUGPA	2.62	3.31	2.86	1.69	2.47	1.77	2.20	2.13
SD	.52	.29	.51	.82	.57	1.91	.85	NA
Region	5		6		7		8	
Ethnicity	W	NW	W	NW	W	NW	W	NW
Number	36	6	7	0	14	0	11	1
Mean HSGPA	2.20	2.29	2.28	NA	2.29	NA	2.35	2.46
SD	.13	.11	.07	NA	.14	NA	.22	NA
Mean SAT Score	879	833	896	NA	852	NA	861	1040
SD	92	74	68	NA	76	NA	65	NA

Table 7 continued. . .

Mean ISUGPA	2.46	3.00	2.47	NA	2.55	NA	2.82	2.83
SD	.90	.49	.89	NA	.60	NA	.40	NA

In some instances the number of subjects in a given group is too small to make any comparisons or generalizations, but overall the tables show that the statistics between the subjects for the variables gender, ethnicity, and IAPSS region were similar.

Pearson correlations between the independent variables and the dependent variables are presented in Table 8. All correlations, including the inter-correlations between the independents, are presented in Appendix Table B1. The only significant positive correlations between independent and dependent variables were HSGPA and ISUGPA (.21, $p<.01$), HSGPA and the percent of 1st semester credit hours completed (.16, $p<.05$), HSGPA and the total number of 1st semester credit hours completed (.17, $p<.05$), and SAT score and ISUGPA (.16, $p<.05$).

Table 8

Pearson Correlations between Independent Variables and Dependent Variables

	ISUGPA	ISUPERCENT	ISUTOTAL
Motivation	.07	.02	.07
Attitude	-.05	-.02	.07
High School GPA	.21**	.16*	.17*
High School Rank	.12	.03	.06
SAT Score	.16*	.05	.01

Table 8 continued. . .

Gender	.05	.08	.05
Ethnicity	.06	.00	.00
Region 1	.13	.12	.07
Region 2	-.06	.02	.07
Region 3	-.06	-.03	-.11
Region 4	-.21**	-.14*	-.14*
Region 5	.06	-.06	.00
Region 6	.00	-.06	-.06
Region 7	.04	.08	.08

* Correlation significant at the 0.05 level. ** Correlation significant at the 0.01 level

A simultaneous multiple regression was conducted to determine which, if any, of the eight independent variables discussed previously were able to predict conditionally-admitted student success. Because the IAPSS region information was in the form of nominal data, it was dummy coded into seven non-nominal variables for use in the multiple regression. The decision was made to evaluate the predictive ability of the IAPSS regions after running the regression to determine whether or not to retain that variable and if retained how to treat it. The resulting fourteen independent variables used in the analyses are identified in Table 9 and their regression statistics for ISU GPA are reported. The eight predictor variables together accounted for approximately 14% of the variance in the subjects' first semester ISU GPA as reported in Table 9 and in the model summary in Appendix Table B2. The adjusted R^2 reported in the model summary in Appendix Table B2 and in Table 9 takes into account the amount of variance that could

possibly be the result of chance variations in the independent variables and adjusts for it: typically, the higher the number of independent variables the greater the difference between R^2 and the adjusted R^2. In this analysis the adjusted R^2 indicates that roughly 5% of the variance in the subject's ISU GPA is accounted for by the predictor variables. The results of the analysis of variance (ANOVA) statistics presented in Table 10 indicate that the regression model is not significant.

Table 9

Summary of Simultaneous Multiple Regression Analysis for Cognitive and Non-cognitive Variables Predicting ISUGPA (N=144)

Variable	*b*	*β*	*t*	*Sig.*
Motivation	.013	.081	.800	.425
Attitude	-.019	-.110	-1.076	.284
High School GPA	1.109	.203	1.929	.056
High School Rank	-.005	-.064	-.613	.541
SAT Score	.002	.191	2.164	.032*
Gender	.048	.030	.335	.738
Ethnicity	.160	.065	.728	.478
Region 1	-.154	-.066	-.524	.601
Region 2	-.426	-.133	-1.231	.220
Region 3	-.524	-.145	-1.387	.168
Region 4	-.506	-.284	-1.906	.059
Region 5	-.174	-.100	-.656	.513

Table 9 continued. . .

Region 6	-.364	-.100	-.965	.518
Region 7	-.200	-.076	-.648	.518
Constant	-.828			
R^2=.140 Adjusted R^2=.047				

*p<.05

Table 10

ANOVA Results for Cognitive and Non-cognitive Variables Predicting ISUGPA

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	2.244	14	.875	1.504	.118
Residual	75.002	129	.581		
Total	87.246	143			

Predictors: all independent variables

Dependent Variable: ISUGPA

The research question that was addressed and answered by this analysis was

1. Are high school grade point average (GPA), class standing, and standardized test scores (cognitive factors) and motivation, attitude, gender, race, and Indiana Association of Public School Superintendents (IAPSS) region (non-cognitive factors) valid predictors of conditionally-admitted student grade point averages at ISU?

The regression analysis presented in Table 9 showed SAT score (.032, $p<.05$) to be the only significant predictor of conditionally-admitted student grade point average.

In Table 11 the regression statistics for the predictor variables and the total 1st semester credit hours completed are presented. The predictor variables accounted for 8% of the variance in total 1st semester credit hours completed as reported in Table 11 and in the model summary in Appendix Table B4. The results of the ANOVA statistics presented in Table 12 indicate that the model is not significant.

Table 11

Summary of Simultaneous Multiple Regression Analysis for Cognitive and Non-cognitive Variables Predicting Total 1st Semester Credit Hours Completed

Variable	*b*	*β*	*t*	*Sig.*
Motivation	.013	.019	.184	.854
Attitude	.013	.019	.177	.860
High School GPA	3.841	.168	1.541	.126
High School Rank	-.021	-.065	-.597	.551
SAT Score	.001	.035	.380	.704
Gender	.013	.002	.021	.984
Ethnicity	-.204	-.020	-.215	.830
Region 1	-.781	-.079	-.611	.542
Region 2	-.141	-.010	-.094	.925
Region 3	-2.656	-.175	-1.621	.107

Table 11 continued. . .

Region 4	-1.874	-.251	-1.628	.106
Region 5	-.969	-.133	-.845	.399
Region 6	-2.017	-.133	-.845	.220
Region 7	-.591	-.054	-.442	.659
Constant	4.289			

R^2=.080

Adjusted R^2= -.019

Table 12

ANOVA Results for Cognitive and Non-cognitive Variables Predicting Total 1st Semester Credit Hours Completed

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	123.476	14	8.820	.807	.661
Residual	1410.413	129	10.933		
Total	1533.889	143			

Predictors: all independent variables

Dependent Variable: ISUTOTAL

The research question that was addressed and answered by this analysis was

2. Are the cognitive factors and non-cognitive factors valid predictors of the percent of credit hours completed by conditionally-admitted students at ISU?

   The regression analysis presented in Table 11 showed that none of the factors were significant predictors of conditionally-admitted student total credit hours completed.

In Table 13 the regression statistics for the predictor variables and the percent of 1st semester credit hours completed are presented. The predictor variables accounted for 8.4% of the variance in the percent of 1st semester credit hours completed as reported in the model summary in Appendix Table B4 and in Table 13. The ANOVA statistics presented in Table 14 indicate that the prediction model is not significant.

Table 13

Summary of Simultaneous Multiple Regression Analysis for Cognitive and Non-cognitive Variables Predicting Percent of 1st Semester Credit Hours Completed

Variable	*b*	*β*	*t*	*Sig.*
Motivation	-.018	-.004	-.042	.967
Attitude	-.293	-.066	-.623	.534
High School GPA	23.372	.165	1.520	.131
High School Rank	-.222	-.110	-1.017	.311
SAT Score	.020	.092	1.012	.313
Gender	2.298	.071	.761	.448
Ethnicity	-.078	-.001	-.013	.989
Region 1	-3.281	-.054	-.416	.678
Region 2	-4.074	-.049	-.440	.661
Region 3	-10.779	-.115	-1.066	.288
Region 4	-12.121	-.263	-1.707	.090
Region 5	-8.772	-.195	-1.240	.217

Table 13 continued. . .

Region 6	-14.871	-.159	-1.473	.143
Region 7	-3.669	-.054	-.4444	.657
Constant	43.489			

R^2=.084

Adjusted R^2= -.015

Table 14

ANOVA Results for Cognitive and Non-cognitive Variables Predicting Percent of 1st Semester Credit Hours Completed

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	4944.702	14	353.193	.809	.615
Residual	53676.298	129	416.095		
Total	58621.000	143			

Predictors: all independent variables

Dependent Variable: ISUPERCENT

The research question that was addressed and answered by this analysis was

3. Are the cognitive factors and non-cognitive factors valid predictors of the total number of 1st semester credit hours completed by conditionally-admitted students at ISU?

   The regression analysis presented in Table 13 showed that none of the factors were significant predictors of conditionally-admitted student percent of total credit hours completed.

The regression summaries in Tables 11 and 13, and in the model summaries in Appendix Tables B3 and B4, show the adjusted R^2 values for the analyses the independent variables and total 1st semester credit hours completed and percent of credit hours completed. The adjusted R^2 values are negative, which is an indication that the independent variables are so completely unrelated to the dependent variables in this regression that the adjustment for chance variation is resulting in a negative adjusted R^2 value.

Reducing the Number of Variables

The ANOVA statistics presented in Tables 10, 12, and 14, and in Appendix Tables B2, B3, and B4 show that none of the models using all of the independent variables were statistically significant. Based on the ANOVA information, the Pearson correlation statistics presented in Table 8 and in Appendix Table B1, and the results of the multiple regression analyses presented in Tables 9, 11, and 13, the decision was made to reduce the number of independent variables in an attempt to find a significant model for each of the research questions. Because of its significance in the first model, SAT score was retained. Since HSGPA was the variable closest to significance in all three models, it also was retained. The results of the simultaneous multiple regression analyses using HSGPA and SAT score are presented below.

In Table 15 the regression statistics for the predictor variables HSGPA and SAT score and the independent variable ISU GPA are presented. The predictor variables accounted for 7.7% of the variance in 1st semester ISU GPA as reported in Table 15 and in the model summary in Appendix Table C1. Both HSGPA (.006, $p<.01$) and SAT score (.026, $p<.05$) significantly contributed to the prediction of 1st semester ISU GPA. The

ANOVA results presented in Table 16 show the prediction model using HSGPA and SAT score to predict ISU GPA was statistically significant, $F(2, 141)=5.859$; $p<.05$.

Table 15

Summary of Simultaneous Multiple Regression Analyses for HSGPA and SAT Score Predicting ISUGPA

Variable	*b*	*β*	*t*	*Sig.*
High School GPA	1.233	.226	2.780	.006**
SAT Score	.002	.183	2.252	.026*
Constant	-1.652			
R^2=.077 Adjusted R^2= .064				

*$p<.05$. **$p<.01$.

Table 16

ANOVA Results for HSGPA and SAT Score Predicting ISUGPA

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	6.695	2	3.347	5.859	.004
Residual	80.551	141	.571		
Total	87.246	143			

Predictors: HSGPA, SAT

Dependent Variable: ISUGPA

Table 17 presents the regression statistics for the predictor variables HSGPA and SAT score and the independent variable total 1st semester credit hours completed. The predictor variables accounted for 2.9% of the variance in the total 1st semester credit hours completed as reported in Table 17 and in the model summary in Appendix Table

C2. The regression results in Table 17 show that only HSGPA (.041, $p<.05$) significantly contributed to the prediction of total 1st semester ISU GPA.

The ANOVA results in Table 18 indicate the prediction model using HSGPA and SAT score to predict total 1st semester credit hours completed is not statistically significant.

Table 17

Summary of Simultaneous Multiple Regression Analyses for HSGPA and SAT Score Predicting Total 1st Semester Credit Hours Completed

Variable	*b*	*β*	*t*	*Sig.*
High School GPA	3.397	.172	2.064	.041*
SAT Score	.001	.024	.287	.775
Constant	3.396			
R^2=.029 Adjusted R^2= .016				

*$p<.05$

Table 18

ANOVA Results for HSGPA and SAT Score Predicting Total 1st Semester Credit Hours Completed

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	45.053	2	22.526	2.133	.122
Residual	1488.836	141	10.559		
Total	1533.889	143			

Predictors: HSGPA, SAT

Dependent Variable: ISUTOTAL

Table 19 presents the regression statistics for the predictor variables HSGPA and SAT score and the independent variable percent of 1st semester credit hours completed. The predictor variables accounted for 3.2% of the variance in the percent of 1st semester credit hours completed as reported in Table 19 and in the model summary in Appendix Table C3. Only HSGPA (.042, $p<.05$) significantly contributed to the prediction of the percent of 1st semester credit hours completed.

The ANOVA statistics presented in Table 20 indicate the prediction model using HSGPA and SAT score to predict percent of 1st semester credit hours completed is not statistically significant.

Table 19

Summary of Simultaneous Multiple Regression Analyses for HSGPA and SAT Score Predicting Percent of 1st Semester Credit Hours Completed

Variable	*b*	*β*	*t*	*Sig.*
High School GPA	24.191	.171	2.054	.042*
SAT Score	.015	.069	.830	.408
Constant	23.516			
R^2=.032 Adjusted R^2= .018				

*$p<.05$

Table 20

ANOVA Results for HSGPA and SAT Score Predicting Percent of 1st Semester Credit Hours Completed

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	1862.585	2	931.292	2.314	.103
Residual	56758.415	141	402.542		
Total	58621.000	143			

Predictors: HSGPA, SAT

Dependent Variable: ISUPERCENT

Chapter Summary

The purpose of this study was to investigate the predictive capability of several independent variables for conditionally-admitted student success. Multiple regression analyses demonstrated that the factors of HSGPA and SAT score were the best predictors to be found in the group of independent variables looked at in this study.

A summary of the study and the implication of the findings are discussed in Chapter 5. Conclusions, and recommendations for further study, are also included.

Chapter 5

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

A summary of the study is presented in this chapter. Findings are reported from the results of the research. Conclusions, discussion, and recommendations for further research are also included in this chapter.

Summary of the Study

This study was designed to look at factors related to conditionally-admitted students at Indiana State University (ISU) that may be used to predict success or to identify students who are in need of extra help. Research questions were formulated to determine if specific predictor variables of success existed, if these predictor variables were significant, and if these variables could be used to predict the success of conditionally-admitted students. Multiple regression and ANOVA statistics were computed on the data. The students included in this study were freshmen who were conditionally-admitted to the University for the fall semester 2002, who attended the summer Sycamore Advantage Program in June 2002, and who were administered the Learning and Study Strategies Inventory (LASSI) during the Sycamore Advantage Program.

Summary of the Findings

The research questions for this study that were answered by the correlation and multiple regression analyses were:

1. Which of the eight predictor variables: high school grade point average, high school class rank, standardized test scores, motivation, attitude, gender, race, and Indiana region are valid predictors of conditionally-admitted student grade point averages (ISUGPA) at ISU?

   In the multiple regression analysis using all of the independent variables, SAT score was the only variable that significantly contributed to the prediction of ISUGPA (.032, $p<.05$), but a significant prediction model was not obtained. After reducing the number of independent variables to two, HSGPA and SAT score, a significant prediction model was obtained (.004, $p<.01$).

2. Which of the cognitive and non-cognitive factors are valid predictors of the total number of 1st semester of credit hours completed by conditionally-admitted students at ISU?

   In the multiple regression analysis using all of the independent variables, none were significant predictors. In a multiple regression analysis using HSGPA and SAT score, HSGPA was significant (.041, $p<.05$), but the prediction model was not significant.

3. Which of the cognitive factors and non-cognitive factors valid predictors of the percent of 1st semester credit hours completed by conditionally-admitted students at ISU?

In the multiple regression analysis using all of the independent variables, none were significant. In a multiple regression using HSGPA and SAT score, HSGPA was a significant predictor (.042, $p<.05$), but the prediction model was not significant.

To answer the above research questions, information regarding conditionally-admitted students at ISU was gathered from the Registrar's Office, from the LASSI, and from the BANNER student information system. Information obtained for each student included in this study consisted of: high school GPA, high school class rank, SAT or ACT score, motivation and attitude scores, gender, ethnicity, home county of residence, ISUGPA, number of 1st semester credit hours completed at ISU, and the percent of 1st semester credit hours completed at ISU. Additional information concerning the entire incoming freshman class of fall 2002 was obtained from the Office of Strategic Planning, Institutional Research and Effectiveness and the Registrar's Office. The information obtained from these resources included mean high school GPA and SAT score, as well as the final, first semester GPAs for all fall 2002 freshmen entering ISU.

Discussion of Findings

In the multiple regression analysis process involving all of the cognitive and non-cognitive predictor variables and ISUGPA a significant prediction model was not achieved (.118, $p<.05$). The predictor variable Scholastic Aptitude Test (SAT) score was the only measure that tested significant in the multiple regression analysis (.032, $p<.05$) for predicting ISUGPA. Finding SAT score as a valid predictor of student success is consistent with studies found in the literature (College Board, 2001; Izumi, 2001; and UniSci, 2002), which indicated SAT was a significant predictor of college grade point

average. This finding is inconsistent with other studies, such as those conducted by Rothstein (1993), and the National Center for Open and Fair Testing (2001) that have found the opposite to be true; SAT score was not a good predictor of college success because it can be greatly influenced by the student's background characteristics.

SAT score did not have the highest correlation to ISUGPA (.16), significant at $p<.05$. The predictor variable HSGPA had the strongest correlation to ISUGPA (.21), significant at $p<.01$. In a study conducted by the University of California (UC) system (Geiser & Studley, 2001), it was found that HSGPA could possibly be considered a better, single predictor of college success than SAT score. This study has led the UC system to consider eliminating the test as an admissions requirement (Kim, 2001). In *Answers in the Toolbox*, Adelman (1999) also found that HSGPA was highly correlated to college success, and in *Predicting success in college: SAT studies of classes graduating since 1980* published by the College Board in 2001, there are several studies cited which report that HSGPA has a strong correlation to college GPA, in some instances stronger than .50.

The cognitive predictor variable high school class rank (HSRANK) had the third highest correlation to ISUGPA (.12). Even though the correlation between HSRANK and ISUGPA was a non-significant correlation, since HSRANK is a function of HSGPA, not surprisingly it had a high correlation with that predictor variable (.54), significant at $p<.01$.

Not one of the non-cognitive predictor variables; motivation, attitude, gender, race, and IAPSS region approached significant correlations for ISUGPA. The non-

cognitive predictor variable, attitude, had a non-significant negative correlation with the dependent variable ISUGPA (-.05).

The multiple regression analysis involving the cognitive and non-cognitive predictor variables and their prediction capability for percent of 1st semester credit hours earned did not yield a significant prediction model (.615, $p<.05$). The predictor variable HSGPA exhibited the only significant correlation to the percent of 1st semester credit hours completed (.16) significant at $p<.05$. The next highest correlation with percent of 1st semester credit hours completed, although non-significant, was exhibited by gender (.08).

The multiple regression analysis involving the cognitive and non-cognitive predictor variables and their prediction capability for total 1st semester credit hours earned also did not yield a significant prediction model (.661, $p<.05$). As with percent of 1st semester credit hours completed, the predictor variable HSGPA was the only independent variable with a significant correlation to total 1st semester credit hour completed, (.17) significant at $p<.05$. The two variables motivation and attitude had the next highest correlation to 1st semester credit hours completed although it was non-significant at .07.

Based on past studies done by Adelman (1999), the College Board (2001), and other research found in the literature, high school GPA and SAT score have a strong predictive capability for student success. Regarding correlation statistics calculated on the study sample showing HSGPA and SAT score with the strongest correlations to the dependent variables, the number of independent variables was reduced to two; HSGPA and SAT score, and the statistical analyses were run again.

In the multiple regression analysis involving the independent predictor variables HSGPA and SAT score, a significant prediction model was achieved with the dependent variable ISUGPA (.004, $p<.01$) as shown in the model summary in Appendix Table C1. Table 15 in Chapter 4 and Appendix Table E present the standardized coefficients that resulted from the multiple regression analysis. Approximately 8% of the variance in the subjects' ISUGPA was explained by the independent variables HSGPA and SAT score as shown in the model summary in Appendix Table C1.

In the multiple regression analysis involving the independent predictor variables HSGPA and SAT score and the dependent variable total 1st semester credit hours completed a significant prediction model was not achieved as shown in the ANOVA results presented in Appendix Table C2. The independent variable HSGPA was significant (.041, $p<.05$) while the independent variable SAT score was not, as shown in Table 16 in Chapter 4.

In the multiple regression analysis involving the independent predictor variables HSGPA and SAT score and dependent variable percent of 1st semester credit hours completed a significant prediction model was not achieved, as shown in the ANOVA results presented in Appendix Table C3. The independent variable HSGPA was significant (.42, $p<.05$) while the independent variable SAT score was not, as shown in Table 19 in Chapter 4.

Conclusions

This study initially looked at the predictive capability of the three cognitive variables used most often to admit students to college; high school GPA, high school class rank, and SAT score. The only cognitive variable of the three that correlated

significantly to all of the dependent variables in the study; ISUGPA, percent of 1st semester credit hours completed, and total 1st semester credit completed, was high school GPA. In the multiple regression analyses, high school GPA also had the highest predictive ability for all the dependent variables looked at in the study. This indicates that high school GPA could be a useful tool in evaluating the chances of success of conditionally-admitted students at ISU. SAT score had a significant correlation to the dependent variable ISUGPA, but showed little correlation to the other dependent variables, total 1st semester credit hours completed and percent of 1st semester credit hours completed. When used in combination with high school GPA, SAT score may also be a good indicator of success at ISU for conditionally-admitted students. As noted above, there is a great deal of research that supports using the cognitive variables of high school GPA and SAT score as predictors of student success. The analyses used in this study support the use of high school GPA and SAT score to predict ISU GPA, but demonstrated that only high school GPA was a significant predictor of percent of 1st semester credit hours completed and total 1st semester credit hours completed.

The other cognitive variable; high school class rank, and the non-cognitive variables; motivation, attitude, gender, ethnicity, and IAPSS region did not prove statistically significant in predicting any of the variables used to identify student success in the study; ISU GPA, percent of 1st semester credit hours completed, and total 1st semester credit hours completed. While the high school GPA's of the subjects appear to be comparable among students, high school class rank may be a measure too specific to the school a student attends to be comparable among schools. High school class rank was not a valid predictor of conditionally-admitted student success at ISU, and since the

correlations between high school class rank and the dependent variables were so small its usefulness as an indicator of success at ISU is doubtful. That high school class rank is not a good predictor of student success would seem to not be the case at all institutions: studies conducted by the Task Force on Standardized College Admissions Testing at the University of Texas at Austin (2002) and by Perez (2002), and data from Indiana University Purdue University in Indianapolis (Larter, McBride, Plater, Porter, & Watt, 1997) indicate that high school class rank is a strong predictor of student success in college.

This study also looked at the predictive capability of five non-cognitive variables; motivation, attitude, gender, ethnicity, and IAPSS region. It is difficult to draw any conclusions from the analyses of these variables. None of the non-cognitive variables had a significant correlation to the dependent variables, and they exhibited no predictive capability for the dependent variables. There are several possible explanations for the lack of significant correlations. While some studies have found that motivation, attitude, and self-efficacy can be significant in predicting student success (Bandura, 1988; Pajares, 1996b; Ting, 2003), this did not appear to hold true for the conditionally-admitted students participating in the study. Possible explanations for this are; the instrument used to measure motivation and attitude may not be accurately assessing motivation and attitudei in a way useful to this study or, the self-reported information collected by the LASSI may not be reliable, a problem that has been encountered in other studies using self-reported data (Pascarella, 2001).

Previous research has found that both gender and ethnicity are predictors of student success (Zheng, Saunders, Shelley, & Whalen, 2002), but these factors were not significant in this study.

One thing that may explain this lack of significance is the number of non-white students was too low to get a true measure of the affect ethnicity had on the dependent variables. It may also be true that since the population for this study was conditionally-admitted students as opposed to non-conditionally admitted students, there may be factors at work that caused the results to differ from those in previous studies.

Finally, IAPSS region was not significantly correlated to or proved to be a significant predictor for any of the dependent variables. Instead of using the IAPSS region of each student as an independent variable it may have been better to use the socio-economic status of the students or perhaps some measure of the academic quality of the students' high school. In previous research socio-economic status has been shown to be a predictor of student success (McGrath & Braunstein, 1997), and research has also shown that the level of academic rigor of a student's high school is a predictor of student success in college (Olson, 2002; Nye, Konstantopoulos, & Hedges, 2004). Within each of the eight IAPSS regions there are probably a wide range of socio-economic levels and high schools of varying academic difficulty which resulted in that variable being non-significant. And as stated above, it is possible that there are differences between the conditionally-admitted student population and non-conditionally admitted students that would explain why IAPSS region did not prove to be a significant predictor.

Recommendations from the Study

There are several ideas and recommendations that could be considered as a result of this study. If increasing the retention level and graduation rate of conditionally-admitted students, and unconditionally-admitted students, is a goal of ISU then one recommendation is an evaluation of the admission process. Another is to increase the University's commitment to the support services provided by the Student Academic Services Center (SASC). And finally, creation of a University College or Division at ISU may be a way to address the problem of how to communicate to new freshmen the importance of utilizing support services and disseminating to them information that is important for success in college.

Raise Admission Standards

Conditionally-admitted students at ISU, and all students in general, display a wide variety of characteristics; attitudinally, ethnically, geographically, and in their preparation for and their ability to succeed in college. Admitting students to the University who have the greatest chance of success, and identifying students who may be in need of extra academic support, could be a first step in improving retention. Firmer admission guidelines and policies that are more strictly adhered to might initially decrease the number of incoming freshmen each fall semester, but if there is a subsequent increase in retention then the reduction in the number of freshmen could eventually result in an increase in the overall student population. Higher admission standards have been credited with positive affects on retention and graduation at Oklahoma State and Oklahoma Universities when changes were made in the late 1980's (Burd, 1997), and a study at the University of North Dakota (Goenner & Snaith, 2004) showed that increases in retention

from the first year to the second, and increases in the overall graduation rate, were a result of higher admission standards. Further research should be done to look at institutions where admission standards have been raised and strictly adhered to, looking at not only the effect the changes had on retention and student success over an extended period of time, but also at the effect the changes may have had on access to the institutions.

Expand Support Programs

The second recommendation deals with the support services offered by the SASC and other departments on ISU's campus. These services that have a proven track record of increasing student success, and research should be conducted in an effort to find factors in addition to those currently being used by the Admissions Office and the SASC to identify students who are in need of a more intrusive assistance program like the Academic Opportunity Program, or the support services provided by the ISU community. Increased support from the University in the form of additional staff, an increased budget, and more space would enable the various support programs on campus to reach more students and could result in increased retention.

The support services provided by the SASC; tutoring, mentoring, and supplemental instruction, have resulted in higher GPAs for students that utilize those resources. For example, students participating in the tutoring program are likely to experience an increase of .25 to .40 in their GPA (B. Byers, personal communication January 18, 2005), and that same increase in GPA was realized by students participating in the mentoring program (Fowler, 2005). In classes that offered supplemental instruction in the fall semester 2002, the average class GPA of students who utilized the service was

2.60, versus a class GPA of 1.90 for students who did not (J. Smock, personal communication March 2, 2005). In research on a national scale, the increase in GPA due to supplemental instruction has been found to be similar to that experienced at ISU; a nationwide study conducted by the International Center for Supplemental Instruction at the University of Missouri-Kansas City found that between 1998 and 2003 the average GPA of students utilizing supplemental instruction was 2.60, while for non-participants the average GPA was 2.10 (International Center for Supplemental Instruction, 2003).

Create a University College

The final recommendation involves the creation of a University Division or College to which all incoming ISU freshmen would be admitted. Students would benefit from the expertise of professional advisors, and it would be easier to integrate the students into the University through programs and courses designed to help students begin successful academic careers. In Tinto's (1987) analysis of student retention the students' first year is considered to be a critical period; the chances a student will leave the institution are much greater during this time and helping the student "fit" into the environment is extremely important. According to Tinto, much of what happens to students in the first year will impact their decision to stay at or leave the institution.

The components of the University College would be specifically designed to help new freshmen "fit" into the University environment their first year, components such as: orientation and registration programming, a professional advising staff, tutoring and mentoring services, supplemental instruction, and referral to other University services when applicable. A focus of the University College would be more intrusive advising and tracking of students' performance as they progress through their first year. This would

allow a chance for intervention and possibly avert situations that could cause a student to leave the University.

In addition to the support services already mentioned, a course designed to help students make the transition from high school to college, a first year seminar, would be a requirement of all incoming freshmen. ISU currently offers a course through the SASC similar to the first year seminar courses offered at other institutions. The ISU course is entitled University 101: Learning in the University Community, and is designed to help integrate students into the University environment and teach them skills considered necessary for success. This two credit-hour class is required of incoming AOP students, but is available to any ISU student. As with first-year seminar courses at other institutions (Schnell, 2000), University 101 has shown to have a positive impact on students' GPAs; in 1997 students enrolled in the class earned an overall GPA that was 12% higher than students who were not enrolled in the course. Expanding the scope of this class and requiring enrollment by all incoming freshmen could result in the same increase for all freshmen.

Recommendations for Further Research

This study raises some interesting questions for future research. Among them are: *Have there been changes in the AOP student population over the last 10 to 15 years that would justify a change in the admissions process for these students?*

This study looked at eight characteristics of AOP students in an attempt to find a way to identify whether or not a student would succeed at ISU. The characteristics chosen for the study were ones that traditionally have either been used in the admissions process (high school GPA, high school class rank, and standardized test scores) or are

data that are routinely gathered on all students (gender, ethnicity, geographic area of residence), and two others that in past research have shown to have an impact on the success of students (motivation and attitude). It is recommended that the AOP population be studied to determine whether it has changed over time and whether additional variables exist in this population that may be better indicators of student success.

What effect would a more intrusive approach to dealing with AOP students have on their success?

AOP students are currently subject to the same enrollment and retention guidelines that are in place for all students at ISU. It is recommended that research be done to see if adopting stricter guidelines for conditionally-admitted students, such as: limiting the number of hours they are allowed to enroll in their first semester and the possibility of being dismissed from school for non-participation in the support programs would have a positive effect on their success. Also, the positive or negative effect that stricter guidelines for AOP students might have on students' decision to attend or not attend ISU should be studied.

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APPENDIXES

APPENDIX A

Learning and Study Strategies Inventory (LASSI)

Learning and Study Strategies Inventory

Second Edition

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University of North Carolina

Many students are not as aware as they need to be about how they study and learn. The **Learning and Study Strategies Inventory (LASSI)** is designed to help you develop or expand that awareness so you can be more successful in college.

The **LASSI** helps you to assess your strengths and weaknesses in ten different areas related to being a strategic and successful learner in college. Research has shown that each of these areas is important for succeeding in higher education.

The greatest benefit from completing the **LASSI** is that it will help you to identify areas of your knowledge, skills, motivation and attitudes you may need to improve. Using this information can help you to target your efforts to become a more strategic and successful student.

Instructions for completing

The **Learning and Study Strategies Inventory (LASSI)** contains 80 statements related to how you learn and study. You need to read each statement and then mark a response according to the following key:

Very much typical of me
Fairly typical of me
Somewhat typical of me
Not very typical of me
Not at all typical of me

Sample Question:

99. I like to learn more about myself by taking inventories like this. a b c (d) e

a. **Not at all typical of me**—does not necessarily mean that the statement would never describe you, but it would be true of you only in rare instances. Circle **a** for this response.

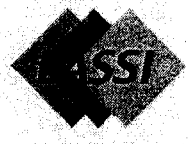
b. **Not very typical of me**—means that the statement generally would not be true of you. Circle **b** for this response.

c. **Somewhat typical of me**—means that the statement would be true of you about half the time. Circle **c** for this response.

d. **Fairly typical of me**—means that the statement would generally be true of you. Circle **d** for this response.

e. **Very much typical of me**—does not necessarily mean that the statement would always describe you, but that it would be true of you almost all the time. Circle **e** for this response.

In the above example, we have circled **d**, indicating that this person usually likes to take inventories like the **LASSI**. Try to rate yourself according to *how well the statement describes you*, not in terms of what you think you should do 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.*



Learning and Study Strategies Inventory
Second Edition

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Very much typical of me — e
Fairly typical of me — d
Somewhat typical of me — c
Not very typical of me — b
Not at all typical of me — a

1.	I concentrate fully when studying.	a b c d e
2.	I am unable to summarize what I have just heard in a lecture or read in a textbook.	a b c d e
3.	I try to find relationships between what I am learning and what I already know.	a b c d e
4.	I find it hard to stick to a study schedule.	a b c d e
5.	In taking tests, writing papers, etc., I find I have misunderstood what was wanted and lose points because of it.	a b c d e
6.	I am able to study subjects I do not find interesting.	a b c d e
7.	When I decide to study, I set aside a specific length of time and stick to it.	a b c d e
8.	Because I don't listen carefully, I don't understand some course material.	a b c d e
9.	I try to identify potential test questions when reviewing my class material.	a b c d e
10.	During class discussions, I have trouble figuring out what is important enough to put in my notes.	a b c d e
11.	To help me remember new principles we are learning in class, I practice applying them.	a b c d e
12.	My underlining is helpful when I review text material.	a b c d e
13.	When it comes to studying, procrastination is a problem for me.	a b c d e
14.	I set high standards for myself in school.	a b c d e
15.	When I am studying a topic, I try to make everything fit together logically.	a b c d e
16.	I find it difficult to maintain my concentration while doing my coursework.	a b c d e
17.	I only study the subjects I like.	a b c d e
18.	When preparing for an exam, I create questions that I think might be included.	a b c d e
19.	When I take a test, I realize I have studied the wrong material.	a b c d e
20.	If there is a web site for my textbook, I use the information provided there to help me learn the material.	a b c d e
21.	I have difficulty identifying the important points in my reading.	a b c d e
22.	When work is difficult, I either give up or study only the easy parts.	a b c d e
23.	To help me learn the material presented in my classes, I relate it to my own general knowledge.	a b c d e
24.	There are so many details in my textbooks that it is difficult for me to find the main ideas.	a b c d e
25.	I review my notes before the next class.	a b c d e
26.	I have difficulty adapting my studying to different types of courses.	a b c d e
27.	I translate what I am studying into my own words.	a b c d e

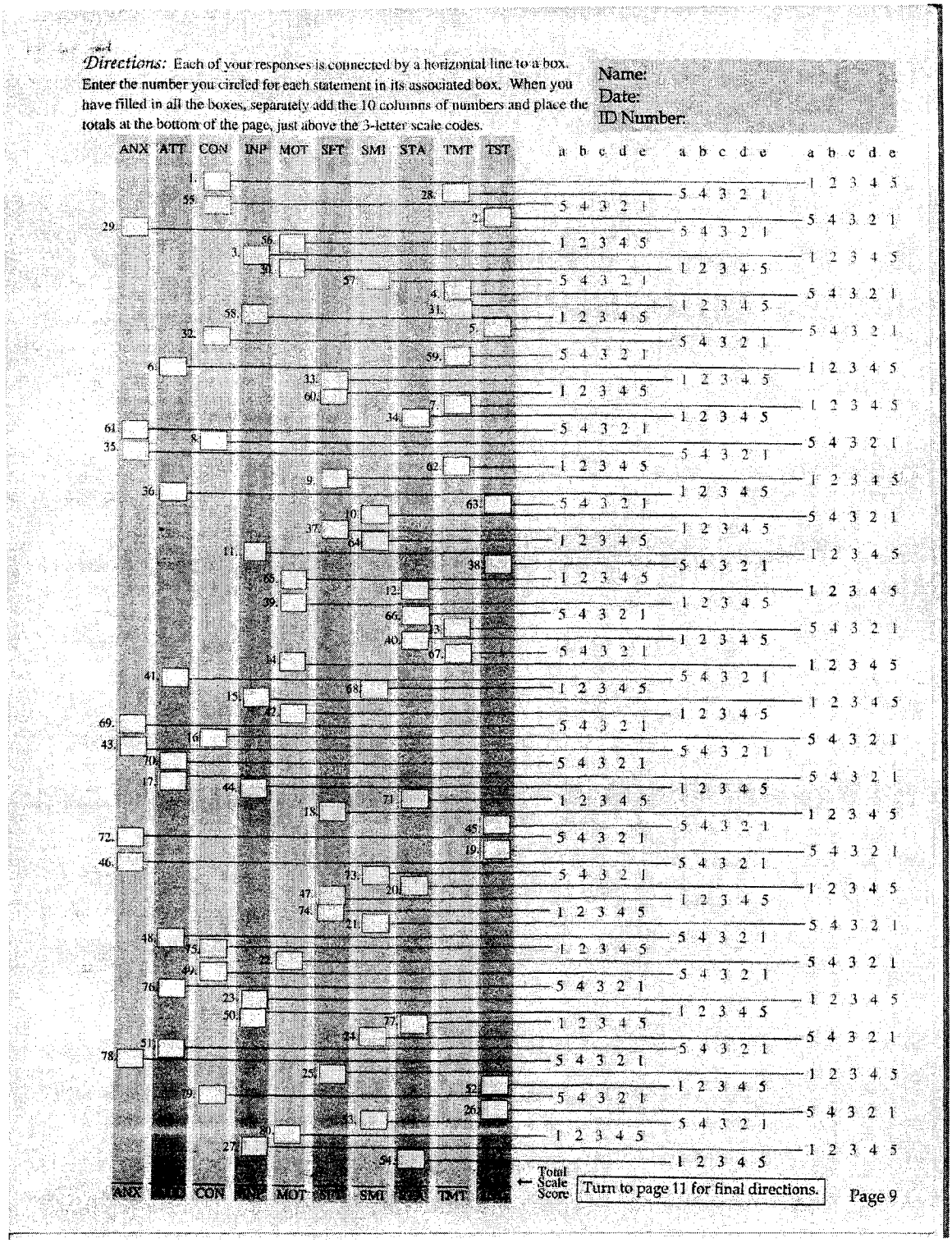
a = Very much typical of me
b = Fairly typical of me
c = Somewhat typical of me
d = Not very typical of me
e = Not at all typical of me

28.	I put off studying more than I should.	a b c d e
29.	I get discouraged because of low grades.	a b c d e
30.	Even if I am having difficulty in a course, I can motivate myself to complete the work.	a b c d e
31.	I spread out my study times so I do not have to "cram" for a test.	a b c d e
32.	My mind wanders a lot when I study.	a b c d e
33.	I stop periodically while reading and mentally go over or review what was said.	a b c d e
34.	I go to the college learning center for help when I am having difficulty learning the material in a course.	a b c d e
35.	I feel very panicky when I take an important test.	a b c d e
36.	I have a positive attitude about attending my classes.	a b c d e
37.	I test myself to see if I understand what I am studying.	a b c d e
38.	When I study for a test, I have trouble figuring out just what to do to learn the material.	a b c d e
39.	Even if I do not like an assignment, I am able to get myself to work on it.	a b c d e
40.	When they are available, I attend review sessions for my classes.	a b c d e
41.	I would rather not be in school.	a b c d e
42.	I set goals for the grades I want to get in my classes.	a b c d e
43.	When I am taking a test, worrying about doing poorly interferes with my concentration.	a b c d e
44.	I try to see how what I am studying would apply to my everyday life.	a b c d e
45.	I have trouble understanding exactly what a test question is asking.	a b c d e
46.	I worry that I will flunk out of school.	a b c d e
47.	To help make sure I understand the material, I review my notes before the next class.	a b c d e
48.	I do not care about getting a general education, I just want to get a good job.	a b c d e
49.	I find it hard to pay attention during lectures.	a b c d e
50.	I try to relate what I am studying to my own experiences.	a b c d e
51.	I dislike most of the work in my classes.	a b c d e
52.	I review my answers during essay tests to make sure I have made and supported my main points.	a b c d e
53.	When studying, I seem to get lost in the details and miss the important information.	a b c d e
54.	I use special study helps, such as italics and headings, that are in my textbook.	a b c d e

Very much typical of me
Fairly typical of me
Somewhat typical of me
Not very typical of me
Not at all typical of me

55.	I am very easily distracted from my studies.	a b c d e
56.	Even when I don't like a course, I work hard to get a good grade.	a b c d e
57.	It is hard for me to decide what is important to underline in a text.	a b c d e
58.	To help me learn the material, I complete at least some of the practice problems in my textbooks.	a b c d e
59.	I do not have enough time to study because I spend too much time with my friends.	a b c d e
60.	To check my understanding of the material in a course, I make up possible test questions and try to answer them.	a b c d e
61.	Even when I am well prepared for a test, I feel very anxious.	a b c d e
62.	I set aside more time to study the subjects that are difficult for me.	a b c d e
63.	I do poorly on tests because I find it hard to plan my work within a short period of time.	a b c d e
64.	During a demonstration in class, I can identify the important information I need to remember.	a b c d e
65.	I am up-to-date in my class assignments.	a b c d e
66.	When I am having trouble with my coursework, I do not go to the instructor for help.	a b c d e
67.	I end up "cramming" for every test.	a b c d e
68.	When I listen to class lectures, I am able to pick out the important information.	a b c d e
69.	When I am studying, worrying about doing poorly in a course interferes with my concentration.	a b c d e
70.	I do not care if I finish college as long as I have a good time.	a b c d e
71.	I try to find a study partner or study group for each of my classes.	a b c d e
72.	Courses in certain subjects, such as math, science, or a foreign language, make me anxious.	a b c d e
73.	When completing a problem-solving task, it is difficult for me to pick out the important information.	a b c d e
74.	After a class, I review my notes to help me understand the information that was presented.	a b c d e
75.	If I get distracted during class, I am able to refocus my attention.	a b c d e
76.	In my opinion, what is taught in my courses is not worth learning.	a b c d e
77.	If I am having trouble studying, I ask another student or the instructor for help.	a b c d e
78.	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
79.	I find that during lectures I think of other things and don't really listen to what is being said.	a b c d e
80.	Even when study materials are dull and uninteresting, I manage to keep working until I finish.	a b c d e

You have now completed LASSI. Turn the page to begin the scoring process.



Scoring Directions—Participant's Chart for **LASSI**

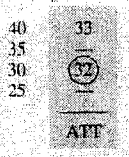
Name:
Date:
ID Number:

The chart below is used to interpret the scores you calculated on page 9 of this booklet. Each column is labeled with a three-letter code representing one of the ten **LASSI** scales. Find your score on the scale directly above each scale code and circle this number. Do this for each scale.

For example, if your ATT score was 32, find the number 32 just above the ATT scale and circle the 32, as shown in the example below.

If you cannot find your exact score, circle the **next lowest number**. When you have finished all ten scale scores, connect the circles to see your **LASSI** 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.

Example:



Each of the three-letter codes indicates a category of learning and study strategies or methods. The meanings of the codes are:

- ANX • anxiety and worry about school performance
- ATT • attitude and interest
- CON • concentration and attention to academic tasks
- INP • information processing, acquiring knowledge, and reasoning
- MOT • motivation, diligence, self-discipline, and willingness to work hard
- SFT • self-testing, reviewing, and preparing for classes
- SMI • selecting main ideas and recognizing important information
- STA • use of support techniques and materials
- TMT • use of time management principles for academic tasks
- TST • test strategies and preparing for tests

Percentiles	ANX	ATT	CON	INP	MOT	SFT	SMI	STA	TMT	TST	Percentiles
99	40	40	40	40	40	40	40	38	40	40	99
95	37	39	37	38	39	36	38	35	37	38	95
90	35	—	35	35	38	33	37	33	35	36	90
85	33	38	34	34	37	31	35	32	33	35	85
80	32	37	33	33	36	30	34	30	32	34	80
75	31	—	32	31	—	29	33	29	31	33	75
70	30	36	31	30	35	28	32	—	30	32	70
65	29	—	30	—	34	27	31	28	29	—	65
60	28	35	29	29	33	26	30	27	28	31	60
55	27	—	—	28	—	—	29	26	27	30	55
50	26	34	28	27	32	25	—	—	—	—	50
45	25	—	27	—	31	24	28	25	26	29	45
40	24	33	26	26	—	23	27	24	25	28	40
35	23	—	25	25	30	22	26	—	24	—	35
30	22	32	24	24	29	—	25	23	23	27	30
25	21	—	23	—	28	21	24	22	22	26	25
20	20	31	22	23	27	20	23	21	21	25	20
15	18	30	21	22	26	19	22	20	20	24	15
10	17	28	19	21	24	17	21	19	18	23	10
5	14	26	17	19	22	15	18	17	16	20	5
1	10	21	13	15	18	12	13	13	12	16	1
	ANX	ATT	CON	INP	MOT	SFT	SMI	STA	TMT	TST	

Scoring Interpretation

Notice that the columns on each side of the chart are labeled "Percentiles." A percentile indicates the portion of a national sample of students who scored at or below a particular score. For example, the score of 32 on ATT is beside the 30th percentile; that means 30% of the students in a national sample scored 32 or lower while 70% of the students scored higher than 32.

What do these scores mean to you? Any score at or above the 75th percentile level indicates an area of relative strength. Improving your strategies and skills in these areas should not be your highest priority. However, improving in any area of learning and studying can still be helpful to you for succeeding in college.

Any score between the 50th and 75th percentile levels indicates an area where you may need to improve your strategies and skills. Without improving your knowledge and skills in these areas, you may encounter difficulties succeeding in college.

Any score at or below the 50th percentile level indicates an area of relative weakness. Improving your strategies and skills in these areas should be your highest priority. It is very likely that your strategies and skills in these areas are not sufficient to help you succeed in college. There are many college courses, books, computer-based instruction, and other learning resources at your college, the college learning center, or the bookstore that can help you to improve your learning and study strategies.

Duplicate Chart for Those Administering **LASSI**

Name:
Date:
ID Number:

The chart below is used to interpret the scores you calculated on page 9 of this booklet. Each column is labeled with a three-letter code representing one of the ten LASSI scales. Find your score on the scale directly above each scale code and circle this number. Do this for each scale.

For example, if your ATT score was 32, find the number 32 just above the ATT scale and circle the 32, as shown in the example below.

If you cannot find your exact score, circle the **next lowest number**. When you have finished all ten scale scores, connect the circles to see your **LASSI** 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.

Example:

40	33
35	—
30	(32)
25	—
	ATT

Each of the three-letter codes indicates a category of learning and study strategies or methods. The meanings of the codes are:

- ANX • anxiety and worry about school performance
- ATT • attitude and interest
- CON • concentration and attention to academic tasks
- INP • information processing, acquiring knowledge, and reasoning
- MOT • motivation, diligence, self-discipline, and willingness to work hard
- SFT • self-testing, reviewing, and preparing for classes
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Percentiles	ANX	ATT	CON	INP	MOT	SFT	SMI	STA	TMT	TST	Percentiles
99	40	40	40	40	40	40	40	38	40	40	99
95	37	39	37	38	39	36	38	35	37	38	95
90	35	—	35	35	38	33	37	33	35	36	90
85	33	38	34	34	37	31	35	32	33	35	85
80	32	37	33	33	36	30	34	30	32	34	80
75	31	—	32	31	—	29	33	29	31	33	75
70	30	36	31	30	35	28	32	—	30	32	70
65	29	—	30	—	34	27	31	28	29	—	65
60	28	35	29	29	33	26	30	27	28	31	60
55	27	—	—	28	—	—	29	26	27	30	55
50	26	34	28	27	32	25	—	—	—	—	50
45	25	—	27	—	31	24	28	25	26	29	45
40	24	33	26	26	—	23	27	24	25	28	40
35	23	—	25	25	30	22	26	—	24	—	35
30	22	32	24	24	29	—	25	23	23	27	30
25	21	—	23	—	28	21	24	22	22	26	25
20	20	31	22	23	27	20	23	21	21	25	20
15	18	30	21	22	26	19	22	20	20	24	15
10	17	28	19	21	24	17	21	19	18	23	10
5	14	26	17	19	22	15	18	17	16	21	5
1	10	21	13	15	18	12	13	13	12	18	1
	ANX	ATT	CON	INP	MOT	SFT	SMI	STA	TMT	TST	

Scoring Interpretation

Notice that the columns on each side of the chart are labeled "Percentiles." A percentile indicates the portion of a national sample of students who scored at or below a particular score. For example, the score of 32 on ATT is beside the 30th percentile; that means 30% of the students in a national sample scored 32 or lower while 70% of the students scored higher than 32.

What do these scores mean to you? Any score at or above the 75th percentile level indicates an area of relative strength. Improving your strategies and skills in these areas should not be your highest priority. However, improving in any area of learning and studying can still be helpful to you for succeeding in college.

Any score between the 50th and 75th percentile levels indicates an area where you may need to improve your strategies and skills. Without improving your knowledge and skills in these areas, you may encounter difficulties succeeding in college.

Any score at or below the 50th percentile level indicates an area of relative weakness. Improving your strategies and skills in these areas should be your highest priority. It is very likely that your strategies and skills in these areas are not sufficient to help you succeed in college. There are many college courses, books, computer-based instruction, and other learning resources at your college, the college learning center, or the bookstore that can help you to improve your learning and study strategies.

APPENDIX B

Correlations, Model Summaries, and ANOVA Results Using All Variables

Table B1

Pearson Correlations Between Variables

	Mot	Att	HSGPA	HSRANK	SAT	IAPSS
Motivation	1.00	.52**	.13	.11	-.10	-.06
Attitude	.52**	1.00	.01	-.07	-.09	.09
HSGPA	.13	.01	1.00	.54**	-.09	.02
HSRANK	.11	-.07	.54**	1.00	.04	-.03
SAT	-.10	-.09	-.09	.04	1.00	.00
IAPSS	-.06	.09	.02	-.03	.00	1.00
Gender	.18*	.16*	.22*	.12	-.29**	.02
Ethnicity	.11	.05	.09	.23**	-.13	-.16*
ISUGPA	.07	-.05	.21**	.12	.16*	.06
ISUPERCENT	.02	-.02	.16*	.03	.05	.02
ISUTOTAL	.07	.07	.17*	.06	.01	.06
Region 1	.15*	-.08	.18*	.10	.03	-.66**
Region 2	.01	.09	.00	.11	-.07	-.32**
Region 3	.05	.00	-.05	-.06	.02	-.17*
Region 4	-.16*	-.04	-.10	-.14*	-.03	-.13
Region 5	.02	.02	-.20**	.00	.02	.17*
Region 6	-.12	-.21**	.03	.06	.07	.18*
Region 7	.04	.06	.06	-.14	-.06	.42**

* Correlation significant at the 0.05 level (2-tailed). ** Correlation significant at the 0.01 level (2-tailed).

Table B1 continued...

	Gender	Ethnicity	ISUGPA	ISUPERCENT	ISUTOTAL
Motivation	.18*	.11	.07	.02	.07
Attitude	.16*	.05	-.05	-.02	.07
HSGPA	.22**	.09	.21**	.16*	.17*
HSRANK	.12	.23**	.12	.03	.06
SAT	-.29**	.13	.16*	.05	.01
IAPSS	.02	0.16*	.06	.02	.06
Gender	1.00	.07	.05	.08	.05
Ethnicity	.07	1.00	.06	.00	.00
ISUGPA	.05	.06	1.00	.81**	.74**
ISUPERCENT	.08	.00	.81**	1.00	.89**
ISUTOTAL	.05	.00	.74**	.89**	1.00
Reg 1	.07	.07	.13	.12	.07
Reg 2	-.04	.18*	-.06	.02	.07
Reg 3	.08	.13	-.06	-.03	-.11
Reg 4	-.19*	-.16*	-.21**	-.14*	-.14*
Reg 5	.06	.08	.06	-.06	.00
Reg 6	.01	-.08	.00	-.06	-.06
Reg 7	.02	-.12	.04	.08	.08

* Correlation significant at the 0.05 level (2-tailed). ** Correlation significant at the 0.01 level (2-tailed).

Table B1 continued. . .

	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6	Reg 7
Motivation	.15*	.01	.05	-.16*	.02	-.12	.04
Attitude	-.08	.09	.00	-.04	.02	-.21**	.06
HSGPA	.18*	.00	-.05	-.10	-.20**	.03	.06
HSRANK	.10	.11	-.06	-.14*	.00	.06	-.14
SAT	.03	-.07	.02	-.03	.02	.07	-.06
IAPSS	-.66**	-.32**	-.17*	-.13	.17*	.18*	.42**
Gender	.07	-.04	.08	-.19*	.06	.01	.02
Ethnicity	.07	.18*	.13	-.16**	.08	-.08	-.12
ISUGPA	.13	-.06	-.06	-.21**	.06	.00	.04
ISUPERCENT	.12	.02	-.03	-.14*	-.06	-.06	.08
ISUTOTAL	.07	.07	-.11	-.14*	.00	-.06	.08
Reg 1	1.00	-.10	-.09	-.22**	-.23**	-.09	-.12
Reg 2	-.10	1.00	-.06	-.15*	-.16*	-.06	-.08
Reg 3	-.09	-.06	1.00	-.13	-.14*	-.05	-.07
Reg 4	-.22**	-.15*	-.13	1.00	-.36**	-.13	-.19
Reg 5	-.23**	-.16*	-.14*	-.36**	1.00	-.14*	-.20**
Reg 6	-.09	-.06	-.05	-.13	-.14*	1.00	-.07
Reg 7	-.12	-.08	-.07	-.19*	-.20**	-.07	1.00

* Correlation significant at the 0.05 level (2-tailed). ** Correlation significant at the 0.01 level (2-tailed).

Table B2

Model Summary and ANOVA Results for All Independent Variables and ISUGPA

Model	R	R^2	Adjusted R^2	Std. Error
Summary	.375	.140	.047	.76250

Predictors: (Constant), HSGPA, HSRANK, SAT, Gender, Ethnicity, Motivation, Attitude, IAPSS Region

Dependent variable: ISUGPA

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	2.244	14	.875	1.504	.118
Residual	75.002	129	.581		
Total	87.246	143			

Predictors: all independent variables

Dependent Variable: ISUGPA

Table B3

Model Summary and ANOVA Results for All Independent Variables and ISUPERCENT

Model	R	R^2	Adjusted R^2	Std. Error
Summary	.290	.084	-.015	20.398

Predictors: (Constant), HSGPA, HSRANK, SAT, Gender, Ethnicity, Motivation, Attitude, IAPSS Region

Dependent variable: ISUPERCENT

Table B3 continued. . .

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	4944.702	14	353.193	.809	.615
Residual	53676.298	129	416.095		
Total	58621.000	143			

Predictors: all independent variables

Dependent Variable: ISUPERCENT

Table B4

Model Summary and ANOVA Results for All Independent Variables and ISUTOTAL

Model	R	R^2	Adjusted R^2	Std. Error
Summary	.284	.080	-.019	3.307

Predictors: (Constant), HSGPA, HSRANK, SAT, Gender, Ethnicity, Motivation, Attitude, IAPSS Region

Dependent variable: ISUTOTAL

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	123.476	14	8.820	.807	.661
Residual	1410.413	129	10.933		
Total	1533.889	143			

Predictors: all independent variables

Dependent Variable: ISUTOTAL

APPENDIX C

Correlations, Model Summaries, and ANOVA Results Using HSGPA and SAT Score

Table C1

Correlations, Model Summary, and ANOVA Results for HSGPA, SAT Score, and ISUGPA

	ISUGPA	HSGPA	SAT
ISUGPA	1.00	.209**	.162*
HSGPA	.209**	1.00	-.094
SAT	.162*	-.094	1.00

* Correlation significant at the 0.05 level (2-tailed). ** Correlation significant at the 0.01 level (2-tailed).

Model	R	R^2	Adjusted R^2	Std. Error
Summary	.277	.077	.064	.75583

Predictors: (Constant), HSGPA, SAT

Dependent variable: ISUGPA

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	6.695	2	3.347	5.859	.004
Residual	80.551	141	.571		
Total	87.246	143			

Predictors: (Constant), HSGPA, SAT

Dependent Variable: ISUGPA

Table C2

Correlations, Model Summary, and ANOVA Results for HSGPA, SAT Score, and ISUPERCENT

	ISUPERCENT	HSGPA	SAT
ISUPERCENT	1.00	.164*	.054
HSGPA	.164*	1.00	-.094
SAT	.053	-.094	1.00

* Correlation significant at the 0.05 level (2-tailed).

Model	R	R^2	Adjusted R^2	Std. Error
Summary	.178	.032	.018	20.063

Predictors: (Constant), HSGPA, SAT

Dependent variable: ISUPERCENT

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	1862.585	2	931.292	2.314	.103
Residual	56758.415	141	402.542		
Total	58621.000	143			

Predictors: (Constant), HSGPA, SAT

Dependent Variable: ISUPERCENT

Table C3

Correlations, Model Summary, and ANOVA Results for HSGPA, SAT Score, and ISUTOTAL

	ISUTOTAL	HSGPA	SAT
ISUTOTAL	1.00	.170*	.008
HSGPA	.170*	1.00	-.094
SAT	.008	-.094	1.00

* Correlation significant at the 0.05 level (2-tailed).

Model	R	R^2	Adjusted R^2	Std. Error
Summary	.171	.029	.016	3.249

Predictors: (Constant), HSGPA, SAT

Dependent variable: ISUTOTAL

Model	SS	*df*	Mean Square	*F*	*Sig.*
Regression	45.053	2	22.526	2.133	.122
Residual	1488.836	141	10.559		
Total	1533.889	143			

Predictors: (Constant), HSGPA, SAT

Dependent Variable: ISUTOTAL

APPENDIX D

Distribution of High School GPAs and ISU GPAs

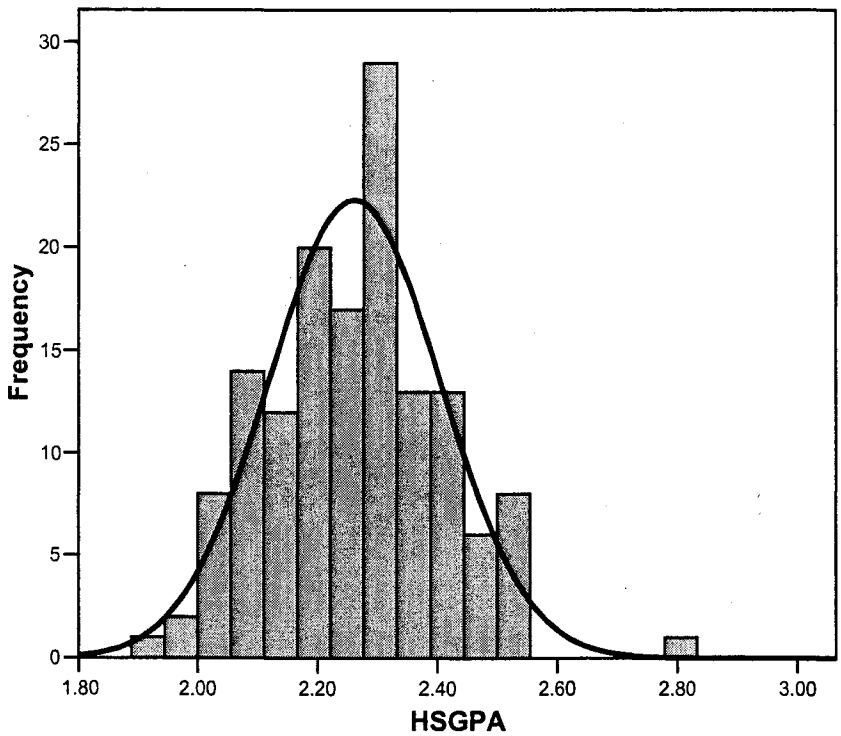

Figure D1. Distribution of High School GPAs for Subjects Participating in the Study.

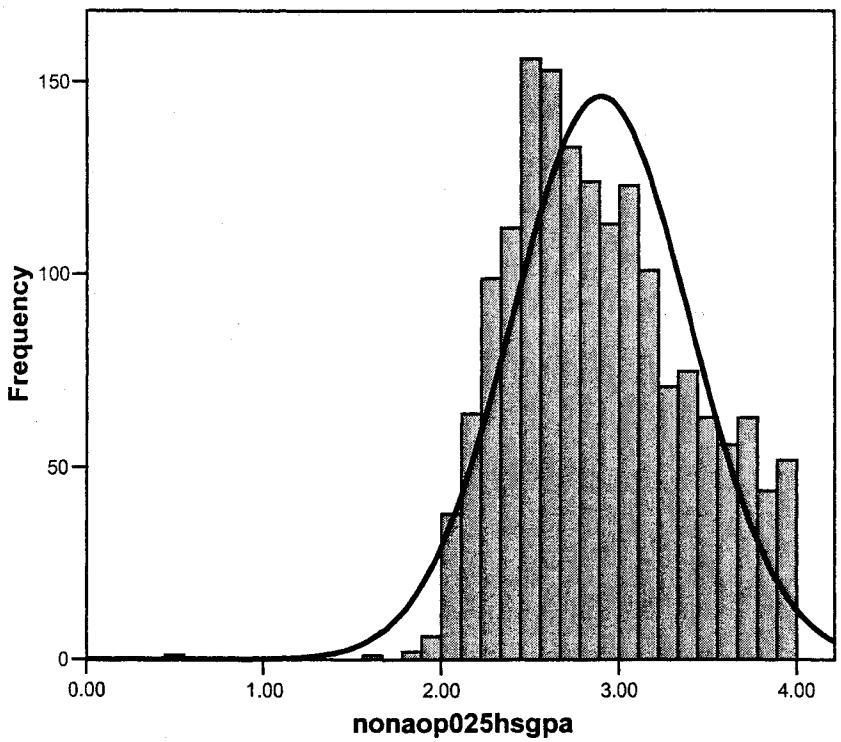

Figure D2. Distribution of High School GPAs for Non-AOP Freshmen Students Entering ISU Fall 2002.

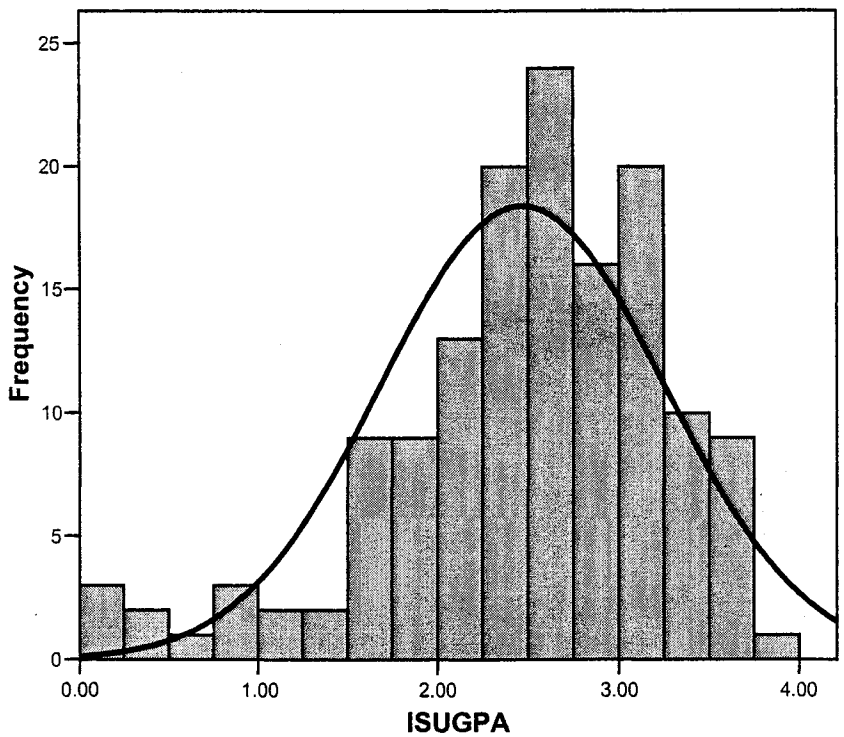

Figure D3. Distribution of ISU GPAs for Subjects Participating in the Study.