

IDENTIFYING PREDICTORS OF RETENTION
AND SUCCESS IN A MID-WESTERN
COMPREHENSIVE UNIVERSITY

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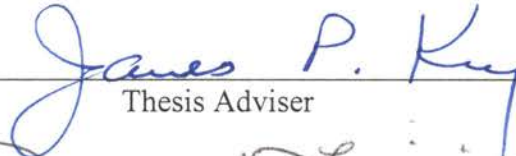
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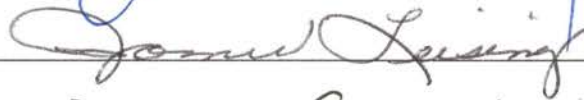
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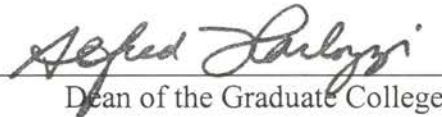
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CHAPTER I

INTRODUCTION

Research on retention is intended to produce statistical information about aspects of perseverance that may interest policymakers and educators alike (Borg & Gall, 1989). On a global scale, the International Association for the Evaluation of Educational Achievement (IAEA) has conducted major descriptive studies comparing the academic achievement levels of higher education students in many different nations, including the United States (Postlethwaite & Husen, 1985).

Likewise, the National Center of Educational Statistics specializes in this kind of research. Many of its findings are published in the annual volume called Digest of Educational Statistics. This Center also administers the National Assessment of Educational Progress (NAEP), which collects descriptive information about how well the nation's higher education students are doing in various subject areas (Borg & Gall, 1989).

Descriptive studies have greatly increased our knowledge about what happens in the school departure process. The quality of the school is, of course, a major factor, as are the actual classroom practices and attitudes of practitioners (e.g., supervisors, administrators and teachers). Some of the important books on this subject include Life in the Classroom by Philip Jackson (1968); The Good High School by Sara Lawrence

Lightfoot (1983); and A Place Called School by John Goodlad (1983). In her book on school departure, Dryfoos (1990) states "failure to complete one's schooling goals is a process rather than a single risk event" (p. 79). Understanding the epidemiology of school departure is fundamental to this author's argument and added: "at-risk- behaviors are residual from some previous era and, therefore, interrelated to a current activity" (p. 82). Subjects like student departure and retention must, therefore, be investigated at all levels of academia, not just within the arena of higher education.

Low achievement in school results from an array of forces, many of which are outside the control of the individual. Moreover, low achievement in school has been shown to be an important predictor of substance abuse, delinquency, and sexual intercourse (Conroy, 1995). A person initiates hard drug use or has early unprotected sexual intercourse or commits a delinquent act at a specific time and place. Usually these actions are voluntary and follow a personal decision (although they are heavily influenced by the social environment). In effect, low academic achievement is both a predictor and a consequence of other kinds of risk behaviors that transcend into the halls of institutions of higher learning, as well as being a problem in itself (Tinto, 1993).

Background and Setting

During the past 29 years, even as the enrollment rate fluctuated (Figure 1), retention has been studied, discussed, and debated at Oklahoma State University (hereafter referred to as OSU). What is known is that more students generally leave between Spring and Fall than between Fall and Spring semesters. Still, there are

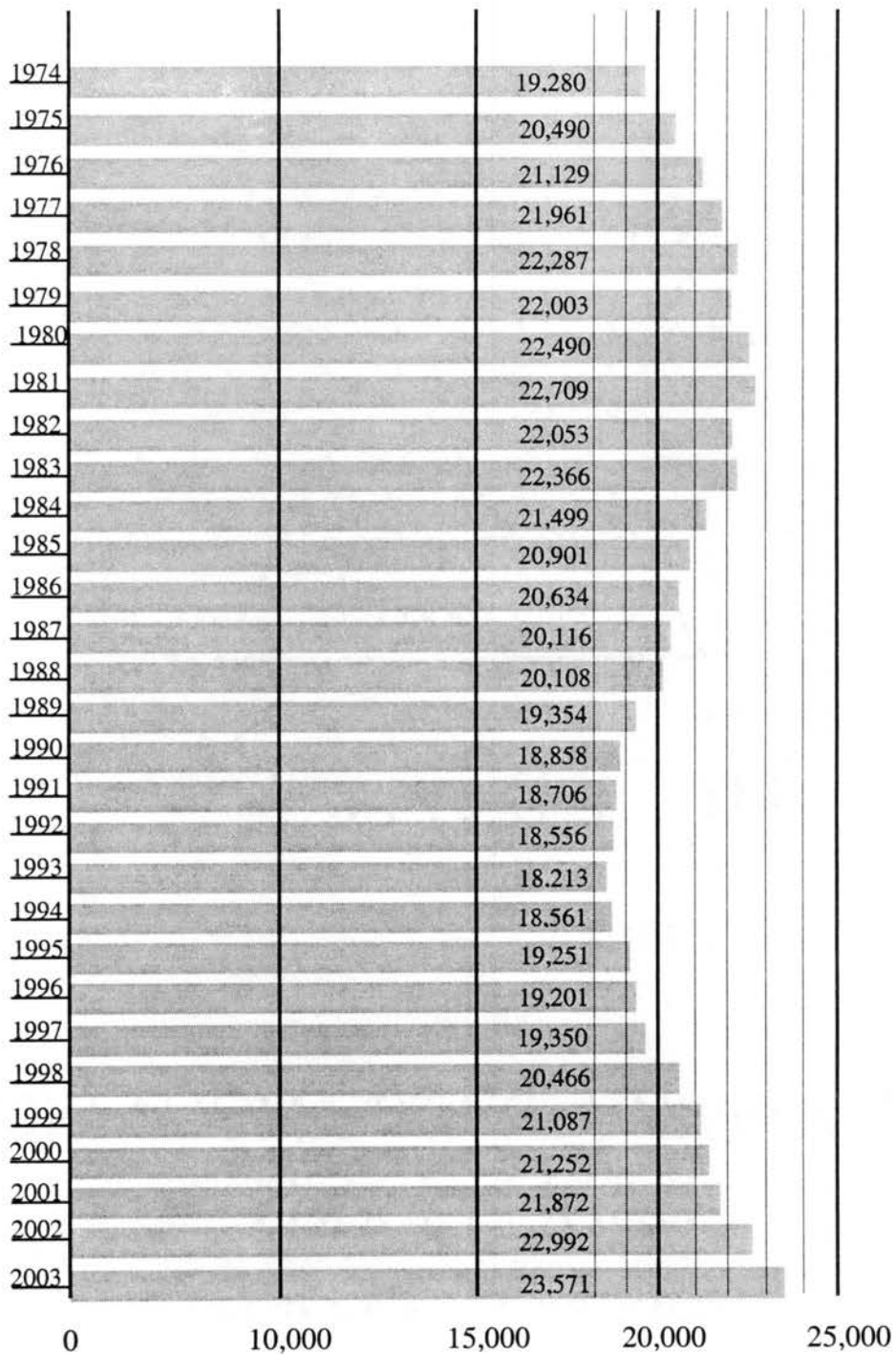


Figure 1: OSU Main Campus Enrollment, Fall Semesters, 1974 — 2003

From *OSU Student Profile* booklets, Fall 1975 to Fall 2002

bothersome attrition statistics that consistently reappear each semester.

For example, statistics from OSU's Office of Planning, Budget and Institutional Research show that in the Spring of 1994, 12,794 undergraduate students were enrolled. Spring graduates accounted for 1,553 student, 286 were suspended and 181 were placed on probation, and another 28 had academic problems. In the fall of 1994, 9,277 students returned. Research of this nature tells us that 1,491 students were in good standing but did not return in the fall. The loss of students in good academic standing from Fall, 1993 to Spring, 1994 was 964. The data does not reflect how many of the students left only temporarily for internships and similar activities (Burgesses, 1995).

Furthermore, during the Spring, 1995 semester, 209 students voluntarily withdrew (i.e., dropouts.). Others may have left without withdrawing. The self-reported reasons for leaving were: personal problems (40), employment opportunities (34), health (27), financial difficulties (20), transfer (18), academic performance (6), deceased (1), want practical experience (1), housing problems (1), and other (61). Most of the students (186) said they planned to return to college at a later date (e.g., "stopouts"). In the fall of 1992, OSU had 2,014 students who transferred in from other state institutions and 1,423 students who transferred out to them. In comparison, Oklahoma University (OU) had 2,378 students who transferred in and 1,165 students who transferred out (Johnson, 1995).

I offer a third example as a point of comparison. Oklahoma State University's Office of Planning, Budget and Institutional Research show that in the Spring of 2001, 15,579 undergraduate students were enrolled. Spring graduates accounted for 1,697 students, 312 were suspended and 179 were placed on probation, and another 36 had

academic problems. Statistics from the Office of Planning, Budget and Institutional Research informs us that, in the fall of 2002, 14,588 students (of the 15,579) returned. Considering the normal attrition (loss from spring to fall semesters), statistics from this office inform us that there was an increase of 1,120 students in fall 2002 enrollment from 2001.

Information of this nature gives validity to OSU officials wanting to know the best way to help the in-coming freshmen who are enrolling in the various Colleges at OSU continue their enrollment through the completion of their degree (see Noel & Levitz, 1992). In part, they want to know why students are leaving? On the other hand, the enduring question of how to retain students remains. These two questions have now come to have different meanings to the various Colleges within the OSU system (notes from a personal conversation with Steve Robinson, Director of OSU Assessment Center on April 11, 1995).

OSU's College of Agriculture Sciences and Natural Resources (hereafter referred to as CASNR) has not been immune to the enrollment fluctuating trend (Figure 2). In fact, as enrollments dropped in Colleges of Agriculture at institutions of higher learning across this country during the late 1980s (Horne, 1992), effective ways to retain students were constantly being sought within OSU's CASNR. This is to say that OSU officials are constantly asking two essential questions of OSU's College of Agriculture: 1) Why are CASNR students leaving OSU (Table I); and 2), What can CASNR do to keep them at OSU until graduation? (Table II).

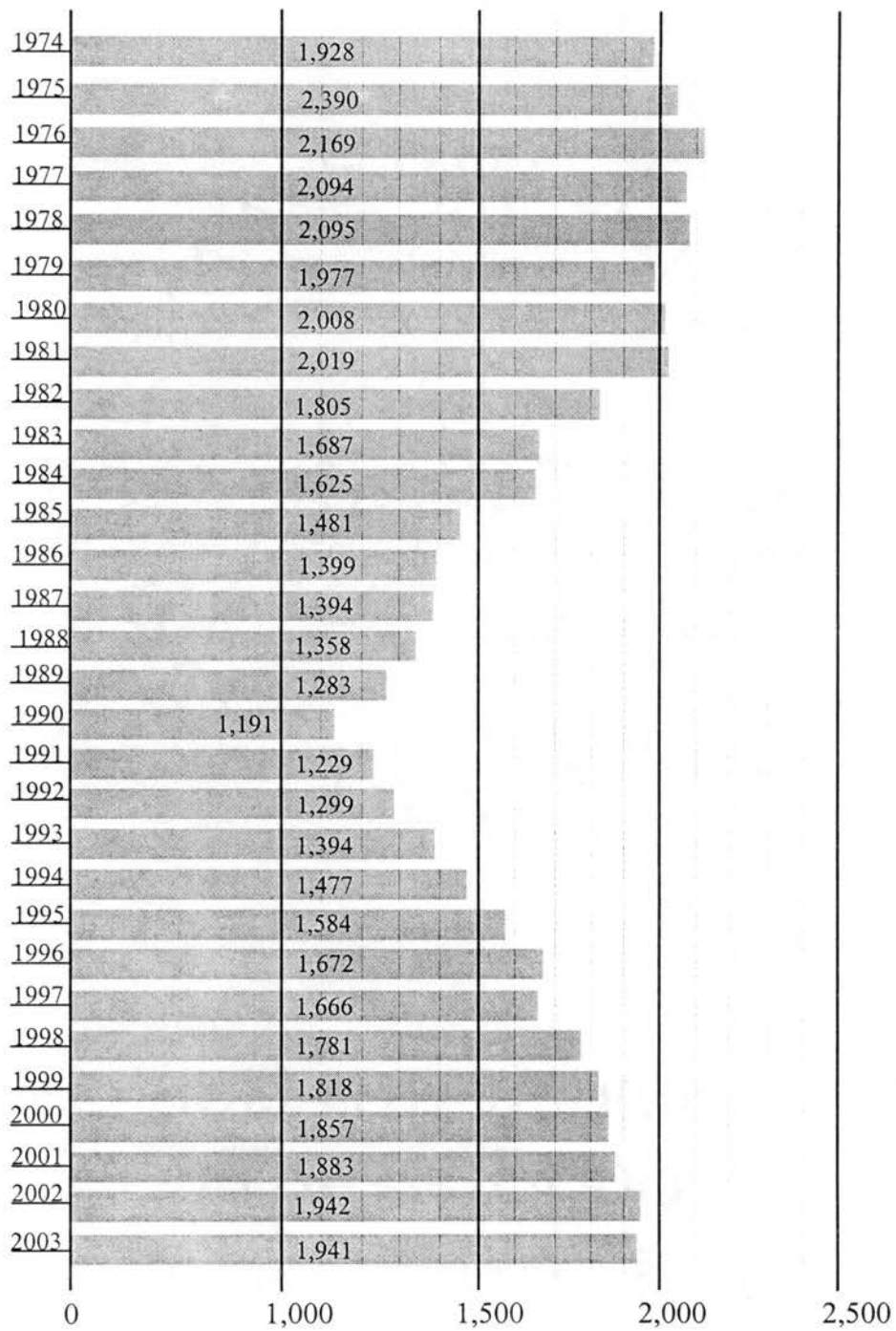


Figure 2: OSU's CASNR Main Campus Enrollment, Fall Semesters, 1974 — 2003

From *OSU Student Profile* booklets, Fall 1975 to Fall 2002

Table I

CASNR Retention Rates, OSU, Fall Semesters, 1975 to 2003

| Year of Freshmen Enrollment | Retention Rate (Expressed in Percent) | | | |
|--------------------------------|---------------------------------------|-----------|--------|--------|
| | Freshmen | Sophomore | Junior | Senior |
| Fall, 1975 Semester | 64.2 | 72.3 | 85.9 | 12.1 |
| Fall, 1976 Semester | 72.4 | 82.4 | 78.6 | 21.3 |
| Fall, 1977 Semester | 69.3 | 81.6 | 81.4 | 14.6 |
| Fall, 1978 Semester | 66.8 | 78.4 | 83.1 | 13.7 |
| Fall, 1979 Semester | 70.2 | 81.6 | 80.6 | 12.6 |
| Fall, 1980 Semester | 71 | 76 | 86.6 | 13.4 |
| Fall, 1981 Semester | 70.4 | 80.3 | 82.6 | 29.2 |
| Fall, 1982 Semester | 68.4 | 79.1 | 87.1 | 30.7 |
| Fall, 1983 Semester | 64.7 | 77.1 | 82.1 | 36 |
| Fall, 1984 Semester | 64.7 | 77.1 | 82.1 | 33 |
| Fall, 1985 Semester | 73.7 | 82.2 | 82.8 | 34.8 |
| Fall, 1986 Semester | 72.5 | 82.6 | 80.3 | 35.2 |
| Fall, 1987 Semester | 74.7 | 75.8 | 82.3 | 43.5 |
| Fall, 1988 Semester | 62.9 | 72.9 | 77.2 | 28.4 |
| Fall, 1989 Semester | 69.7 | 71.2 | 73.1 | 22.2 |
| Fall, 1990 Semester | 65.1 | 71.8 | 78.2 | 33.2 |
| Fall, 1991 Semester | 67 | 73 | 78.7 | 29.9 |
| Fall, 1992 Semester | 72.3 | 71.1 | 75.9 | 29.8 |

Table I (Continued)

| Year of Freshmen Enrollment | Retention (Expressed in Percent) | | | |
|--------------------------------|----------------------------------|-----------|--------|--------|
| | Freshmen | Sophomore | Junior | Senior |
| Fall, 1993 Semester | 69.4 | 71.2 | 76.4 | 28.2 |
| Fall, 1994 Semester | 63.6 | 75.1 | 78.6 | 30.4 |
| Fall, 1995 Semester | 66.6 | 74.9 | 79.7 | 27.2 |
| Fall, 1996 Semester | 71.8 | 71.7 | 77.6 | 32.1 |
| Fall, 1997 Semester | 71.3 | 76.8 | 80.4 | 33.7 |
| Fall, 1998 Semester | 68.2 | 76.4 | 81.6 | 29.6 |
| Fall, 1999 Semester | 67.3 | 81.5 | 79.4 | 27.2 |
| Fall, 2000 Semester | 68.4 | 78.3 | 81.4 | 29.2 |
| Fall, 2001 Semester | 70 | 79.5 | 80.5 | 30.3 |
| Fall, 2002 Semester | 69.9 | 77.4 | 77.2 | 25.8 |

Table II

OSU And CASNR Graduation Rates, Fall, 1975 to Fall, 2002 Semesters

| Academic Year | OSU Graduation Rates (Expressed In Numbers) | | | CASNR Graduation Rates (Expressed In Numbers) | | |
|------------------|--|--------|--------|--|--------|--------|
| | Bachelor | Master | Doctor | Bachelor | Master | Doctor |
| 1974-75 | 2,111 | 623 | 181 | 256 | 56 | 29 |
| 1975-76 | 2,762 | 645 | 167 | 278 | 76 | 34 |
| 1976-77 | 2,698 | 678 | 212 | 302 | 71 | 40 |
| 1977-78 | 2,456 | 710 | 256 | 310 | 86 | 28 |
| 1978-79 | 3,245 | 698 | 198 | 298 | 79 | 31 |
| 1979-80 | 3,567 | 654 | 232 | 268 | 76 | 38 |
| 1980-81 | 3,387 | 623 | 213 | 337 | 89 | 41 |
| 1981-82 | 3,171 | 659 | 188 | 379 | 91 | 36 |
| 1982-83 | 3,022 | 645 | 198 | 370 | 86 | 30 |
| 1983-84 | 3,290 | 752 | 228 | 384 | 81 | 36 |
| 1984-85 | 3,301 | 665 | 223 | 397 | 81 | 42 |
| 1985-86 | 3,318 | 664 | 224 | 327 | 67 | 47 |
| 1986-87 | 3,232 | 689 | 189 | 287 | 77 | 35 |
| 1987-88 | 2,755 | 667 | 184 | 268 | 85 | 32 |
| 1988-89 | 2,883 | 712 | 211 | 269 | 66 | 34 |
| 1989-90 | 2,792 | 606 | 229 | 298 | 67 | 38 |
| 1990-91 | 2,679 | 627 | 207 | 264 | 74 | 28 |
| 1991-92 | 2,741 | 662 | 183 | 240 | 65 | 23 |

Table II (Continued)

| Academic Year | OSU Graduation Rates (Expressed In Numbers) | | | CASNR Graduation Rates (Expressed In Numbers) | | |
|------------------|--|--------|--------|--|--------|--------|
| | Bachelor | Master | Doctor | Bachelor | Master | Doctor |
| | 1992-93 | 2,710 | 713 | 136 | 278 | 64 |
| 1993-94 | 2,767 | 766 | 206 | 288 | 72 | 44 |
| 1994-95 | 2,562 | 752 | 156 | 267 | 65 | 29 |
| 1995-96 | 2,703 | 723 | 208 | 317 | 60 | 44 |
| 1996-97 | 2,786 | 754 | 204 | 345 | 68 | 30 |
| 1997-98 | 2,640 | 805 | 180 | 353 | 87 | 39 |
| 1998-99 | 2,800 | 782 | 188 | 386 | 73 | 29 |
| 1999-2000 | 2,834 | 909 | 187 | 384 | 58 | 29 |
| 2000-01 | 2,964 | 812 | 201 | 400 | 65 | 27 |
| 2001-02 | 3,004 | 772 | 191 | 357 | 69 | 26 |
| 2002-03 | 3,201 | 774 | 185 | 389 | 65 | 26 |

Problem Statement

The question consistently being asked by OSU officials in the year prior to the collection of data for this study (i.e., 1995), was: "Why do twenty-seven percent of incoming freshmen who initially enroll in OSU's CASNR not re-enroll in that college as

sophomores (Figure 3), but are lost to either: 1) their leaving the university before completing their course of study in CASNR; or 2) other departments on the campus” (see Robinson, April 11, 1995 note above)

Purpose Of This Study

The purpose of this descriptive study was to identify factors related to OSU’s College of Agricultural Sciences and Natural Resources, Fall, 1995 freshmen population for predicting retention and success within that College.

Research Objectives

The following objectives were necessary to accomplish the purpose of this study:

1. Identify demographic and academic characteristics of incoming freshmen in OSU’s College of Agricultural Sciences and Natural Resources which might affect retention and success, including those measured by the College Student Inventory, High School GPA (HSGPA), ACT scores, and College Cumulative GPA (CCGPA).
2. Determine the relationship between retention (i.e., completion of 2nd semester at OSU), and the identified demographic and academic characteristics.
3. Determine the best demographic and academic predictors of retention
4. Determine the relationship between success (i.e., as measured by CCGPA at graduation), and the identified demographic and academic characteristics.
5. Determine the best demographic and academic predictors of success.

| College of Enrollment Fall 1993 | College of Enrollment – Fall Semester 1994 | | | | | | | | Dropped | Grad | Total |
|------------------------------------|--|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|-----------|-------|
| | ASNR | A&S | CBA | EDUC | ENGR | TECH | HES | UAS | | | |
| Ag. Sci. & Nat. Res. | 12 1.2% | 581 58.6% | 38 3.8% | 47 4.7% | 13 1.3% | 11 1.1% | 21 21% | 1 0.1% | 268 27.0% | 0 0.0% | 992 |
| Arts & Sciences | 184 69.4% | 8 3.0% | 4 1.5% | 6 2.3% | 1 0.4% | 1 0.4% | 5 1.9% | 4 1.5% | 52 19.6% | 0 0.0% | 265 |
| Business Admin. | 1 0.2% | 24 5.1% | 301 63.5% | 11 2.3% | 1 0.2% | 3 0.6% | 9 1.9% | 0 0.0% | 124 26.2% | 0 0.0% | 474 |
| Education | 0 0.0% | 11 5.9% | 7 3.8% | 102 54.8% | 0 0.0% | 0 0.0% | 0 0.0% | 1 0.5% | 65 34.9% | 0 0.0% | 186 |
| Engr. & Arch. | 12 2.5% | 41 8.5% | 24 5.0% | 12 2.5% | 261 54.4% | 13 2.7% | 5 1.0% | 1 0.2% | 111 23.1% | 0 0.0% | 480 |
| Engr. Tech. | 0 0.0% | 4 6.1% | 4 6.1% | 1 1.5% | 5 7.6% | 34 51.5% | 0 0.0% | 0 0.0% | 18 27.3% | 0 0.0% | 66 |
| Human Envir. Sci. | 3 1.9% | 10 6.2% | 7 4.3% | 5 3.1% | 1 0.6% | 1 0.6% | 91 56.2% | 0 0.0% | 44 27.2% | 0 0.0% | 162 |
| Univ. Acad. Services | 11 2.0% | 53 9.6% | 14 2.5% | 24 4.3% | 12 2.2% | 3 05% | 20 3.6% | 179 32.3% | 238 43.0% | 0 0.0% | 554 |
| Total | 223 7.0% | 732 23.0% | 399 12.6% | 208 6.5% | 294 9.2% | 66 2.1% | 151 4.7% | 186 5.9% | 920 28.9% | 0 0.0% | 3,179 |

Figure 3: Retention Of Freshmen Students Enrolled By Colleges, Fall, 1993 To Fall, 1994

From OSU Student Profile. Fall. 1994, p. 88.

Need For This Study

Student retention is not a new problem to institutions of higher education, but in an era of fluctuating enrollments the problem becomes even more prominent (Peters, 1995). An unsettled economy and the resulting loss of tax revenues have forced state and federal governments to search for methods of retaining potential "school-leavers" at all levels of academia. Particular concern has been expressed over the decline in the population of high school graduates and its potential impact on college enrollment. Between 1981 and 1985, for example, first-time freshmen enrollment in all U.S. institutions of higher education declined 11.6 percent, from approximately 2.6 million in 1981 to 2.3 million in 1985 (Center for Education Statistics, 1987, p. 130)

Significance Of The Study

There are two major ways of increasing enrollment in an institution of higher learning. One is to increase recruitment efforts, thereby hoping to increase the total number of admissions. A second approach is to decrease the attrition rate, while maintaining the same student admission rate (Stodt & Klepper, 1987). This is to say that one principal way for colleges and universities to combat the general trend of declining student enrollment is to retain as many students as possible. Detection of high-risk students and early intervention might decrease the number of departures. As such, every effort should be made to keep those students who enroll at OSU (Ross, 1988).

Assumptions Of The Study

The following assumptions are pertinent to this study:

1. That the instrument administered (i.e., College Student Inventory) will elicit accurate responses that will satisfy the objectives of the study.
2. That all respondents to the survey questionnaire are conscientiously reflecting their attitudes, opinions, and beliefs.
3. That the selection of survey participants (i.e., study students) is unbiased.
4. That the selection of survey participants (i.e., study students) includes individuals who are representative of the population under study.
5. That the Fall, 1995 list of incoming freshmen received from the OSU Office of University Assessment are all inclusive.

Definition Of Terms

The following terms and variables were operationally defined for this study.

Although everyone talks about the “drop-out rate”, there is no common definition (Dryfoos, 1990). Several terms used in this study that were either abbreviated or have some special meaning are defined below. Refer to Glossary in Appendix 3 for more terms and references.

1. Academic advisor: A faculty member with whom a student works with to plan and supervise their college academic experience (Stratil, 1988).

2. Attrition: Herein defined as the gradual reduction of membership within the OSU student body.
3. College of Agricultural Sciences and Natural Resources: The College within OSU which offers educational programs in the fields of Agricultural Communications, Agricultural Economics, Agricultural Education, Agricultural Engineering, General Agriculture, Agronomy, Animal Science, Biochemistry, Entomology, Forestry, Horticulture/Landscape Architecture, and Pre-Veterinary Science (OSU University Catalog, 1994-1995 Oklahoma State University, p. 59).
4. Dropouts: Students who have left any formal educational system prior to achieving their educational goals and have no plans to return to school (Stratil, 1988).
5. High-risk course: Defined as a course that traditionally has a high percentage of D's, F's and/or withdrawals (Stratil, 1988).
6. High-risk student: a student who is classified either as a dropout, pushout, fadeout, stopout, or is at-risk (for dropping out) (Stratil, 1988).
7. Plan-of-study: an outline sequencing the courses a student will take to complete his or her degree program (OSU Graduate Student Handbook for Agricultural Education, 1995. p. 9).
8. Retention: Herein defined as the percent of study students who chose to enroll in CASNR for the Fall, 1995 semester who returned and completed the following spring semester.
9. School-leaver: Refers to an individual who leaves any formal educational system before completion (Stratil, 1988).
10. Stopout: Students who have temporarily interrupted their college attendance but intent to return at a later date to resume pursuit of their educational goals (Stratil, 1988).
11. Study student: Herein defined as a Fall, 1995 OSU freshmen who chose to enroll as a CASNR student.
12. Success: Herein defined as a study student's College Cumulative GPA (CCGPA) upon graduation from OSU.
13. Successful Completer: Herein defined as a study student's accomplishing a degree from OSU.

Summary

The College of Agricultural Sciences and Natural Resources at OSU strives to prepare graduates for a dynamic and changing world, where the magnitude of the problems to be solved seems to be ever increasing. Young men and women who graduate from CASNR at OSU in the coming years will need an even better educational experience than those before them received. Whatever the contemporary issues in agriculture all CASNR students must be provided with the opportunity to develop sharp minds and use increasingly advanced tools for solving a wide variety of problems.

The causes of student departure from OSU have been well researched. All have generated considerable data for addressing the first question of the two-part inquiry being made by OSU officials: Why are students leaving CASNR? A constant reminder running throughout this research tapestry is that competition is increasing within post-secondary agriculture institutions for the number of new students. Hence, the economics of retaining those who are presently enrolled within OSU's CASNR has become an attractive alternative for countering future departures (Ross, 1988).

In order to accomplish this goal, there must be a comprehensive and ongoing system of assessment for the purpose of tracking the academic progress of all CASNR students. After identifying student's needs and desires, it provides an effective means of communicating this information to advisors and support staff.

Organization Of This Study

This chapter emphasized global as well as local issues involving school departure, hereby giving an overall credence to this endeavor. A review of the related literature will be provided in the subsequent chapter as well as a description of the methods to be used in conducting the study. There will also be a description of the subjects, instrument to be used, the research design and procedures, and the analysis of data procedures.

CHAPTER II

LITERATURE REVIEW

Theoretical Framework

The purpose of the literature review is to give background information on the problem of retaining students within institutions of higher learning and to give a sense of direction to this study. Education is often regarded as the most critical institution in our democracy, perhaps because of its transformational power from ignorance to knowledge, from victimization to empowerment, or simply said, from despair to hope. Education plays a fundamental role in ensuring social mobility. By doing so, it guards and protects the delicate balance between change and status quo necessary to the survival and preservation of a democracy. In short, the information presented herein may seem to be the ‘great equalizer’ for the high-risk student [e.g., the fadeout, pushout, stopout, at-risk, and/or dropout; see Glossary (Appendix # 3) for definitions].

Access to public education for all did not occur in America until the twentieth century, and could still be questioned today (Aronson, 2001). A number of Educators, historians, social scientists, and researchers have documented that, far from offering equal opportunities to all, schools create more barriers for disadvantaged students by separating them from other students, or by holding lower expectations for them. These discoveries are not new, of course, but they reveal a tension between our professed

beliefs and the social reality we allow to exist. For instance, many Americans in 1954 believed education truly provided equal opportunities for all, until the Supreme Court ruled in the famous case of *Brown vs. Board of Education* that separate schools for black children were inherently unequal.

As we step into the twenty-first century, the gap between our democratic ideals and social reality seems to be widening. On the one hand, institutions of higher education are still expected, at least in theory, to be "the great equalizer", a meritocracy by which individuals are sifted and screened for academic success and failure regardless of race, gender, social class, or minority status. On the other hand, far from jump-starting high-risk students, American's higher education system is losing many of them. Studies show that concern about retention and attrition rates in higher education have increased during the years and efforts to identify and treat the potential high risk student have grown considerable (Brawer, 1996).

According to Autry et. al. (1999), one of the major problems facing college and universities nationwide is a high attrition rate; approximately 57 percent of the students entering a college or university in 1986 were either fadeouts, pushouts, stopouts, or at-risk (for dropping out). Of those not returning, 75 percent were dropouts. Santa Rita & Scranton (2001) reported that while the statistics remain fairly constant, approximately 50 percent of the freshmen population enrolled in colleges and universities in the 1990s left before completing their degree program. Fadeouts, pushouts, stopouts or at-risk students who are ignored by teachers and administrators lose hope, fail, and eventually drop out.

In the context of higher education, high risk students who manage to beat the odds against them have been labeled “resilient.” Educational resilience has become the object of many studies. Historically speaking, the term resilience first appeared in the first half of the nineteenth century and Webster's dictionary explains it as "the capability of a strained body to recover its size and shape after deformation caused especially by compressive stress" (Mish, 1997).

One can surmise from this definition that the word was born in the field of physics. The word was borrowed by the field of developmental psychopathology to refer to individuals who were able to overcome odds against healthy psychological development. In other words, individuals who should have behaved in a pathological way, but did not, were considered resilient. The word then traveled from the field of psychology to the fields of sociology and education. A common definition of resilience is "successful adaptation despite risk and adversity." This definition assumes a universal pattern of human development as the benchmark for successful adaptation. In other words, if one is resilient he or she avoids pathological behavior that would have been predicted by a certain set of circumstances (e.g., risk and adversity).

Educational resilience has provoked mixed reactions. In moderate circles, it is used as a confirmation that, indeed, everyone in America does have an equal opportunity to education. After all, if some "make it" despite the odds against them, then everybody can, with a little effort. It must mean that our democracy works, and what works should not be changed. The implication of this view is that responsibility for academic success lies within each individual, regardless of circumstances.

In more conservative circles, the concept of educational resilience is irrelevant because of the belief that differences in intelligence — therefore academic success — are genetically determined along ancestral lines. The reasoning goes like this: since school success and failure are predetermined, there is no reason to spend any resources on trying to change what is inevitable. At best, educationally resilient individuals represent those few cases at the leading edge of the bell curve, the exceptions that confirm the rule.

In more progressive circles, the predominant response has been to cheer at the emergence of what is seen as a new social tool to equip at-risk students against school failure. Thus, even though the responsibility for academic success ultimately lies with the individual, it is the role of social institutions like school or family to offset the effects of obstacles faced by students, and to make them competitive with their more privileged peers. This approach implies that educational resilience is something that can be measured, fostered, administered, even inoculated like a vaccine, into at-risk students to ensure their success.

Thus, the questions that have dominated the discourse on educational resilience and student retention have focused around whether this capability (i.e., educational resilience) is innate or acquired, whether it, in itself, can predict academic success in at-risk students, and whether educational resilience can be considered a vaccine against school failure. If so, what factors can strengthen educational resilience in individuals or in groups?

The idea of educational resilience became popular in a context of shrinking resources for lower socioeconomic status groups, of an emerging two-tiered society,

and a general climate of social and economic laissez-faire. In this climate, where policy makers have been concerned with saving tax dollars by cutting welfare education programs for disadvantaged students, the emergence of educational resilience as a possible predictor of academic success for lower-income students should not be seen as simply fortuitous (Forde, 2002).

From a philosophical standpoint, the recent interest in educational resilience has a striking parallel to the philosophical debate over intelligence that dominated the field of education and social sciences throughout the twentieth century. In his famous book, *The Mismeasure of Man*, Stephen Jay Gould (1981) unveils the role of science in the service of dominant philosophical and social policies, and helps us to understand the ideological assumptions behind so-called "scientific objectivity." It is not inconceivable that a debate of the same magnitude might take place in the near future over the issue of educational resilience.

From a philosophical perspective, it would also be interesting to explore educational resilience with other intersecting concepts. Since there is no resilience without adversity, the word adversity can designate very different situations. It can simply represent necessary milestones in human growth and maturity, or it can designate life-threatening circumstances. Does educational resilience have the same properties in either case? "Bouncing back" to academic success is also somewhat of a fluctuating notion. Does it refer to behaving in a "normal" way, or does it refer to simply surviving the trauma of schooling, with possible psychological side effects? These questions show the complexity of the concept of education resilience and call for correspondingly complex answers.

Other disciplines can shed new lights on the study of educational resilience and/or school retention. Anthropology of education is interested in the relationship between culture and education and how each influences the other. What role does education play in the dominant culture and how does education change culture? Among working-class school achievers, the anthropological perspective seek to discover what place student retention occupies in the continuum between academic success and failure.

Cultural anthropology makes us mindful of what we often take for granted as natural, but is, in fact, a product of our culture. Two social researchers, Strauss and Corbin (1990), warn their colleagues against the insidious effects of school cultural assumptions. Assumptions that are based on school cultural perspectives are especially difficult to recognize because everyone of the same cultural heritage, for the most part, thinks the same way so that no one is likely to question you for making these shared assumptions.

Finally, it is interesting to note that educational resilience and school retention are being closely examined in other modern democracies (Aronson, 2001). In 1999, France held a national conference on school retention, which indicated a similar trend toward studying and explaining the subject of educational resilience. In Asian cultures, especially in Japan and China, issues of educational resilience and/or school retention is not seen as a tragic necessity, but instead as a positive force to encourage and develop in children at an early age (Choy, 2001). There is no perceived necessity to protect the individual against adverse classroom conditions. Perhaps the retention of a few students

amidst at-risk peers does not have the same importance in Asian cultures because individuality may not be as central as it is in Western societies.

As American educators we favor integration in problem-solving approaches, not because we are eclectic "middle-of-the-roaders", but because we recognize the value of different approaches and various contributions in solving problems (Alpert & Dunham, 1986). Although I am not wedded to any one approach to solving the problem of student departure from higher education, I recognize that psychoanalysis has offered much to the understanding of the departure process. And, I firmly believe that a cognizant approach will be recognized as the core of solving retention problems.

The merit of all these perspectives consists in reframing discussions over educational resilience and school retention in higher education. That is, in attempting to address the questions posed by OSU officials (review PROBLEM STATEMENT, page 5 of Chapter 1) one gains a broader perspective, which can only benefit and inform research. They allow us to unveil unspoken assumptions about student retention.

Setting And Background At OSU

The information presented herein is not limited to any one solution. The countless discussions, and subsequent literature, on educational resilience and retention at OSU is voluminous, reaching into all areas of campus life in an effort to understand student's withdrawal from schooling. The path to enhanced student retention at OSU is not an easy or a smooth one. Successful retention efforts are difficult to mount, if only because of our continuing inability to make sense of the variables associated with

student departure. Despite the extensive body of literature that speaks to the question, there is still much we do not know about its longitudinal character and the complex interplay of forces which gives rise to it.

The purpose hereafter is to offer a review of the literature that is exceedingly relevant to this study. The remainder of the chapter is divided into the following sections: Progressive nature of departing; consequences facing school-leavers; academic performance of 'high-risk' students; challenges facing higher education; predictors of attrition at OSU; and a summary.

Progressive Nature Of Departing

In any post-secondary institution there are students that withdraw prematurely from their program of study (Wlodkowski et. al., 2001). The students can have a variety of reasons for withdrawing. The institute has an interest in knowing the reasons so that action can be taken to avert withdrawal. Like many institutions of higher learning across the country, and especially those that serve a non-traditional student population, OSU is faced with a high attrition rate and lower than desirable graduation rate (review tables in Chapter One). Although academic preparation and achievement variables are well-established predictors of success, Porter (1990) believes that student attitudes toward the university experience may also play a significant role in determining whether an individual will demonstrate educational resiliency and graduate.

In her book on school departure, Dryfoos (1990) states that "failure to complete one's schooling goals is a process rather than a single risk event" (p. 79). Understanding

the epidemiology of school departure is fundamental to this author's argument: "at-risk behaviors are residual from some previous era and, therefore, interrelated to a current activity" (p. 82). Subjects like educational resiliency and student departure and retention must, therefore, be investigated at all levels of academia, not just within the arena of higher education.

Descriptive studies have greatly increased our knowledge about what happens in the departure process. The quality of the school is, of course, a major factor, as are the actual classroom practices and attitudes of practitioners (e.g., supervisors, administrators and teachers). Some of the important books on this subject include Life in the Classroom by Philip Jackson; The Good High School by Sara Lawrence Lightfoot; and A Place Called School by John Goodlad.

Descriptive research is intended to produce statistical information about aspects of student retention that may interest policymakers and educators alike. In fact, the National Center of Educational Statistics specializes in this kind of research. Many of its findings are published in the annual volume called Digest of Educational Statistics. This Center also administers the National Assessment of Educational Progress (NAEP), which collects descriptive information about how well the nation's higher education students are doing in various subject areas (see Borg, 1989, for details).

On a larger scale, the International Association for the Evaluation of Educational Achievement (IAEA), has conducted major descriptive studies comparing the academic achievement levels of higher education students in many different nations, including the United States (see Postlethwaite & Husen, 1985, for details).

In essence, although everyone talks about the "dropout rate," there is no common definition (Dryfoos, 1990). The Center for Educational Statistics (CES) of the U.S. Department of Education tracks the number of yearly high school graduates and the number of freshman students enrolled four years earlier in each state. A 1990s figure most often stated is that one-in-five of U.S. students did not finish high school (Peters, 1995). Areas of low graduation rates for the 1980s (under sixty-five percent) included all of the South, the District of Columbia, Nevada, New York, Tennessee and Texas (see Education Weekly of February 18, 1987). Santa Rita & Scranton (2001) reported that while the statistics remain fairly constant, approximately 50 percent of the freshmen population enrolled in colleges and universities in the nineties dropped out before completing their program.

For example, low achievement during secondary schooling results from an array of forces, many of which are outside the control of the individual. Moreover, low achievement in high school has been shown to be an important predictor of substance abuse, delinquency, and sexual intercourse (Dryfoss, 1990). A young person initiates hard drug use or has early unprotected sexual intercourse or commits a delinquent act at a specific time and place. Usually these actions are voluntary and follow a personal decision (although they are heavily influenced by the social environment). In effect, low academic achievement is both a predictor and a consequence of other kinds of risk behaviors that transcend into the halls of institutions of higher learning, as well as being a problem in itself (Tinto, 1993).

Consequences Facing School-Leavers

The consequences arising from leaving higher education school prematurely are well documented (Dryfoos, 1990). Higher rates of student departures at the secondary level, though measured in different terms, are of no less concern to institutional planners. It is this departure, sparked by the belated recognition that the long-predicted decline in the size of the college-going population has finally arrived (see Figure 4), that has heightened the concern of institutional planners (Tinto, 1993).

Though the size of that cohort has been buoyed up by the influx of adult learners into institutions of higher education, this has been insufficient to counter the decline in the size of institutions' graduating classes. This is not to say that those who attend and fail to obtain a degree have not benefited from higher education.

In this regard, the label "dropout" is one of the most frequently misused terms in our lexicon of educational descriptors (Tinto, 1993). It is used to describe the actions of all school-leavers, regardless of the reasons or conditions, which mark their leaving. But higher education school-leavers, e.g., "stopout" or "dropout," often do not think themselves as "school failures." Many see their actions as quite positive steps toward goal fulfillment. Indeed, it is often the case that such departures are an important part of the process-of-discovery, which marks individuality, as well as representing social and intellectual maturation.

Still, research on the subject informs us that higher education "leavers" have significantly fewer job prospects, make lower salaries, and are most often unemployed, some permanently (Tinto, 1993). With increasing technical demands from the

| FALL | New Freshmen | % Including December | Continuing | % Including December | Readmission | % Including December | New Transfer | % Including December | TOTAL | % Including December |
|------|--------------|-------------------------|------------|-------------------------|-------------|-------------------------|--------------|-------------------------|--------|-------------------------|
| 1983 | 3,012 | | 15,693 | | 982 | | 2,240 | | 21,927 | |
| 1984 | 2,950 | -2.1% | 14,841 | -5.4% | 1,105 | 12.5% | 2,157 | -3.7% | 21,053 | -4.0% |
| 1985 | 2,982 | 1.1% | 14,200 | 4.3% | 1,092 | -1.1% | 2,232 | 3.5% | 20,506 | -2.6% |
| 1986 | 3,044 | 2.1% | 13,949 | -1.8% | 1,214 | -11.2% | 2,059 | -7.8% | 20,266 | -2.2% |
| 1987 | 2,847 | -6.5% | 13,772 | -1.3% | 1,179 | -2.9% | 1,949 | -5.3% | 19,747 | -2.6% |
| 1988 | 2,947 | 3.5% | 13,567 | -1.5% | 1,104 | -6.4% | 2,110 | 8.3% | 19,728 | -0.1% |
| 1989 | 2,705 | -8.2% | 13,203 | -2.7% | 1,089 | -1.4% | 2,007 | 4.9% | 19,004 | -3.7% |
| 1990 | 2,319 | -14.3% | 13,087 | 0.9% | 1,164 | 6.9% | 1,927 | -4.0% | 18,497 | -2.7% |
| 1991 | 2,166 | -6.6% | 13,054 | -0.3% | 1,087 | -6.6% | 2,086 | 8.3% | 18,393 | -0.6% |
| 1992 | 2,232 | 3.0% | 12,931 | -0.9% | 968 | -10.9% | 2,096 | 0.5% | 18,227 | -0.9% |
| 1993 | 2,188 | 2.0% | 12,826 | -0.8% | 906 | -6.4% | 1,987 | -5.2% | 17,907 | -1.8% |
| 1994 | 2,177 | -0.5% | 12,513 | -2.4% | 904 | -0.2% | 1,890 | -4.9% | 17,484 | -2.4% |

Figure 4: OSU Enrollment By Type Of Admission, Fall Semesters 1983 — 1994

From: OSU Student Profile, Fall, 1994, p. 53.

workforce ill-equipped jobseekers more often turn to illegitimate sources of employment, such as drug dealing and fencing "hot merchandise" (Hahn et. al., 1987). In addition, school-leavers at all levels are also more likely to be welfare dependent (Thomas, 1994), and more frequently experience unstable marriages (Milne et. al., 1989).

Furthermore, Tinto, in his book Leaving College (1993), states that:

"Much of what we think we know about school success and failure is wrong or at least is leading. A great deal of the literature is filled with stereotypical portraits of student dropouts. For instance, dropouts have been frequently portrayed as having a distinct personality profile or as lacking in a particular attribute needed for college completion. As a consequence they have been mistakenly viewed by the educational system as being different or deviant from the rest of the student population. Such stereotypes are reinforced by a language (a way of talking about student departure) which label individuals as failures for not having completed their course of studies in an institution of higher learning" (p. 3).

Society suffers the consequences of students "dropping out" in terms of lost revenues from diminished taxes and increased welfare expenditures. Dropouts are much more likely to be involved in problem behaviors of all kinds, including delinquency, substance abuse, and unwanted childbearing (Milne et. al., 1989). The chances of becoming an adjudicated criminal and serving time in prison are also much higher for school-leavers than for graduates (Alpert & Dunham, 1986).

Academic Performance Of High-Risk Students

The literature on the academic performance of higher education high-risk students is very rich (Albert & Dunham, 1986; Hahn et. al., 1987; Borg & Gall, 1989;

Dryfoos, 1990). In a discussion of the antecedents of school departure from higher education I return to the chicken-and-the-egg quandary. Which variables preceded higher education “fadeout”, “pushout”, “stopout” and/or “dropout”, and which ones are the results of departure from the institution itself?

What is known, though, is that the antecedents of being high-risk are similar: falling behind one's colleagues in scholastic rating (Tinto, 1993), and securing poor grades (Behnke et. al., 1999) often lead to dropping out with a kind of inevitable progression. Attrition increases with age and nonresident status; it decreases with higher high school and first-quarter college grades, and decreases with attendance in any freshmen orientation course (Murtaugh et. al., 1999). According to Santa Rita & Scranton (2001), a high-risk student can be defined as being deficient in specific skills; having low incoming grades (i.e., from high school); possessing a heightened expectation of failure; lacking familiarity with academic requirements; and having an absence of role models (i.e., for academic success).

Conversely, parental support is a key factor in school performance for the higher education student. In fact, among SES measures, parental education is the strongest determinant of academic success: the more advanced a parent's education, the less likely the student will be a school-leaver (Borg & Gall, 1989). Several studies document the findings that strong parental guidance is as important as coming from a two-parent family (Milne et. al., 1989; Burley et. al., 2001; Santa Rita & Scranton, 2001). As with many studies, other characteristics, such as being reared in a one- or two-parent family, or race, was not significant when the socioeconomic status (SES) was accounted for.

According to Albert & Dunham (1986) and Ross (1988), males are at a higher risk of dropping out than females — conversely, studies conducted in the nineties inform us that female adult learners are 2.3 times more likely than males to graduate within 6 years (Wlodkowski et. al., 2001). The high-risk factor is much higher for students whose primary language is not English (Borg, 1989); and even higher for students whose families live in poverty or on welfare (Thomas, 1994). Students who are truant; act out in class; have ever been on scholastic probation, suspended or expelled; and are involved in other kinds of similar behaviors are more likely to be school-leavers than others (Hahn et al., 1987). High-risk students have low expectations for future schooling, are not involved in school activities, and have friends with similar patterns of behavior (Gibbons & Phillips, 1980). High-risk students spend more time dating and, in the larger institutions, riding around in cars (Miller, 1983).

In light of the factors influencing academic performance, some students who decide to leave higher education have much higher academic potential than those who stay in, but they are unwilling to expose themselves to the daily hassles, humiliations, and dangers they would have to endure by continuing in school (Tinto, 1987; Dryfoos, 1990; Tinto, 1993).

Challenges Facing Higher Education

Colleges and universities that succeed in retaining students pay close attention to student's backgrounds, needs and expectations and take action to accommodate them (Brotherton & Phaedra, 2001). Tinto (1993) informed us that more students leave their

college or university prior to degree completion than stay (p. 1). For example, of the nearly 2.4 million students who in 1993 entered higher education for the first time, over 1.5 million will leave their institution without receiving a degree. Of those, approximately 1.1 million will leave higher education altogether, without ever completing either a two- or four-year degree program.

In fact, according to the Department of Labor statistics, out of 100 students who "make it" to high school graduation, 65 go on to college, with a dismal 17 percent (or 11 of them) ever completing any type of college degree, from A.A. to Ph.D. (Conroy, 1995).

Furthermore, the consequences of shrinking enrollment varies considerable among institutions of higher education (Tinto, 1987). While some institutions, most notable the prestigious private colleges and universities, continue to experience gains in enrollments, many smaller and less prestigious public and private colleges, two- and four-year, have undergone dramatic declines. Some institutions, primarily the smaller tuition-driven colleges, have teetered on the brink of financial collapse. Indeed, many have closed their doors in recent years with many more predicted to follow suit.

In essence, the consequences of this massive and continuing exodus from higher education are not trivial, either for individuals who leaves schooling prior to completion of a degree or for their institutions. For individuals the occupational, monetary, and other societal rewards of higher education are in large part conditional on earning a college degree. For example, men between the ages of twenty-five and older with one to three years of college report a median income in 1989 of \$31,308. College graduates of

the same age report a median income of \$38,565, a difference of nearly 23 percent (Tinto, 1993).

Predictors Of Attrition At OSU

School quality is an important factor affecting whether a student stays in school or not (Tinto, 1993). Urban communities with high employment rates may have lower retention rates because of the pull of jobs. Segregated institutions, public vocational schools, schools with low teacher-pupil ratios, large schools with large classes, and schools with emphasis on tracking and testing have higher attrition rates (Miller et. al., 1983). Students who feel shut out of school activities, powerless in adversarial teacher-student relationships, are bored or uninvolved often leave (Ross, 1988).

"Withdrawals are going to happen, but the university may need to evaluate closer the reasons students give for leaving," said Dr. Becky Johnson, OSU Dean of Undergraduate Studies. "When we ask why, we might not be giving them the right options!" Take, for example, the students who withdrew from OSU in the Spring, 1993. When asked their reasons for leaving fewer than 3 percent stated academics as being the primary cause. The fact remains that school-leavers represents a loss of both a fiscal and human capital.

What is known from research of this nature is that not all students are at the same risk of becoming an attrition statistic. Dependable variables such as ACT test scores; high school grade point averages (HSGPA); and gender and racial characteristics of OSU students have all been used as indicators of student departure

(Ross, 1988). Variations in attrition are also present among the University colleges (Figure 5). Similar inquiries have also been directed toward OSU faculty in the likes of Qualities and Attributes of Undergraduate Advisement as Perceived by Academic within the College of Agricultural Sciences and Natural Resources, Oklahoma State University (Horne, 1989); the Faculty Perceptions of Student Retention at OSU (OSU PASS Committee, 1991); and the Faculty Enrollment and Retention Questionnaire (William & Bull, 1995).

In addition, various committees at OSU have conducted numerous studies on the subject of retention. Examples include the OSU Report of Committee of Retention (1972); Final Report of the Ad Hoc Committee on Student Retention (Keys et. al., 1981); the Retention and Graduation of OSU Male Student Athletes: 1970-80 (OSU Academic Affairs & Awards Committee, 1982); the Academic Advisement Task Force survey (Bauer et. al., 1986); the OSU College of Education Study (1991); the Oklahoma High School Indicator Project (Oklahoma State Regents For Higher Education, 1992); and the College of Engineering, Architecture, and Technology Retention Study (Thompson & Shaw, 1993). Still other examples lie in the usage of norm-referenced instruments (e.g., the College Student Inventory used by OSU's Animal Science Department; and the Student Satisfaction Inventory used by OSU Office of University Assessment). And lastly, there are academic intervention programs (e.g., the Supplemental Instruction (SI) and Video- Based Supplemental Instruction (VSI). Both were developed by OSU's Office of University Assessment to target high-risk courses (and these programs were implemented on the campus during the Spring, 1995 semester) to increase overall student performance and retention (Pickering, 1995).

| College of Enrollment Fall 1993 | College of Enrollment – Fall Semester 1994 | | | | | | | | Dropped | Grad | Total |
|------------------------------------|--|----------------|----------------|---------------|----------------|--------------|--------------|--------------|----------------|----------------|--------|
| | ASNR | A&S | CBA | EDUC | ENGR | TECH | HES | UAS | | | |
| Ag. Sci. & Nat. Res. | 830 59.5% | 23 1.6% | 11 0.8% | 10 0.7% | 1 0.1% | 2 0.1% | 7 0.5% | 8 0.6% | 264 18.9% | 239 17.10% | 1,395 |
| Arts & Sciences | 30 0.7% | 2,293 54.0% | 102 2.4% | 110 2.6% | 17 0.4% | 21 0.5% | 58 1.4% | 5 0.1% | 1,076 25.4% | 531 12.5% | 4,243 |
| Business Admin. | 9 0.3% | 65 2.4% | 1,417 53.1% | 25 0.9% | 2 0.1% | 6 0.2% | 21 0.8% | 5 0.2% | 599 22.5% | 519 19.5% | 2,668 |
| Education | 6 0.4% | 58 3.4% | 22 1.3% | 910 54.0% | 1 0.1% | 1 0.1% | 6 0.4% | 4 0.2% | 368 21.8% | 309 18.3% | 1,685 |
| Engr. & Arch. | 7 0.8% | 92 4.5% | 41 2.0% | 21 1.0% | 1,208 59.5% | 54 2.7% | 8 0.4% | 3 0.1% | 351 17.3% | 235 11.6% | 2,030 |
| Engr. Tech. | 1 0.2% | 7 1.1% | 10 1.6% | 2 0.3% | 8 1.2% | 382 59.3% | 2 0.3% | 0 0.0% | 133 20.7% | 99 15.4% | 644 |
| Human Envir. Sci. | 4 1.9% | 26 2.5% | 19 1.9% | 14 1.4% | 2 0.2% | 2 0.2% | 563 55.2% | 2 0.2% | 202 19.8% | 186 18.2% | 1,020 |
| Univ. Acad. Services | 19 2.4% | 94 11.7% | 47 5.8% | 41 5.1% | 15 1.9% | 8 1.0% | 40 5.0% | 217 27.0% | 322 40.0% | 1 010% | 804 |
| Total | 916 6.3% | 2,658 18.3% | 1,669 11.5% | 1,133 7.8% | 1,254 8.7% | 476 3.3% | 705 4.9% | 244 1.7% | 3,315 22.9% | 2,119 14.6% | 14,489 |

Figure 5: OSU Freshmen Attrition By Classification And College, Fall Semesters, 1993, 1994

From OSU Student Profile, Fall, 1994, p. 92

In short, the causes of student departure from OSU have been well researched. All have generated considerable data for addressing the first question of the two-part inquiry being made by OSU officials: Why are students leaving CASNR? A constant reminder running throughout this research tapestry is that competition is increasing within post-secondary agriculture institutions for the fewer number of new students. Hence, the economics of retaining those who are presently enrolled within CASNR has become an attractive alternative for countering future departures (Ross, 1988).

This leaves the second question unattended: How do we keep them? My research, therefore, extends beyond the initial inquiry of why students are leaving CASNR. It includes an investigation into what might be done within that College to retain students, and hopefully, this information will be useful University-wide.

Previously used predictors in determining whether a student will stay at OSU or not is next (see Ross, 1988; as well as the OSU Student Profile, Fall, 1994 for statistical details). Also included herein is an annotated summary of the Student Satisfaction Survey conducted on the OSU campus in the spring of 1995 and administered by the Office of University Assessment.

ACT As A Predictor

Two key predictors of whether a student will stay in school at OSU are his/her composite ACT test score and high school grade point average (HSGPA) (Ross, 1988). OSU's Office of Planning, Budget and Institutional Research data reveals that the ACT test scores of OSU freshmen have increased steadily over a five-year period. An

analysis suggests, though, that disparities in persistence are prevalent and based on the academic performance of students. In fact, Ross (1988) shows there exist a strong, positive relationship between the two variables and student retention from the freshmen-to-sophomore year. In brief, as a student's ACT score and/or HSGPA increases, the probability of retention also increases (see Ross, 1988, Tables 4 and 5, pp. 9 & 10, respectively).

For instance, using seven-year means to help control for yearly fluctuations (i.e., 1980 to 1986), she found the mean percentage of students who returned to OSU after their freshman year increased from 54.4 percent for the ACT category of 0-14; to 64.4 percent for students in the 15-17 ACT score range; to 71.1 percent for the ACT score category of 18-24; to 81.7 percent for the 25-29 ACT score range; and up to 86.9 percent for the final 30⁺ ACT score category. In short, differences in retention percentages as the ACT score category hierarchy descends are significant. There is a 32 percent difference between the lowest (0-14) to the highest (30⁺) score category. In the 18-24 score category, which contains the overwhelming number of students, there is more than 17 percent difference to the 30⁺ score category.

HSGPA As A Predictor

Ross (1988) found that the higher a student's HSGPA is, the more likely he/she will return to OSU after the end of the freshman year (p. 11). Using seven year means to control for year-to-year variability (i.e., 1980 to 1986), Ross showed that student retention rates are 47.4 percent for the 0-2.9 grade point average; 51.9 percent for the

2.1-2.5 category; 62.8 percent for the 2.6-3.0 category; 74.6 percent for the 3.1-3.5 category; and 84.1 percent for the 3.6-4.0 category. A difference of over 35 percentages points in retention exists.

In sum, her data suggested that students who enter OSU with low ACT and HSGPA scores are, generally speaking, not likely to be with the institution one year later and are much more likely not to complete their education at OSU. Many of these students enter under the special waiver program, the so-called "five percent probation" rule (Ross, 1988). Still, from a policy perspective, tough choices must be made about the "five percent" rule. On the one hand they increase class sizes, consume University resources, and increase the need for remedial classes in a first-class research university. On the other hand, these students are less likely to graduate (e.g., "52 percent dropped out after the first year; 68 percent after the second year; and 75 percent after the third year") (Ross, 1988, Table 8, p. 15). Questions to be addressed are do the few who make it through the institution justify the program? Or, should the "five percent" rule be changed. Concomitantly, how will the planned upgrading of academic admission standards impact the special waiver programs? (notes from a personal conversation with Karen Fellers, OSU recruiter, on May 9, 1995).

Racial Characteristics As A Predictor

Ross (1988), suggest that disparities in student persistence by race exist at OSU (Figure 6). She states that differences in student retention rates between whites and other minority groups, with the exception of Asians, are discouraging. Black student

| Fall Semester | White | | Black | | Native American | | Hispanic | | Asian | | Nonresident | | Total |
|------------------|--------|-------|--------|------|-----------------|------|----------|------|--------|------|-------------|-------|--------|
| | Number | % | Number | % | Number | % | Number | % | Number | % | Number | % | |
| 1985 | 17,676 | 84.6% | 562 | 2.7% | 416 | 2.0% | 149 | 0.7% | 237 | 1.1% | 1,861 | 8.9% | 20,901 |
| 1986 | 17,393 | 84.3% | 577 | 2.8% | 460 | 2.2% | 158 | 0.8% | 240 | 1.2% | 1,806 | 8.8% | 20,634 |
| 1987 | 16,985 | 84.4% | 523 | 2.6% | 492 | 2.4% | 153 | 0.8% | 238 | 1.2% | 1,725 | 8.6% | 20,116 |
| 1988 | 17,063 | 84.9% | 543 | 2.7% | 566 | 2.8% | 178 | 0.9% | 247 | 1.2% | 1,511 | 7.5% | 20,108 |
| 1989 | 16,360 | 84.5% | 546 | 2.8% | 613 | 3.2% | 173 | 0.9% | 246 | 1.3% | 1,416 | 7.3% | 19,354 |
| 1990 | 15,800 | 83.8% | 470 | 2.5% | 693 | 3.7% | 167 | 0.9% | 289 | 1.5% | 1,439 | 7.6% | 18,858 |
| 1991 | 15,419 | 82.4% | 481 | 2.6% | 818 | 4.4% | 210 | 1.1% | 303 | 1.6% | 1,475 | 7.9% | 18,706 |
| 1992 | 15,039 | 81.0% | 496 | 2.7% | 929 | 5.0% | 219 | 1.2% | 312 | 1.7% | 1,561 | 8.4% | 18,556 |
| 1993 | 14,474 | 79.5% | 472 | 2.6% | 1,016 | 5.6% | 233 | 1.3% | 332 | 1.8% | 1,686 | 9.3% | 18,213 |
| 1994 | 13,895 | 78.1% | 419 | 2.4% | 1,044 | 5.9% | 279 | 1.6% | 349 | 2.0% | 1,798 | 10.1% | 17,784 |

Figure 6: OSU Enrollment By Ethnicity, Fall Semesters, 1985 — 1994

From : OSU Student Profile, Fall, 1994, p. 56.

retention after one year lags behind that of whites by more than seven percent; white/Hispanic ratios show a 10 percent discrepancy; and on the average and across a seven-year period (i.e., 1980 to 1986), 11.5 percent fewer Native Americans returned after one year at OSU than did white students.

For instance, after a six-year period (i.e., 1980 to 1986), 44 percent of the beginning freshman class of 1981 (who were of white race) graduated while only 26.9 percent of blacks graduated during this same period (see Ross, 1988, Table 10, p. 18). Moreover, about 6 percent of the original white students were still enrolled, compared to 1.9 percent of black students. Hispanic and Native Americans graduation rates once again trailed behind that of their white counterparts, 34.7 percent and 35.8 percent, respectively. Asian and nonresident aliens demonstrated greater persistence than other racial categories. The data suggested that, given the poor record of OSU system for not integrating students within their institutions of higher education, must develop policies to enhance minority student retention must be forthcoming (see Ross, 1988, Table 11, p. 36).

Gender Characteristics As A Predictor

Female students are slightly more likely than males to return to OSU after one year of college (Albert & Dunham, 1986; Ross, 1988). In fact, statistics revealed a retention average for females of 71.9 percent as compared to 69.3 percent for males during a seven-year period (i.e., between 1980 to 1986) (Ross, 1988, p. 19) Gender-related differences for the freshman class of 1981 reveals less of a discrepancy over

time. After six years, 44.1 percent of female students as compared to 43.6 percent of male students had graduated. But when comparing percentage of males-to-females still enrolled after the sixth year, we note twice as many males still attending OSU (i.e., 8.0 percent to 4.1 percent, respectively (see Ross, 1988, Table 12, p. 20).

Retention By Colleges As A Predictor

Although the problem of students departing from the College of Agriculture must be viewed as a University-wide issue, current retention statistics are quite important since they show that student persistence varies across University colleges (Figure 7). Given these disparities among colleges, extra efforts must be forthcoming from those colleges that lag behind in retaining students. Notably, the College of Agriculture had the highest average percentage (74.2 percent) of students who were retained over a seven-year period, i.e., 1980 to 1986 (see Ross, 1988, Table 13, p. 22). Three other colleges (i.e., Business Administration; Engineering, Architecture and Technology; and Home Economics) show one-year persistence rates of 72.7 percent. The "Other" category, which includes the "five percent probation" programs, had the lowest retention: 59.3 percent.

Transfer Students As A Predictor

A high-risk group of becoming attrition statistics after attending for one year are those who transfer from other Oklahoma institutions of higher education to OSU. For

| College | Year | Freshmen | | | Sophomores | | | Juniors | | | Seniors | | |
|----------------------|------|----------|--------|--------|------------|-------|-------|---------|-------|-------|---------|-------|-------|
| | | Dropped | Cont.* | Grad.* | Dropped | Cont. | Grad. | Dropped | Cont. | Grad. | Dropped | Cont. | Grad. |
| Ag. Sci. & Nat. Res. | 1991 | 25.4 | 74.6 | 0.0 | 20.3 | 79.3 | 0.4 | 16.0 | 80.5 | 3.5 | 19.5 | 29.9 | 50.5 |
| | 1992 | 17.3 | 82.3 | 0.4 | 20.9 | 78.3 | 0.8 | 17.5 | 79.1 | 3.4 | 19.6 | 30.3 | 50.1 |
| | 1993 | 19.6 | 80.4 | 0.0 | 20.8 | 78.9 | 0.3 | 16.3 | 77.9 | 5.8 | 19.6 | 28.9 | 51.4 |
| Art & Sciences | 1991 | 32.0 | 68.0 | 0.0 | 25.1 | 74.8 | 0.1 | 21.5 | 75.2 | 3.3 | 28.0 | 26.2 | 45.7 |
| | 1992 | 29.2 | 70.8 | 0.0 | 25.6 | 74.4 | 0.0 | 24.7 | 71.9 | 3.4 | 25.4 | 30.7 | 43.9 |
| | 1993 | 27.0 | 73.0 | 0.0 | 24.3 | 75.6 | 0.2 | 24.1 | 74.7 | 1.3 | 26.2 | 27.8 | 46.0 |
| Business Admin. | 1991 | 26.8 | 73.2 | 0.0 | 22.2 | 77.8 | 0.0 | 19.7 | 72.6 | 7.6 | 22.6 | 20.8 | 56.6 |
| | 1992 | 27.6 | 72.4 | 0.0 | 19.5 | 80.5 | 0.0 | 19.8 | 74.1 | 6.1 | 22.6 | 20.5 | 56.9 |
| | 1993 | 26.2 | 73.8 | 0.0 | 23.1 | 76.8 | 0.2 | 20.2 | 75.3 | 4.5 | 22.1 | 17.4 | 60.5 |
| Education | 1991 | 28.5 | 71.5 | 0.0 | 23.5 | 76.5 | 0.0 | 16.9 | 80.3 | 2.8 | 19.7 | 27.4 | 52.8 |
| | 1992 | 30.5 | 69.5 | 0.0 | 19.9 | 80.1 | 0.0 | 25.7 | 72.3 | 2.0 | 21.6 | 30.1 | 48.3 |
| | 1993 | 34.9 | 65.1 | 0.0 | 19.1 | 80.9 | 0.0 | 21.0 | 77.0 | 2.0 | 20.2 | 30.1 | 49.7 |
| Engineering & Arch. | 1991 | 25.9 | 74.1 | 0.0 | 15.3 | 84.4 | 0.2 | 14.0 | 85.8 | 0.2 | 13.4 | 54.6 | 31.9 |
| | 1992 | 23.4 | 76.6 | 0.0 | 13.0 | 87.0 | 0.0 | 13.4 | 86.4 | 0.2 | 20.2 | 43.4 | 36.4 |
| | 1993 | 23.1 | 76.9 | 0.0 | 15.0 | 85.0 | 0.0 | 14.3 | 85.7 | 0.0 | 20.9 | 45.9 | 33.2 |
| Engr. Technology | 1991 | 42.2 | 57.8 | 0.0 | 28.6 | 71.4 | 0.0 | 20.6 | 79.4 | 0.0 | 25.5 | 42.5 | 31.9 |
| | 1992 | 33.8 | 66.2 | 0.0 | 18.1 | 81.9 | 0.0 | 18.3 | 81.7 | 0.0 | 20.2 | 43.4 | 36.4 |
| | 1993 | 27.3 | 72.7 | 0.0 | 20.6 | 79.4 | 0.0 | 17.4 | 81.3 | 1.3 | 20.9 | 45.9 | 33.2 |
| Human Envir. Sci. | 1991 | 26.3 | 73.7 | 0.0 | 22.3 | 77.7 | 0.0 | 17.2 | 79.9 | 2.9 | 23.2 | 25.0 | 51.8 |
| | 1992 | 22.4 | 77.6 | 0.0 | 16.5 | 83.5 | 0.0 | 18.1 | 79.5 | 2.4 | 23.0 | 34.5 | 42.5 |
| | 1993 | 27.2 | 72.8 | 0.0 | 18.3 | 81.7 | 0.0 | 13.8 | 84.0 | 2.2 | 22.0 | 27.1 | 50.8 |
| Undecided | 1991 | 31.6 | 68.4 | 0.0 | 19.3 | 80.7 | 0.0 | 40.0 | 60.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 1992 | 34.7 | 72.8 | 0.0 | 24.6 | 75.4 | 0.0 | 33.3 | 67.7 | 0.0 | 0.0 | 100.3 | 0.0 |
| | 1993 | 35.6 | 62.5 | 0.0 | 33.3 | 66.7 | 0.0 | 42.9 | 57.1 | 0.0 | 50.0 | 50.0 | 0.0 |
| Alt. Admissions | 1991 | 37.6 | 62.4 | 0.0 | 50.0 | 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 1992 | 34.7 | 65.3 | 0.0 | 33.3 | 66.7 | 0.0 | 50.0 | 50.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 1993 | 35.6 | 64.4 | 0.0 | 30.8 | 69.2 | 0.0 | 100.0 | 74.7 | 1.3 | 0.0 | 0.0 | 0.0 |

Figure 7 Continued

| College | Year | Freshmen | | | Sophomores | | | Juniors | | | Seniors | | |
|-----------------------|------|----------|--------|--------|------------|-------|-------|---------|-------|-------|---------|-------|-------|
| | | Dropped | Cont.* | Grad.* | Dropped | Cont. | Grad. | Dropped | Cont. | Grad. | Dropped | Cont. | Grad. |
| Alt. Adult Admissions | 1991 | 57.7 | 42.3 | 0.0 | 35.7 | 64.3 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 1992 | 48.1 | 51.9 | 0.0 | 35.8 | 61.5 | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 1993 | 54.2 | 45.8 | 0.0 | 31.6 | 68.4 | 0.0 | 0.0 | 100.0 | 0.0 | 100.0 | 0.0 | 0.0 |
| Transfer | 1991 | 50.0 | 50.0 | 0.0 | 40.5 | 59.5 | 0.0 | 39.1 | 56.5 | 4.3 | 0.0 | 100.0 | 0.0 |
| | 1992 | 39.5 | 60.5 | 0.0 | 46.2 | 53.8 | 0.0 | 27.3 | 72.7 | 0.0 | 41.7 | 58.3 | 0.0 |
| | 1993 | 50.0 | 50.0 | 0.0 | 37.5 | 62.5 | 0.0 | 42.9 | 57.1 | 0.0 | 25.0 | 77.0 | 0.0 |
| Acad. Assessment | 1991 | 76.0 | 24.0 | 0.0 | 57.7 | 42.3 | 0.0 | 47.3 | 52.7 | 0.0 | 61.5 | 38.5 | 0.0 |
| | 1992 | 58.1 | 41.9 | 0.0 | 50.8 | 49.2 | 0.0 | 38.5 | 61.5 | 0.0 | 33.3 | 66.7 | 0.0 |
| | 1993 | 46.2 | 53.8 | 0.0 | 48.6 | 51.4 | 0.0 | 36.0 | 64.0 | 0.0 | 14.3 | 85.7 | 0.0 |
| Total | 1991 | 34.4 | 67.6 | 0.0 | 23.3 | 76.7 | 0.0 | 19.3 | 77.0 | 3.7 | 22.6 | 30.6 | 46.8 |
| | 1992 | 28.8 | 71.2 | 0.0 | 21.8 | 78.2 | 0.0 | 21.0 | 75.9 | 3.1 | 21.5 | 33.2 | 45.3 |
| | 1993 | 28.8 | 71.2 | 0.0 | 21.9 | 78.0 | 0.0 | 19.9 | 77.6 | 2.5 | 21.7 | 31.3 | 47.0 |

Figure 7: OSU Retention By College, Fall Semesters, 1991 — 1993

Fram: OSU Student Profile. Fall. 1994, p. 93, 94.

instance, Ross (1988) found a differential of 5.9 percentage points in general attrition rates between transfer freshmen and non-transfer freshmen (see Table 15, p. 26).

Changing Trends At OSU

The research gathered so far in this study has been very illuminating and suggest several possibilities for university policy changes. While some students left OSU without any sign of academic distress, the tables presented thus far in this study paint a clear picture of time (and money) lost due to a high number of students becoming high-risk. This appears to be the biggest single factor keeping students from becoming successful (i.e., graduating from OSU). Since some of the high-risk students are still enrolled (being retained) and may eventually graduate (becoming successful), many appear to have not given up.

Studies of both retention and graduation rates tend to take one of two forms: a broad look at a fairly representative segment of the student population and whether that segment persist or graduates at some other institution; or a more narrow look at the students of one institution, and whether those students persists or graduate from that institution. Certainly institution studies are of less value to policy makers at the national level or state level (Reichard, 2001).

Former Oklahoma State University President James Halligan (1994-2003) reversed a 12-year decline in enrollment and heightened both the retention and graduation rates (Gonzales, 2003). He focused much time and attention to first-year retention, achieving the state's highest freshmen-to-sophomore retention rate (Watkins,

2003). The freshmen-to-sophomore retention rate increased to over 83 percent on the way to Halligan's goal of 60 percent graduation rates. Under his leadership, the university made individual tutoring available for many freshmen classes, orientation classes for all students, and mandatory advising was implemented. The university's probation/suspension policies, which were set up by the state coordinating board, were set up to simultaneously warn and help beginning students quickly when they got into academic difficulty. As a result, enrollment at OSU rose to an all-time high and the freshmen class became one of the best in the university history (Gonzales, 2003). As a web site aptly phrased it, "Graduation rates were setting records" ([http://okstate.edu/vision/ 5yrup date.html](http://okstate.edu/vision/5yrup%20date.html)). Under Halligan's leadership the 2003 graduation rate reached a record 58.8 percent and the university's freshmen retention rate rose in excess of 80 percent (Table III).

Summary

If educational resilience is a process rather than a trait, any attempt to measure it in individuals may be futile. Measuring brings with it the notion of comparison, another pointless activity with regard to educational resilience. One would be very hard-pressed to say who among the fall, 1995 CASNR freshmen was the most resilient or the least resilient. It is simply impossible to establish any comparison or ranking among them. Some would argue that the "successful" (as determined by graduation) showed more educational resilience than individuals who did not succeed. While the findings of this study yet do not permit me to answer this argument, I would simply answer that — as a

TABLE III

OSU Full-Time Freshmen Graduation Rates, Fall Semesters, 1980 — 2003

| Retention Rates | | Graduation Rates | |
|-----------------|--|-------------------|-----------------------|
| Fall Semester | Percent Who Returned The Following Fall | Academic Years | Percent Who Graduated |
| 1980 | 82.8 | 1980 — 1986 | 45.5 |
| 1981 | 83.7 | 1981 — 1987 | 43.9 |
| 1982 | 79.4 | 1982 — 1988 | 44.6 |
| 1983 | 78.6 | 1983 — 1989 | 48.8 |
| 1984 | 79.8 | 1984 — 1990 | 47.6 |
| 1985 | 80.6 | 1985 — 1991 | 45.5 |
| 1986 | 81.1 | 1986 — 1992 | 44.5 |
| 1987 | 78.3 | 1987 — 1993 | 46.2 |
| 1988 | 73.7 | 1988 — 1994 | 48.2 |
| 1989 | 67.9 | 1989 — 1995 | 50.7 |
| 1990 | 68.1 | 1990 — 1996 | 49.0 |
| 1991 | 74.2 | 1991 — 1997 | 49.2 |
| 1992 | 73.6 | 1992 — 1998 | 50.2 |
| 1993 | 73.1 | 1993 — 1999 | 51.8 |
| 1994 | 76.5 | 1994 — 2000 | 50.0 |
| 1995 | 76.6 | 1995 — 2001 | 53.7 |
| 1996 | 79.1 | 1996 — 2002 | 55.5 |
| 1997 | 82.0 | 1997 — 2003 | 58.8 |

Table III Continued

| Retention Rates | |
|-----------------|----------------------|
| Fall Semester | Percent Who Returned |
| 1998 | 83.1 |
| 1999 | 84.6 |
| 2000 | 81.7 |
| 2001 | 80.1 |
| 2002 | 80.3 |
| 2003 | 83.4 |

social process rather than a personal measure — whenever educational resilience is absent, it is our collective social and cultural engagement that is deficient.

In addition, this literature review showed that the more severe adversity is, the more effects adversity will have on individuals, and the more social intervention will be necessary. It also showed how the dominant culture and social order can aggravate faces of adversity for high-risk students. Recent social policy that has stressed the importance of "self-reliance" and the "new social contract," which eliminates safety measures for populations at-risk, will only intensify academic poverty and adversity among people who are already at the bottom of the social ladder (Levitz, Noel & Richter, 1999).

Undeniably, educational resilience as a transformational process helps high-risk students chart a new course for themselves. With much more effort than their middle-

class counterparts, they were able to achieve a significantly high level of success. This is cause for hope and concern — the former because it refutes theories of social determinism, the latter because it transfers the burden of responsibility from the individual alone to a shared accountability among individuals, social institutions, and lawmakers.

When lawmakers who, for the most part, come from privileged backgrounds (and are therefore without an intimate understanding of social adversity) make choices guided by a philosophy of individualism with regard to social programs, health programs, or educational reform, there is indeed cause for concern. Without a growing awareness of the need for shared accountability, the gap between privileged and underprivileged will continue to exist and the tenets of democracy will become more and more fragile. This is to say that student retention has been a much-studied subject at OSU, and the paper trail can be traced back to 1972 (see Report of Committee on Retention, 1972). Retention committees have been formed, and a plethora of recommendations offered. Statistics have been compiled, and students 'at-risk' identified. Consultants have been hired, and troublesome persistence areas determined. Policy initiatives have been implemented to address the problem. Yet, the attrition problem remains extant at OSU in the 1990s. For some, student retention might be viewed as an intractable issue. I reject this pessimistic perspective.

Granted, our knowledge of causes is certainly limited. Though I have a sense of what sorts of actions constitutes successful programming, I am not yet able to tell OSU College of Agriculture officials how or why different actions within individual departments work for different types of students. I have yet to distinguish those

attributes of successful programming that are department-specific from those that are College-specific. More importantly, I still am not able to tell University officials what procedures they should follow to initiate successful retention programs suited to their own needs and resources.

Up until now, my literature review has been quite descriptive rather than explanatory in nature. Without a doubt student retention efforts will continue in the future. The question, however, is at what rate? Pride alone will not allow OSU to remain ranked at the bottom of the Big 8 in student retention. More importantly, we, in CASNR, owe it to our students to further study the issue of SUCCESS and to formulate, evaluate, and implement student graduation policies that work.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to identify factors related to OSU's College of Agricultural Sciences and Natural Resources, Fall of 1995 freshman population for predicting retention and success within that College. Discussion in this chapter was divided into eight (8) major areas: 1) Institutional Review Board, 2) Type of Research Design; 3) Population; 4) Instrumentation; 5) Validity of the Instrument; 6) Reliability of the Instrument, 7) Data Collection Procedures; and 8) the Statistical Analysis of Data.

Research Objectives

The following objectives were necessary to accomplish the purpose of this study:

1. Identify demographic and academic characteristics of incoming freshmen in OSU's College of Agricultural Sciences and Natural Resources which might affect retention and success, including those measured by the College Student Inventory, High School GPA (HSGPA), ACT scores, and College Cumulative GPA (CCGPA).

2. Determine the relationship between retention (i.e., completion of 2nd semester at OSU), and the identified demographic and academic characteristics.
3. Determine the best demographic and academic predictors of retention.
4. Determine the relationship between success (i.e., as measured by CCGPA at graduation), and the identified demographic and academic characteristics.
5. Determine the best demographic and academic predictors of success.

Institutional Review Board (IRB)

Federal Regulations and Oklahoma State University policy require review and approval of all research studies that involve human subjects before investigators can begin their research. The Oklahoma State University Research Services and the IRB conduct this review to protect the rights and welfare of human subjects involved in biomedical and behavioral research. In compliance with the aforementioned policy, this study received the proper surveillance, was granted permission to continue, and was assigned the following number: AG-032 (Appendix A).

Type Of Research Design

A correlational research design was used in this 6-year longitudinal study (see Figure 8, Stratil Prediction Model). This methodological framework described the relationship and predictability between one dependent variable with two or more independent variables, thereby allowing the freedom to examine various aspects of the dependent variable (Pedhazur, 1982). Additionally, this design provided a practical and

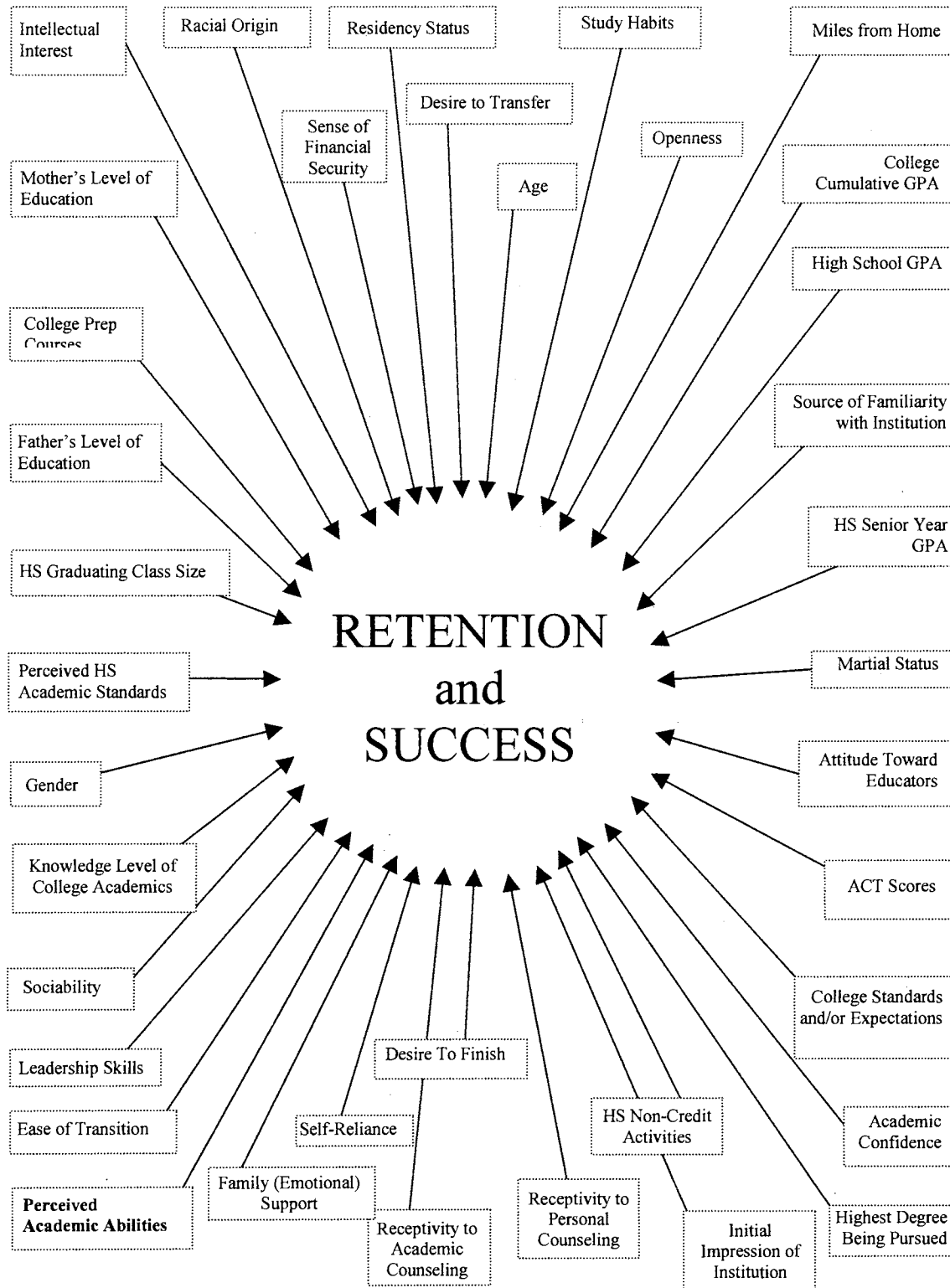


Figure 8: The Stratil Prediction Model, Regarding Retention And Success And Demographic And Academic Variables

systematic way of exploring the relationship among demographic, academic and school-related variables and the retention and success rate of the Fall 1995 CASNR freshmen.

Population

The most appropriate group for an educational investigation is the total population. Since the goal of this initiative is to identify variables unique for predicting retention and success within the freshmen population, a census was taken. The student population for this study consisted of all the freshmen (hereafter referred to as “study students”) who chose to enroll in CASNR for the Fall 1995 semester. Two hundred twenty-three (N = 223) freshmen students completed the College Student Inventory during their freshmen orientation class (Agriculture 1011). Note: one student was deceased before Summer 2002, and therefore, was eliminated from the list.

Instrumentation

The major gathering instrument for this study was the College Student Inventory (Stratil, 1988). The main body of the questionnaire contained 194 questions (items). This instrument consisted of two major sections. Section one consisted of demographic questions (items). The questions in this section offer various options to participants’ for selection, which are represented on the answer sheet as numbered circles.

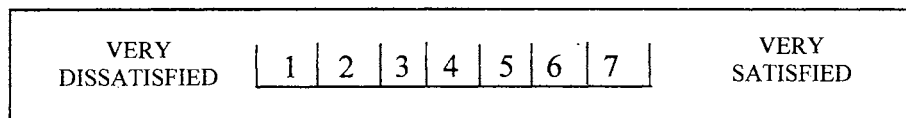
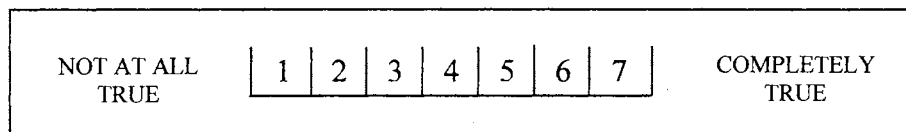
Thus, question #1 appears as follows on the answer sheet:

| Question # | Options |
|------------|---------|
| 1 | ①②③④⑤⑥⑦ |

The answer sheet always provided seven circles, even though some questions offer fewer than seven options. Instructions were to ignore the extra circles.

Section two contained 18 academic items in a Semantic Differential format. The Semantic Differential technique was developed by Osgood, Suck, and Tannenbaum (1967). The Semantic Differential technique is based on the assumption that objects have two different types of meaning for individuals, *denotative* and *connotative*, which can be rated independently. Denotative significance refers to the dictionary meaning of a word, while connotative significance refers to the associations or suggestions that a word calls up. One can more easily state the denotative meaning of an object than its connotative meaning. It is possible, however, to measure the connotative meaning of an object indirectly by asking individuals to rate the object using bipolar adjectives. Thus, the meaning of an object for an individual would be the pattern of his or her ratings of that object on the bipolar adjective scales.

A Semantic Differential scale is constructed by selecting pairs of adjectives representing the evaluative dimension (see examples below).



Notice in the above scales that the adjective pairs are listed in both directions to minimize a *response set* — that is, a tendency to favor certain positions in a list of options. An individual might have a tendency to choose the extreme right end and would check that position for each item. However, if the direction of the scale is changed in a random way so that the right end is not always the more favorable response, then the individual is forced to read each item and respond in terms of its content rather than in terms of a positional preference.

In recording responses on the *CSI*, the points are assigned on a 1 -to- 7 scale, with 7 representing the most positive response. Thus, on the first position, *Very Dissatisfied* would receive a score of 1, the next position a score of 2, and *Very Satisfied*, the last position, would receive a score of 7. On a similar question, the scoring would be reversed, with *Very Dissatisfied* receiving 7 points and *Very Satisfied* 1 point. Ratings over all the items would be totaled and an average score reported.

Coding Procedures

One hundred seven-two of the one-hundred ninety-four CSI (items) assigned to the academic variables by the author was logically based on item content. The number of items ranged from three to ten items per variable with an average of seven.

Regarding demographic variables, the HSGPA and CCGPA were raw scores obtained from the Registrar's office whereas HSSYGPA was represented by numerous categories (e.g., *A*, *halfway between A and B*, *B*, *halfway between B and C*, *C*, and

halfway between C and D) on the CSI, and these categories represented a quantitative attribute (i.e., 1-7, respectively).

Likewise, on the CSI the categorized variables class size, mother's level of education, father's level of education, knowledge level of college academics, highest degree being pursued and academic abilities have numerous categories and these categories represent a quantitative attribute, especially in multivariate analysis. For instance, class size (where "1" stands for *less than 50*, "2" stands for *50 to 99*, "3" stands for *100 to 149*, "4" stands for *150 to 299*, "5" stands for *300 to 499* and "6" stands for *500 or more*) can be used because there are a lot of categories and the numbers designate a quantitative attribute (increasing class size).

The study students, on the average and as a group, had a HSGPA of 3.65, a HSSYGPA of "A", and by the end of the 2nd semester at OSU had a CCGPA of 2.87. Additionally, on the average, their high school graduating class had between 100 and 149 students. Also, on the average, the mothers and fathers had master's degrees.

Moreover, when comparing themselves to the average high school graduating senior in this county, on the average the study students perceived their academic knowledge to be "*Next to the highest 20 %*". On the average the highest degree being pursued by these students is the *Masters* and they perceived their academic ability to be "*Considerable above average.*"

Furthermore, the variable, racial origin, was investigated in this investigation. This variable was dichotomized into *majority* and *minority*. They were coded "0" for *minority* and "1" for *majority*. Similarly, the variable, gender, was also employed as a

predictor variable for this investigation. The attribute, male, was coded “0” and the attribute, female, was coded “1”.

In addition, the college preparatory courses variable, was collapsed into a dichotomous variable for this investigation. For analysis purposes, students who took college prep courses were coded “0” and those who did not was coded “1”. Moreover, the variable, age, was used to measure the student’s age at the time of assessment. On the average, study students were 18 years old when assessed during the Fall, 1995 semester.

Finally, the variable, residence status and miles from home, were both collapsed into a dichotomous format for this investigation. They were both recoded into dummy variables. Residency status was coded with a “1” for *On campus* and a “0” for *Off campus*. Similarly, miles from home was coded a “1” for *101 miles or more from home* and a “0” for *less than 100 miles from home*.

Validity Of The Instrument

According to Creswell (1994), “ If one plans to use an existing instrument, describe the established validity and reliability of items and scales on the instrument” (p. 121). This is vital to the validation of the data. Three general types of validity are used in gathering validity information. These are content, construct, and criterion. Content validity is a nonstatistical type of validity that is usually associated with achievement test (Creswell (1994). According to Stratil (1998), “Content validity is the

degree to which the content of the measurement procedure is directly and obviously relevant to the conceptual definition of the variable that one intends to measure” (p. 8).

A number of methods have been used to build a high degree of content validity into the CSI. Rather than rely on post hoc factor analysis to define scales, for example, the items for each scale were written with the express intent of measuring a particular background or motivational variable as accurately as possible. Great care was taken to ensure that the nuances in each item were appropriate to that intent. In addition, a defensiveness scale was used to eliminate items eliciting a tendency to generate falsely positive responses. Through a five-year course of empirical testing, modification and further testing, a concerted effort has been made to maximize the discrimination between the scales. As a result of these efforts, all of the CSI's scales have a very high level of content validity.

The CSI's content validity is evidenced in the relationship between its practical purpose and its factor structure. Since the general purpose of the CSI is to measure the background and motivational underpinnings of college success, its primary scales form into factors that accord very closely with that goal. Table 3 of Appendix 4 reports the results of this analysis, focusing on scales loading at .40 or higher.

Construct validity, on the other hand, is determined by investigating the psychological qualities, traits, or factors measured by a test to (Creswell, 1994). Test constructors who build tests to measure abilities and adjustments have demonstrated that the traits studied can be reduced to statistical elements called factors.

According to Stratil (1998), “Construct validity is the degree to which a given set of findings is consistent with a coherent, well-developed theory” (p. 28). Below is a

list of theoretical and empirical background concerning the academic characteristics assessed by the CSI (Morrison, 1999).

1. Study Habits Using Weiner's attribution theory (1985) as a general framework, Smith and Price (1996) found that many developmental students have an external focus of control (attributing the major casual factors in their lives to task difficulty and luck rather than effort).
2. Intellectual Interest Cote and Levin (1997) found that the motivation for intellectual growth was a significant factor in predicting GPA, but they also found that the college experience does not strengthen this motivation as one might expect.
3. Desire To Finish Allen (1999) found that the CSI-A's Desire To Finish scale predicted persistence among minority students in a casual model. Schutz and Lanehart (1994) found that possession of long-term educational goals is related to academic performance.
4. Academic Confidence Ethington (1990) found that academic self-confidence predicted college persistence. Himelstein (1992) found that expected grades predicted GPA and the completion of at least one course.
5. Attitude Toward
 Educators Stratil (1988) has argued that student's general attitude toward educators may transfer to the educational process and facilitate or interfere with the learning process.
6. Self-Reliance Geiger and Coper (1995) and Smith (1968) found that self-reliance was related to academic success. Pascarella and Terenzini (1991) review evidence that autonomy increases during college.
7. Sociability See Stoecker, et. al. below.
8. Leadership Skills Ting (2000) found that leadership skills were positively related to academic success.
9. Ease of Transition Stoecker, Pascarella, & Wolfe (1988) have argued that social integration promotes commitment to education and that commitment promotes persistence.
10. Family (Emotional)
 Support Reitzes and Mutran (1980) develop and test a theoretical model relating family background and perceived importance of significance others to academic success.

- | | |
|-------------------------|---|
| 11. Openness | Perry (1970) found that intellectual development in college is characterized by an increasing acceptance of the validity of multiple perspectives and the use of increasing complex integrative processes. |
| 12. Financial Security | Himmelstein (1992) found that feeling able to meet the financial burdens of going to college predicted rate of course completion and GPA. |
| 13. General Receptivity | Himmelstein (1992) found that willingness to seek help with a problem is related to completion of at least one course and a heightened GPA. |
| 14. Initial Impression | Himmelstein (1992) found that institutional satisfaction is related to completion of at least one course and to heightened GPA. Richardson and Sullivan (1994) found that the CSI-A's Initial Impression scale was more strongly related to freshmen GPA for at-risk students than was the SAT. |

Moreover, to establish construct validity of the CSI instrument for this study, the following terms were used: credibility, consistency, dependability, transferability, and confirmability. The criteria used were:

1. **Credibility.** The independent variables accurately represented the views of the subjects and the data in the researcher's conclusions. This was accomplished by addressing the threats to the instrument's external validity (i.e., selection effects, setting effects, history effects, and construct effect) (Guba and Lincoln, 1985, pp. 291-92; LeCompte & Goetz, 1982).
2. **Consistency in test administration and scoring** (were errors caused by carelessness in administration or scoring?) (Borg et. al.,1993). In this study the item responses were consistent across constructs (e.g., concepts, ideas, thoughts, perceptions).
3. **Dependability.** In this study, a dependability audit was carried out (i.e., the review committee will attest to the fact that the data, facts, figures, and

constructs can be traced to original sources). In short, all documents, notes and data were retained for later inspection.

4. Transferability. This study's results were representative of similar settings (see *Consequences Facing School Leavers*, Chapter 2, p. 24) because descriptive details of the collected data were provided to allow others to decide if the findings are, in fact, applicable and representative.
6. Confirmability. This item is concerned with assuring that data and interpretations were rooted in contexts and persons apart from the evaluator and are not simply figments of the evaluator's imagination (Guba & Lincoln, 1989). This was accomplished by checking interpretations and conclusions for researcher bias.

Criterion validity is primarily statistical, and it is the correlation between a set of test scores and some other predictor with an external measure. This external measure is referred to as a criterion. Concurrent validity is a type of criterion validity, except that the criterion measures are collected at the time the test is administered (Downie and Heath, 1965). According to Stratil (1998), "An instrument's concurrent validity is the degree to which its measurements correspond to the measurements provided by other instruments of known validity. The term concurrent implies that two sets of instruments are administered during the same period of time so that extraneous casual variables do not contaminate their relationship" (pp. 11, 12).

The first study of the CSI's concurrent validity to be examined involves an assessment made by the student's institution. One can conceptualize an institution's admissions procedures as constituting a systematic method of assessing student

preparedness for college. This procedure consists of examining a set of students' aptitude test scores, high school records of performance and extracurricular activity, and recommendations by teachers and others. A decision is then made as to the students' fitness to meet the institution's academic standards. These decisions can thus serve as a concurrent standard against which a psychometric instrument can assess its validity.

Based on these premises, Morrison's (1999) research on the CSI-A can be considered a study of concurrent validity. She compared the CSI-A's scale scores for a group of conditionally admitted students (N = 46) at a private comprehensive liberal arts college with the scores for the general freshman class (N = 874).

Reliability Of The Instrument

Reliability is a necessary but not sufficient characteristic for validity; that is, a study cannot be valid and lack reliability (Wiersma, 2000). "If a study is unreliable, we can hardly interpret the results with confidence or generalize them to other populations and conditions" (p. 9).

This study followed suggestions made by Guba and Lincoln (1989) regarding instrument reliability. "Essentially, reliability and validity establish the credibility of research. Reliability focuses on replicability and validity focuses on the accuracy and generalizability of the findings" (p. 234). The questions that they posed were whether or not results were consistent with the data collected.

According to Dr. Michael L. Stratil (1988), developer of the *College Student Inventory*, its effectiveness lies in the instrument predicting who are most prone to

dropping out of school. The CSI's major goal is to identify the demographic and academic motivational variables that are closely related to retention and academic success (as determined by graduation) in college. The most current norms for CSI-Form A were developed in 1998, with samples drawn from institutional data collected from 1995-1998 with stratification based on gender, ethnicity, region, and size of institution (Stratil, 1998).

As a result of these procedures, CSI-A's 21 major independent scales have an average homogeneity coefficient (coefficient alpha and Spearman-Brown split-half reliability) of .80 despite an average length of only 7.8 items. With this solid homogeneity as a base, the *CSI* stability (test- retest reliability) is also quite good. Data from the latest pilot research indicates that the average stability coefficient for the *CSI*'s 21 major scales is .80. As a point of comparison, the 20 major scales in Jackson's (1984) well-respected Personality Research Form (PRF Form E, which has 16 items per scale), obtained an average homogeneity coefficient of .72 (N = 84). The Myers-Briggs Type Indicator, often used by college counseling centers, has an average coefficient alpha reliability of .81 and the California Psychological Inventory (CPI) has an average coefficient alpha reliability of .72 (Stratil, 1998).

In a comparable study of the PRF's 20 major scales (Form AA, 20 items per scale, N = 135), the main stability coefficient was also .80 (Bentler, 1964). The stability coefficient of the Myers-Briggs is .70 and the CPI's test-retest reliability coefficient is .70 (Stratil, 1998).

Data Collection Procedures

This descriptive study involved the collection and analysis of data concerning selected variables common to all CASNR students. This data collection technique was identified as being both systematic as well as exhaustive. The independent variables upon which data were collected included:

DEMOGRAPHIC CHARACTERISTICS ...

| | |
|------------------------------|--|
| Family Background... | Racial Origin Mother's Education Father's Education |
| High School Experience... | High School Graduating Class Size College Preparatory Courses Knowledge level of College academics High School Non-Credit activities Perceived High School Academic Standards H/S Senior Year Grade Point Average High School GPA ACT test scores |
| Status During Enrollment ... | Age Gender Marital Status Miles from Home Perceived Academic Abilities Highest College Degree Being Pursued Perceived College Standards and/or Expectation Residency Status Source of Familiarity with Institution |

ACADEMIC CHARACTERISTICS ...

| | |
|---------------------|--|
| Academic Motivation | Study Habits Intellectual Interests Academic Confidence Desire to Finish Attitude toward Educators |
|---------------------|--|

| | |
|-------------------------------------|--|
| | College Cumulative GPA |
| Social Motivation ... | Self-reliance Sociability Leadership Skills |
| Coping Skills ... | Ease of Transition Family (Emotional) Support Openness Desire to Transfer Sense of Financial Security Initial Impression of Institution |
| Receptivity To Support Services ... | Receptivity to Academic Counseling Receptivity to Personal Counseling |

The researcher collected raw data on each of the above variables using the *CSI* as well as their personal records obtained from the Registrar's office (e.g., High School Grade Point Average (HSGPA), College Cumulative Grade Point Average (CCGPA), High School Senior Year Grade Point Average (HSSYGPA), and ACT scores). The *CSI* was administered with the permission of the former Assistant Dean for Academic Programming (i.e., Dr. Wes Holley) during the Fall 1995 freshmen orientation class (i.e., Agriculture 1011).

The researcher requested of the Registrar (i.e., Dr. Wes Holley) the list of 1995 CASNR freshmen who were successful (as determined by graduating from OSU on or before Spring 2002 semester). All data were kept strictly confidential with the exception of the University Assessment Office Director and the Registrar having access to student's names for the purpose of collecting information from files.

Variables characterizing successful or non-successful "study students" were identified. In brief, study students completing a college degree from OSU were

categorized as “successful” while students who left OSU before obtaining a degree were characterized as “non-successful.”

The responses were analyzed and reported in narrative format. Quantitative data from the instrument were analyzed first by using descriptive statistics that primarily include frequency distributions and percentages. The information was programmed onto Microsoft Excel spreadsheets and then imported into the SPSS software program. Data Editors, using an IBM-compatible computer, accomplished statistical manipulation of the data collected from the instrument.

Preliminary analysis included assigning numbers to each name for confidentiality reasons, computing descriptive measures on the population, and using correlational and regression techniques to achieve the objectives.

Statistical Analysis Of Data

Three parametric procedures were employed in this study. They were standard multiple regression, pearson product moment correlation, and the stepwise multiple regression technique. According to Kachigan (1992), multiple correlation analysis is a statistical procedure appropriate for investigating complex interrelationships between independent variables and dependent variables. Once it was determined that significant correlations existed between the variables in research question one,(i.e., to identify demographic and academic characteristics of incoming freshmen on OSU’s CASNR which might affect retention and success, including those measure by the CSI, HSGPA, ACT scores, and CCGPA), the principle of multiple regression was employed to assess

some idea of the relative influence which the predictor variables had on the dependent variable and to test for statistical significance of this influence.

Moreover, the Pearson Product Moment Correlation was applied to research question two (i.e., determine the relationship between retention (i.e., completion of 2nd semester), and the identified demographic and academic characteristics. This statistical procedure examines the relationship between two quantitative variables (Kachigan, 1992).

Additionally, as Kachigan (1992) stated, multiple regression is an appropriate method for studying the relationship and predictive validity of more than one independent variable to one dependent variable, using the principle of correlation and regression. Therefore, for this study, the standard multiple regression procedure was applied to research question number two.

The standard multiple regression is a statistical procedure where all independent variables enter into the regression equation at once, each one is then assessed as if it had entered the regression model after all other independent variables had entered. Each independent variable was evaluated in terms of what it adds to prediction on the dependent variable that is different from the predictability afforded by all the other independent variables.

A second multiple regression procedure was employed in this study. The stepwise procedure was used to analyze the significant contribution of the independent variables (academic and demographic) on the dependent variable (i.e., success). The stepwise approach to multiple regression analysis allowed a test to be performed at each

step to determine the contribution of each variable already in the equation as if it were to be entered last (Kachigan, 1992).

CHAPTER IV

FINDINGS

Data Analysis

The purpose of this study was to identify factors related to OSU's College of Agricultural Sciences and Natural Resources, Fall of 1995 freshman population for predicting retention and success within that College.

The student population consisted of two hundred twenty-three ($N = 223$) freshmen students who chose to enroll in the College of Agriculture Sciences and Natural Resources (herein referred to as CASNR) for the Fall 1995 semester (note: one student was deceased before the Spring 2002 semester and, therefore, was eliminated from the list). The data for this study was collected using the College Student Inventory (i.e., a dropout proneness instrument) and registrar records.

The data analysis for this study was accomplished under four major sections. The first section consisted of the demographic profile of the participants of this study (hereafter referred to as "study students"). The second section examined the descriptive measures of the independent and the dependent variables. The third section ascertained the relationship between the independent and dependent variables. The fourth and final section determined the predictability and relationship of the variables as measured by

the three research questions. The data were analyzed using, standard multiple regression, pearson product moment correlation and stepwise multiple regression.

Research Objectives

The following objectives were necessary to accomplish the purpose of this study:

1. Identify demographic and academic characteristics of incoming freshmen in OSU's College of Agricultural Sciences and Natural Resources which might affect retention and success, including those measured by the College Student Inventory, High School GPA (HSGPA), ACT scores, and College Cumulative GPA (CCGPA).
2. Determine the relationship between retention (i.e., completion of 2nd semester at OSU), and the identified demographic and academic characteristics.
3. Determine the best demographic and academic predictors of retention.
4. Determine the relationship between success (as measured by CCGPA at graduation), and the identified demographic and academic characteristics.
5. Determine the best demographic and academic predictors of success.

Examination Of Research Objectives

Research Objective # 1: Identify demographic and academic characteristics of incoming freshmen in OSU's College of Agricultural Science and Natural Resources which might affect retention and success, including those measured by the College Student Inventory, High School GPA (HSGPA), ACT scores, and College Cumulative GPA (CCGPA).

Demographic Profile Of Study Students

Gender

Participants in this study consisted of 222 incoming freshmen who chose to enroll in CASNR for the Fall, 1995 semester. Of these, 118 (or 53.2 percent) were females and 104 (or 46.8 percent) were males (see Table IV for results).

Table IV

Number And Percentage: Gender

| GENDER | NUMBER | PERCENT |
|--------|--------|---------|
| Female | 118 | 53.2 |
| Male | 104 | 46.8 |
| | 222 | 100.0 |

Racial Origin

Regarding the variable Racial Origin, the variable was collapsed into a dichotomous format from the original six categories (e.g., Afro-American, American Indian/Alaskan Native, Asian-American/Pacific Islander, Caucasian-American, Hispanic-American, and Other). There were 197 (or 88.7 percent) of the study students who identified their racial origin as majority and 25 (or 11.3) reported their racial origin as minority (see Table V for these analyses).

Table V

Number And Percentage: Racial Origin

| RACIAL ORIGIN | NUMBER | PERCENT |
|---------------|-----------|-------------|
| Majority | 197 | 88.7 |
| Minority | 25 | 11.3 |
| | <hr/> 222 | <hr/> 100.0 |

Age

With regard to the variable Age, 34 (or 15.3 percent) of the study students indicated they were 17 years of age when they enrolled in CASNR and 176 (or 79.3 percent) reported they were 18 years of age. In addition, 9 (or 4.1 percent) reported to be 19 years old when they entered CASNR at OSU (see Table VI for these findings).

Table VI

Number And Percentage: Age

| AGE | NUMBER | PERCENT |
|--------------|-----------|-------------|
| 17 | 34 | 15.3 |
| 18 | 176 | 79.3 |
| 19 | 9 | 4.1 |
| Missing Data | 3 | 1.4 |
| | <hr/> 222 | <hr/> 100.0 |

Mother's Level of Education

In this study, 67 (or 30.2 percent) of the participants indicated their mother had a high school diploma and 52 (or 23.4 percent) reported she had one to three years of college. On the other hand, 64 (or 28.8 percent) revealed their mothers had a bachelor's degree and 39 (or 17.6 percent) reported them to have a master's degree (see Table VII for these results).

Table VII

Number And Percentage: Mother's Level Of Education

| CATEGORIES | NUMBER | PERCENT |
|------------------------|-----------|-------------|
| High School Diploma | 67 | 30.2 |
| 1 to 3 yrs. of College | 52 | 23.4 |
| Bachelor's degree | 64 | 28.8 |
| Master's degree | 39 | 17.6 |
| | <hr/> 222 | <hr/> 100.0 |

Father's Level of Education

Likewise in this study, 51 (or 23 percent) of the participants reported their fathers had a high school diploma and 50 (or 22.5 percent) revealed they had one to three years of college. In contrast, 74 (or 33.3 percent) indicated they had a bachelor's

degree and 47 (or 21.2 percent) reported them to have a master's degree (see Table VIII for these results).

Table VIII

Number And Percentage: Father's Level Of Education

| CATEGORIES | NUMBER | PERCENT |
|------------------------|------------|--------------|
| High School Diploma | 51 | 23.0 |
| 1 to 3 yrs. of College | 50 | 22.5 |
| Bachelor's degree | 74 | 33.3 |
| Master's degree | 47 | 21.2 |
| | <u>222</u> | <u>100.0</u> |

Residency Status

While attending college, 182 (or 82 percent) of the study students reported they would reside on campus while 40 (or 18 percent) indicated they would be living off campus (see Table IX for these analyses).

Table IX

Number And Percentage: Residency Status

| CATEGORIES | NUMBER | PERCENT |
|------------|------------|--------------|
| ON Campus | 182 | 82.0 |
| OFF Campus | 40 | 18.0 |
| | <u>222</u> | <u>100.0</u> |

College Preparatory Courses

In the study the College Prep Courses variable was measured on only two levels. Two hundred six (or 92.8 percent) of the respondents reported taking college prep courses, whereas, only 16 (or 7.2 percent) of students indicated they did not engage in any college prep courses while in high school (see Table X for these findings).

Table X

Number And Percentage: College Preparatory Courses

| CATEGORIES | NUMBER | PERCENT |
|---------------------------|------------|--------------|
| Took College Prep Courses | 206 | 92.8 |
| No College Prep Courses | 16 | 7.2 |
| | <u>222</u> | <u>100.0</u> |

Miles From Home

The variable miles from home was originally measured by six categories (namely, *less than 10 miles*, *10 to 50 miles*, *51 to 100 miles*, *101 to 300 miles*, *301 to 600 miles*, and *more than 500 miles*). However, for this study it was collapsed into a dichotomous variable. Ninety four (or 42.3 percent) of the study students indicated they were less than 100 miles from home. In comparison, 128 (or 57.7 percent) reported to be 101 or more miles from home (see Table XI for findings).

Table XI

Number And Percentage: Miles From Home

| CATEGORIES | NUMBER | PERCENT |
|---|--------|---------|
| Students living less than 100 miles from home | 94 | 42.3 |
| Students living 101 or more miles from home | 128 | 57.7 |
| 222 | 100.0 | |

High School Senior Year GPA

The senior year GPA was measured on a five-point scale in this investigation. One hundred twenty nine (or 58.1 percent) of the study students reported their Senior Year GPA was an “A” and 64 (or 28.8 percent) indicated between “A – B”. Likewise, 20 (or 9 percent) expressed their Senior Year GPA to be “B” while 7 (or 3.2 percent)

shared that it was between “B – C”. Further, 2 (or .9 percent) revealed their Senior Year GPA to be between “C– D” (see Table XII for analysis).

Table XII

Number And Percentage: High School Senior Year GPA

| CATEGORIES | NUMBER | PERCENT |
|-----------------|------------|--------------|
| “A” | 129 | 58.1 |
| Between “A – B” | 64 | 28.8 |
| “B” | 20 | 9.0 |
| Between “B – C” | 7 | 3.2 |
| Between “C – D” | 2 | .9 |
| | <u>222</u> | <u>100.0</u> |

Highest Degree Being Pursued

The variable, highest degree being pursued, was identified on a three point scale in this empirical study. Sixty-one (or 27.5 percent) of the study students reported they would pursue a 4–year bachelor’s and master’s degree, respectively. In contrast, 100 (or 45 percent) expressed a desire to pursue a Doctoral degree (see Table XIII for analysis).

Table XIII

Number And Percentage: Highest Degree Being Pursued

| CATEGORIES | NUMBER | PERCENT |
|--------------------------|------------|--------------|
| 4-Year Bachelor's Degree | 61 | 27.5 |
| Master's Degree | 61 | 27.5 |
| Doctoral Degree | 100 | 45.0 |
| | <u>222</u> | <u>100.0</u> |

High School Graduating Class Size

Relative to the variable Class Size, 82 (or 36.9 percent) of the study students reported their graduating class size to be less than 50 while 43 (or 19.4 percent) indicated that number to be between 50 and 99. Additionally, 20 (or 9 percent) shared that the size of their high school graduating class to be between 100 and 149 whereas 32 (or 14.4 percent) revealed between 150 and 299. Thirty four (or 15.3 percent) stated their graduating class size was between 300 and 499 while only 10 (or 4.5 percent) designated 500 or more students in their graduating class. There was one General Education Degree student (see Table XIV for details).

Table XIV

Number And Percentage: Graduating Class Size

| CATEGORIES | NUMBER | PERCENT |
|-----------------------|--------|---------|
| Less than 50 students | 82 | 36.9 |
| 50 to 99 students | 43 | 19.4 |
| 100 to 149 students | 20 | 9.0 |
| 150 to 299 students | 32 | 14.4 |
| 300 to 499 students | 34 | 15.3 |
| 500 or more students | 10 | 4.5 |
| GED | 1 | .5 |
| | 222 | 100.0 |

Perceived Knowledge Level Of College Academics

When comparing himself or herself to the average high school graduating senior in this country, ninety (or 40.5 percent) of the study students reported their perceived knowledge level (of college academics) to be in the highest twenty percent while 78 (or 35.1 percent) selected “*Next to highest 20%*”. Fifty (or 22.5 percent) chose the “*Middle 20%*” category while only 4 (or 1.4 percent) recognized themselves to be in the “*Next to the lowest 20%*” category (see Table XV for analysis).

Table XV

Number And Percentage: Perceived Knowledge Of College Academics

| CATEGORIES | NUMBER | PERCENT |
|------------------------|------------|--------------|
| Highest 20% | 90 | 40.5 |
| Next to highest 20% | 78 | 35.1 |
| Middle 20% | 50 | 22.5 |
| Next to the lowest 20% | 4 | 1.8 |
| | <u>222</u> | <u>100.0</u> |

Perceived Academic Ability

The variable, perceived academic ability, was divided into four categories for this study. Twenty nine (or 13.1 percent) reported their academic ability to be “*Average or below*,” whereas, 71 (or 32 percent) indicated their academic ability to “*Slightly above average*.” On the other hand, 103 (or 46.4 percent) revealed their academic ability to be “*Considerably above average*” while only 19 (or 8.6 percent) reported their academic ability as “*Extremely high*.” See Table XVI for results.

Table XVI

Number And Percentage: Perceived Academic Ability

| CATEGORIES | NUMBER | PERCENT |
|----------------------------|------------|--------------|
| Average or below | 29 | 13.1 |
| Slightly above average | 71 | 32.0 |
| Considerably above average | 103 | 46.4 |
| Extremely high | 19 | 8.6 |
| | <u>222</u> | <u>100.0</u> |

Descriptive Summary Measures

The dependent (criterion) variable *retention* was measured by using the number of study students who returned and completed the following spring semester in CASNR. Information obtained from the Registrar's office in June 2002 reported a retention rate of 193 students (Table XVII). But, only 180 (out of the 193 participants) fully completed the College Student Inventory questionnaire.

Twenty-nine students were found not to have returned and/or did not complete the Spring, 1996 semester. An additional 53 study students dropped out between the Spring, 1996 semester and May, 2002 semester; consequently, a total of 83, or 27%, study students eventually dropped out of this six-year study. This is to say that a total of 140, or 73%, were retained each semester and became successful (i.e., graduating from OSU).

Table XVII

Number and Percentage: Summary

| | NUMBER | PERCENT |
|--|--------|---------|
| Study Students..... | 222 | 100% |
| Study Students Not Completing 1996 Spring Semester..... | 29 | 13% |
| Study students "retained" (i.e., students returning and completing the spring semester) | 193 | 87% |
| Study student responding to all CSI questions..... | 90 | 81% |
| Study students dropping out after second semester | 53 | 27% |
| "Successful Completers" (i.e., study students graduating from OSU)..... | 140 | 73% |

The mean scores and the standard deviation scores of the study students' outcome indicators for retention are presented in Table XVIII (N = 180). The mean scores and the standard deviation scores of the study students' outcome indicators for success are presented in Table XIX (N = 140).

Table XVIII

*Means And Standard Deviations Of The Predictor And Criterion (I.E., Retention)**Variables (N = 180)*

| Predictor Variables | Mean | SD |
|---|-------|------|
| High School GPA (obtained from Registrar) | 3.65 | .38 |
| CCGPA (at 2 nd semester) (obtained from Registrar) | 2.87 | .77 |
| ACT score (obtained from Registrar) | 24.45 | 3.88 |
| High School Senior Year GPA (Perceived) | 2.61 | .89 |
| Racial Origin | 3.94 | .65 |
| Mother's Level of Education | 3.73 | 1.91 |
| Father's Level of Education | 4.06 | 1.81 |
| HS Graduating Class Size | 2.67 | 1.68 |
| Knowledge Level of College Academics (Perceived) | 1.86 | .83 |
| Age | 18.86 | .43 |
| Miles from Home | .58 | .49 |
| HS Academic Standards (Perceived) | 5.81 | 1.18 |
| Highest Degree Being Pursued | 5.18 | .84 |
| Academic Abilities (Perceived) | 4.50 | .83 |
| Gender | .47 | .50 |
| College Preparatory Courses | .01 | .26 |
| Residency Status | .18 | .36 |
| Marital Status | .22 | .56 |
| Study Habits | 5.64 | .93 |

Table XVIII Continued

| Predictor Variables | Mean | SD |
|------------------------------------|------|------|
| HS Non-Credit Activities | 2.67 | 1.89 |
| Academic Confidence | 4.70 | .40 |
| Attitude Toward Educators | 5.63 | .62 |
| Intellectual Interest | 6.75 | .66 |
| Desire to Finish | 1.83 | .43 |
| Self-Reliance | 7.80 | .81 |
| Leadership Skills | 4.91 | .50 |
| Sociability | 6.83 | .81 |
| Ease of Transition | 6.26 | .61 |
| Openness | 7.59 | .77 |
| Sense of Financial Security | 3.31 | .14 |
| Family (Emotional) Support | 5.85 | .60 |
| Desire to Transfer | 1.78 | .22 |
| Impression of Institution | 5.84 | .52 |
| Receptivity to Personal Counseling | 4.42 | 1.28 |
| Receptivity to Academic Counseling | 6.09 | .66 |

Table XIX

*Means And Standard Deviations Of The Predictor And Criterion (I.E., Success)**Variables (N = 140)*

| Predictor Variables | Mean | SD |
|---|-------|------|
| High School GPA (obtained from Registrar) | 3.70 | .38 |
| CCGPA (at 2 nd semester) (obtained from Registrar) | 2.96 | .73 |
| ACT score (obtained from Registrar) | 24.45 | 1.54 |
| High School Senior Year GPA (Perceived) | 2.61 | .89 |
| Racial Origin | 3.94 | .65 |
| Mother's Level of Education | 4.29 | 1.20 |
| Father's Level of Education | 4.58 | 1.81 |
| HS Graduating Class Size | 2.67 | 1.72 |
| Knowledge Level of College Academics (Perceived) | 1.86 | .83 |
| Age | 17.91 | .43 |
| HS Academic Standards (Perceived) | 5.83 | 1.20 |
| Miles from Home | .58 | .49 |
| Highest Degree Being Pursued | 5.18 | .84 |
| Academic Abilities (Perceived) | 4.54 | .93 |
| Gender | .51 | .50 |
| College Preparatory Courses | .00 | .00 |
| Residency Status | 1.19 | .39 |
| Marital Status | 1.00 | .00 |
| HS Non-Credit Activities | 2.67 | 1.89 |

Table XIX Continued

| Predictor Variables | Mean | SD |
|------------------------------------|------|------|
| Study Habits | 5.64 | .68 |
| Academic Confidence | 6.11 | .62 |
| Attitude Toward Educators | 5.65 | .59 |
| Intellectual Interest | 6.77 | .67 |
| Desire to Finish | 1.88 | .46 |
| Self-Reliance | 7.77 | .85 |
| Leadership Skills | 4.92 | .50 |
| Sociability | 6.82 | .88 |
| Ease of Transition | 6.27 | .62 |
| Openness | 7.66 | .77 |
| Predictor Variables | Mean | SD |
| Sense of Financial Security | 3.38 | .64 |
| Family (Emotional) Support | 5.83 | .58 |
| Desire to Transfer | 1.04 | .24 |
| Impression of Institution | 3.94 | .62 |
| Receptivity to Personal Counseling | 2.37 | .79 |
| Receptivity to Academic Counseling | 4.45 | 1.12 |

Research Objective # 2: Determine the relationship between retention (i.e., completion of 2nd semester at OSU) and the identified demographic and academic characteristics.

Correlation Analysis Regarding Retention and Demographic Characteristics

Correlation analysis was conducted to determine the relationship between the predictor (independent) variables and the criterion (dependent) variable retention. The Pearson Product Moment Correlation (r) (hereafter referred to as the Pearson) was used to describe the relationship between predictor and the criterion variables.

Relative to the demographic variables (see Table XX), the Pearson (r) results indicated that High School GPA, College Cumulative GPA (at completion of 2nd semester), Mother's Level of Education, Father's Level of Education, HS Senior Year GPA, Gender, and College Preparatory Courses were significantly correlated to retention.

More specifically, High School GPA (HSGPA) ($r = .43$), College Cumulative GPA (i.e., CCGPA at completion of 2nd semester) ($r = .69$), Mother's Level of Education ($r = .13$), Father's Level of Education ($r = .14$) and High School Senior Year GPA ($r = .19$) were significantly correlated to retention at the .001 level. However, Gender ($r = -.15$) and College Preparatory Courses (taken in high school) ($r = -.15$) were negatively correlated to retention.

Table XX

Correlation Coefficients Between Retention And Demographic Variables

| Demographic Variables | Retention: Correlation Coefficients | | | | | | | | | |
|-------------------------------------|-------------------------------------|--------|---------------|-----------------------------|-----------------------------|---------------|----------|--------------------------------|-----------|--------|
| | HSGPA | CCGPA | Racial Origin | Mother's level of Education | Father's level of Education | HS Class Size | HSSYGP A | Knowledge of College Academics | ACT Score | Age |
| HSGPA | 1.000 | .604** | -.186* | .090 | .007 | -.223** | .749** | .297** | .327** | .062 |
| CCGPA (at 2 nd semester) | .604** | 1.000 | -.146* | .155* | .143* | -.049 | .384** | .177** | .305** | -.037 |
| Racial Origin | -.186* | -.146* | 1.000 | -.115 | -.029 | .198** | .173** | -.045 | -.082 | -.072 |
| Mother's Level of Ed | .090 | .155* | -.115 | 1.000 | .514** | -.006 | -.085 | -.187** | .217 | .013 |
| Father's Level of Education | .007 | .143* | -.029 | .514** | 1.000 | -.011 | -.017 | -.196** | .188** | .019 |
| HS Graduating Class Size | -.223** | -.049 | .198** | -.006 | -.011 | 1.000 | .180** | -.008 | .127 | -.026 |
| HS Senior Year GPA | .749** | .384** | .173** | -.085 | -.017 | .180** | 1.000 | .292** | -.259 | .086 |
| Knowledge of College Academic | .297** | .177** | .045 | -.187** | -.196** | -.008 | .292** | 1.000 | -.623** | .079 |
| ACT Score | .327** | .305** | -.082 | .217** | .188** | .127 | .259** | -.623** | 1.000 | -.086 |
| Age | .062 | .037 | -.072 | .013 | .019 | -.026 | .086 | .079 | -.086 | 1.000 |
| Miles from Home | -.180* | -.044 | -.185** | .038 | .113 | -.299** | .152* | -.050 | .138 | .070 |
| Highest Degree Being Pursued | .047 | .052 | .130 | .129 | .151* | .177** | .059 | -.251 | .281** | -.044 |
| Perceived Academic Abilities | .233** | .171* | -.028 | .194** | .189** | .055 | .210** | -.613** | .567** | .009 |
| Gender | .240** | .194** | -.049 | .173** | .145* | -.182** | -.150* | -.088 | -.126 | .249** |
| College Prep Courses | -.101 | -.078 | -.099 | -.007 | -.068 | .024 | .103 | .112 | .073 | .034 |
| Residency Status | .065 | .013 | -.093 | .078 | .011 | -.181** | -.088 | .096 | -.135 | .120 |
| Marital Status | .016 | .014 | -.023 | -.086 | -.069 | -.011 | .038 | .111 | -.156* | -.009 |
| Non-Credit HS Activities | .054 | .000 | -.104 | .034 | .022 | -.036 | .020 | .140* | -.028 | .097 |
| Perceived HS Academic Status | -.032 | -.057 | .045 | .042 | .034 | -.146* | .043 | -.170* | .057 | .146* |
| Retention | .429** | .692** | .011 | .128 | .141* | -.036 | .186 | -.035 | .095 | -.070 |

Table XX Continued

| Demographic Variables | Retention: Correlation Coefficients | | | | | | | | |
|---------------------------------|-------------------------------------|------------------------------|------------------------------|---------|----------------------|------------------|----------------|--------------------------|---------------------------------|
| | Miles from Home | Highest Degree Being Pursued | Perceived Academic Abilities | Gender | College Prep Courses | Residency Status | Marital Status | Non-Credit HS Activities | Perceived HS Academic Standards |
| Miles from Home | 1.000 | .060 | .038 | -.036 | -.078 | -.144* | -.039 | .040 | -.067 |
| Highest Degree Being Pursued | .060 | 1.000 | .251** | -.133* | -.101 | -.225** | -.100 | -.067 | .020 |
| Perceived Academic Abilities | .038 | .251** | 1.000 | .115 | -.023 | -.003 | -.136* | -.036 | .173** |
| Gender | -.036 | -.133* | .115 | 1.000 | -.053 | .194** | -.191** | .139* | .062 |
| College Prep Courses | -.078 | -.101 | -.023 | -.053 | 1.000 | .005 | .092 | .022 | -.142* |
| Residency Status | -.144* | -.225** | -.003 | .194** | .005 | 1.000 | .049 | .049 | -.093 |
| Marital Status | -.039 | -.100 | -.136* | -.191** | .092 | .049 | 1.000 | -.022 | -.012 |
| Non-Credit HS Activities | .040 | -.067 | -.036 | .139* | .022 | .109 | -.022 | 1.000 | -.061 |
| Perceived HS Academic Standards | -.067 | .020 | .173** | .062 | -.142* | -.093 | -.012 | -.061 | 1.000 |
| Retention | -.074 | .034 | .010 | -.145* | -.150* | -.062 | -.057 | -.010 | .028 |

Notes: * $p \leq .05$
 ** $p \leq .01$

Correlation Analysis Regarding Retention And Academic Variables

Relative to the academic (independent) variables' relationship to the criterion variable retention (see Table XXI), the PPM Correlation was used. The Pearson (r) results indicated that Study Habits, Academic Confidence, Intellectual Interest, Desire to Finish, Leadership Skills, and Ease of Transition were significantly correlated to retention.

Moreover, Study Habits ($r = .63$), Academic Confidence ($r = .49$), Intellectual Interest ($r = .19$), Desire to Finish ($r = .11$), and Ease of Transition ($r = .13$) were positively correlated to retention. However, Leadership Skills ($r = -.16$) was negatively related to retention.

Table XXI

Correlation Coefficients Between Retention And Academic Variables

| Academic Variables | Retention: Correlation Coefficients | | | | | | | |
|------------------------------------|-------------------------------------|---------------------|---------------------------|-----------------------|------------------|---------------|-------------------|-------------|
| | Study Habits | Academic Confidence | Attitude Toward Educators | Intellectual Interest | Desire To Finish | Self-Reliance | Leadership Skills | Sociability |
| Study Habits | 1.000 | .051 | -.184* | .051 | -.081 | .358** | .158* | .247** |
| Academic Confidence | .051 | 1.000 | .071 | .337** | .071 | .084 | .058 | .273** |
| Attitude Toward Educators | -.184* | .071 | 1.000 | .141 | .208** | .192** | .163* | .057 |
| Intellectual of Interest | .051 | .337** | .141 | 1.000 | .047 | .115 | .167* | .208** |
| Desire To Finish | -.081 | .071 | .208** | .047 | 1.000 | .164* | .116 | -.018 |
| Self-Reliance | .358** | .084 | .198** | .115 | -.164* | 1.000 | .064 | .061 |
| Leadership Skills | .158* | .058 | .173** | .167* | .116 | .064 | 1.000 | .157* |
| Sociability | .247** | .273** | .045 | .208** | -.018** | -.061 | .157* | 1.000 |
| Ease of Transition | .176* | .290** | -.082 | .208** | -.006** | .284** | .214** | .243** |
| Openness | .206** | .159** | -.072 | .226** | .047 | .282** | .294** | .218** |
| Sense of Financial Security | .107 | .319** | .185** | .121 | .264** | -.120** | .055* | .138 |
| Family Support | -.187* | .209** | .130 | .165* | .168* | .136** | .133 | .039 |
| Desire To Transfer | -.109 | .028* | -.028 | .106 | .005 | .055 | .076 | .005 |
| Impression of Institution | .098 | .001 | .061 | .007 | -.223 | .326** | .017 | .093 |
| Receptivity to Personal Counseling | -.101 | .410** | -.061 | -.007 | .177 | -.074 | .037 | .131 |
| Receptivity to Academic Counseling | -.007 | .056 | .183 | .268** | .129 | -.008 | .208** | .268 |
| Retention | .628** | .491** | .071 | .188 | .111* | -.077 | -.156** | -.036 |
| Ease of Transition | 1.000 | .330** | .084 | .148* | .099 | .284** | .214** | .243** |
| Openness | .330** | 1.000 | .093 | .023 | .061 | .282** | .294** | .218** |
| Sense of Financial Security | .084 | .093 | 1.000 | .079 | .056 | -.120** | .055* | .138 |
| Family (Emotional) Support | .148 | .023 | .079 | 1.000 | -.105 | .136** | .133 | .039 |

Table XXI Continued

| Academic Variables | Retention: Correlation Coefficients | | | | | | | |
|------------------------------------|-------------------------------------|----------|-----------------------------|----------------------------|--------------------|---------------------------|------------------------------------|------------------------------------|
| | Ease of Transition | Openness | Sense of Financial Security | Family (Emotional) Support | Desire To Transfer | Impression of Institution | Receptivity to Personal Counseling | Receptivity To Academic Counseling |
| Desire To Transfer | .099 | .061 | .056 | -.105 | 1.000 | .055 | .076 | .005 |
| Impression of Institution | .391** | .213** | -.228** | .062 | -.041 | .326** | .017 | .093 |
| Receptivity to Personal Counseling | -.056** | .023 | .317** | .172 | .124 | -.074 | .037 | .131 |
| Receptivity to Academic Counseling | .205** | .265** | .187 | .122 | .035 | -.008 | .208** | .268 |
| Retention | .128 | .045 | .076 | .081 | .072 | -.077 | -.156** | -.036 |

Notes: * $p \leq .05$
 ** $p \leq .01$

Research Objective # 3: Determine the best demographic and academic predictors of retention.

Standard Multiple Regression Analysis Regarding Retention And Demographic Characteristics

A Standard Multiple Regression was performed with retention as the dependent variable and High School GPA, College Cumulative GPA (at end of 2nd semester), Racial Origin, Mother's Level of Education, Father's Level of Education, HS Graduating Class Size, Senior Year GPA, Knowledge Level of College Academics, ACT scores, Age, Miles from Home, Highest Degree being Pursued, Perceived Academic Abilities, Gender, College Prep Courses, Residence Status, Non-Credit HS Activities, Perceived HS Academic Standards, and Marital Status as the independent variables (Table XXII).

When these independent variables were entered into the equation, they resulted in a multiple correlation coefficient (r) of .69. The 19 predictor (demographic) variables accounted for 48% (42% adjusted) of the variance (r^2) in retention. A significant linear relationship was found between the 19 predictor variables and retention ($df = 18/158 = 7.975$, $p < .001$). Furthermore, only one of the nineteen independent (demographic) variables, College Cumulative GPA (at end of 2nd semester), contributed significantly to retention with a t -value of 8.519 ($p < .001$) (Table XXII).

Table XXII

Summary Results Of The Regression For Retention And Demographic Variables

| Predictor Variables | B | SE | Beta | t | p-value |
|--|---------|--------|-------|---------|---------|
| HSGPA (obtained from Registrar | 17.744 | 13.434 | .139 | 1.321 | .188 |
| CCGPA (at end of 2 nd semester) | 44.599 | 5.235 | .651 | 8.519** | .000*** |
| ACT scores (obtained from Registrar) | -1.389 | 1.086 | -.110 | -1.279 | .203 |
| High School Senior Year GPA (Per.) | 2.576 | 4.794 | .049 | .537 | .592 |
| Racial Origin | 15.760 | 9.830 | .103 | 1.603 | .111 |
| Mother's Level of Education | 1.497 | 1.728 | .059 | .866 | .388 |
| Father's Level of Education | 1.367 | 1.796 | .052 | .761 | .448 |
| HS Graduation Class Size | 1.712 | 2.052 | .059 | .834 | .405 |
| Knowledge Level of College Academics | 2.207 | 4.951 | .038 | .446 | .656 |
| Age | -6.874 | 6.957 | -.062 | -.988 | .325 |
| Miles from Home | 14.444 | 6.410 | .128 | 1.941 | .054 |
| HS Academic Standards (Perceived) | -.154 | 6.324 | .002 | .024 | .981 |
| Highest Degree Being Pursued | .727 | 3.739 | .012 | .195 | .846 |
| Academic Abilities (Perceived) | -2.410 | 4.825 | -.041 | -.499 | .618 |
| Gender | 4.215 | 6.699 | .043 | .603 | .547 |
| College Preparatory Courses | -14.570 | 11.125 | -.079 | -1.310 | .192 |
| Residency Status | -5.691 | 7.968 | -.046 | -.714 | .476 |
| Marital Status | .617 | 6.797 | .006 | .091 | .028 |

Notes: Multiple regression coefficient (r) = .690
Variance (r^2) = .476 ; Adjusted r^2 = .416
 $f = 7.975$
 $df = 18/158$
*** $p < .001$

Standard Multiple Regression Analysis Regarding Retention And Academic Variables

A Standard Multiple Regression was performed with retention as the dependent variable and Study Habits, Academic Confidence, Attitude Towards Educators, Intellectual Interest, Desire To Finish, Self-Reliance, Leadership Skills, Sociability, Ease of Transition, Openness, Sense of Financial Security, Family (Emotional) Support, Desire To Transfer, Impression of Institution, Receptivity to Personal Counseling, and Receptivity to Academic Counseling as the independent variables (Table XXIII).

When these independent variables were entered into the equation, they resulted in a multiple correlation coefficient (r) of .55. The 16 predictor (academic) variables accounted for 30% (22% adjusted) of the variance (r^2) in retention. A significant linear relationship was found between the 16 predictor variables and retention ($df = 15/164 = 4.047$, $p < .001$). Furthermore, three of the sixteen academic variables, Intellectual Interest, Desire to Finish, and Desire to Transfer contributed significantly to retention with t -values of 2.23, 2.57, and -2.31 (respectively), ($p < .001$) (Table XXIII).

Table XXIII

Summary Results Of The Multiple Regression For Retention and Academic Variables

| Predictor Variables | <i>B</i> | SE | Beta | <i>t</i> | p-value |
|------------------------------------|----------|------|-------|----------|---------|
| Study Habits | 8.074 | .006 | .110 | 1.306 | .193 |
| Academic Confidence | -2.615 | .004 | -.068 | -.710 | .479 |
| Attitude Toward Educators | -2.859 | .006 | -.038 | -.471 | .638 |
| Intellectual of Interest | 1.257 | .006 | .184 | 2.232*** | .027 |
| Desire To Finish | 2.143 | .008 | .208 | 2.568*** | .011 |
| Self-Reliance | -5.576 | .005 | -.099 | -1.17 | .448 |
| Leadership Skills | -1.055 | .007 | -.114 | -1.455 | .150 |
| Sociability | -4.941 | .005 | -.088 | -1.084 | .280 |
| Ease of Transition | 1.216 | .007 | .162 | 1.804 | .073 |
| Openness | 2.617 | .005 | .044 | .511 | .610 |
| Sense of Financial Security | 1.142 | .006 | .153 | 1.803 | .073 |
| Family (Emotional) Support | -8.683 | .006 | -.111 | -1.379 | .170 |
| Desire To Transfer | -3.485 | .015 | -.177 | -2.306** | .022 |
| Impression of Institution | 4.849 | .003 | .014 | .157 | .875 |
| Receptivity to Personal Counseling | -1.731 | .005 | -.031 | -.348 | .728 |
| Receptivity to Academic Counseling | 2.443 | .006 | .032 | .380 | .705 |

Notes: Multiple regression coefficient (r) = .546
 Variance (r^2) = .298 ; Adjusted r^2 = .224
 $f = 4.047$
 $df = 15/164$
 *** $p < .001$

Research Objective # 4: Determine the relationship between success (i.e., as measured by CCGPA at graduation) and the identified demographic and academic characteristics.

Correlation Analysis Regarding Success (As Measured By CCGPA At Graduation) And Demographic Characteristics.

Correlation analysis was conducted to determine the relationship between the predictor (independent) variables and the criterion (dependent) variable success. This correlation procedure provided the correlation coefficient between the two quantitative variables. The Pearson was used to describe the relationship between demographic (predictor) and the success (criterion) variables. Twelve of the 18 demographic variables were significantly related to success.

Shown in Table XXIV, eight demographic characteristics were positively related to success (as measured by CCGPA at graduation). Cumulative College GPA (at graduation) was positively related to HSGPA ($r = .44$), both Mother's and Father's level of Education ($r = .13$ and $.11$, respectively), HSSYGPA ($r = .48$), Perceived Knowledge of College Academics ($r = .263$), ACT scores ($r = .27$), Age ($r = .14$), and Perceived High School Academic Abilities ($r = .16$).

Additionally, five demographic variables were negatively related to CCGPA (at time of graduation). Cumulative College GPA (at time of graduation) was negatively correlated with Miles from Home ($r = -.10$), Gender ($r = -.17$), College Prep Courses ($r = -.20$), and Marital Status ($r = -.11$).

Table XXIV

Summary Results Of The Relationship Between Success And Demographic Variables

| Demographic Variables | Success: Correlation Coefficients | | | | | | | |
|---|-----------------------------------|---------------|-----------------------------|-----------------------------|------------|---------|-----------------------|-------------------------------|
| | HSGPA | Racial Origin | Mother's level of Education | Father's Level of Education | Class Size | HSSYGPA | HS Academic Standards | Knowledge of College Academic |
| HSGPA | 1.000 | .108 | .078 | .025 | -.145 | .749** | .003 | -.112 |
| Racial Origin | -.108 | 1.000 | -.011 | -.067 | .214* | .173** | -.160 | .033 |
| Mother's Level of Ed | .078 | -.011 | 1.000 | .520** | .048 | -.085 | -.011 | -.244** |
| Father's Level of Education | .025 | -.067 | .520** | 1.000 | .003 | -.017 | -.025 | -.247** |
| Class Size | -.145 | .214* | .048 | .003 | 1.000 | .180** | .108 | .050 |
| HS Senior Year GPA | -.037 | .029 | .035 | .017 | .183 | 1.000 | .143 | .092 |
| Perceived HS Academic Standards | .003 | -.160 | .011 | -.025 | .108 | .043 | 1.000 | -.132 |
| Perceived Knowledge Level of College Academic | -.112 | .033 | -.244** | -.247** | -.050 | .292** | -.132 | 1.000 |
| ACT Score | .126 | -.029 | .229** | .184* | .088 | .259** | -.012 | -.544** |
| Age | -.062 | -.022 | -.132 | -.047 | -.029 | .086 | .145* | .195* |
| Miles from Home | .000 | -.213* | .057 | .161 | -.354** | -.152* | -.067 | .038 |
| Highest Degree Being Pursued | -.037 | .148 | .089* | .154 | .196* | -.059 | -.020 | -.206* |
| Perceived HS Academic Abilities | .129 | .107 | .190* | .243** | .059 | -.210** | .156 | -.575** |
| Gender | -.065 | -.063 | .195* | .175* | -.193** | .150 | .163 | -.127 |
| College Prep Courses | -.118 | -.073 | -.057 | -.083 | .083 | .039 | -.065 | .098 |
| Residency Status | .029 | -.065 | .080 | .003 | -.140 | .088 | -.005 | .074 |
| Marital Status | -.059 | -.132 | -.152 | -.201 | -.092 | -.068 | -.174* | .159 |
| Non-Credit HS Activities | .141 | .019 | .024 | .050 | .012 | .039 | -.025 | .141 |
| Success | .444** | -.013 | .130 | .108 | -.073 | .484** | -.032 | .263** |

Table XXIV Continued

| Demographic Variables | Success: Correlation Coefficients | | | | | | | | | |
|---------------------------------|-----------------------------------|--------|-----------------|------------------------------|---------------------------------|---------|----------------------|------------------|----------------|--------------------------|
| | ACT Scores | Age | Miles From Home | Highest Degree Being Pursued | Perceived HS Academic Abilities | Gender | College Prep Courses | Residency Status | Marital Status | Non-Credit HS Activities |
| ACT Score | 1.000 | -.149 | .077 | .250*** | .512** | -.102 | -.031 | -.137 | -.177* | .011 |
| Age | -.149 | 1.000 | .007 | -.068 | -.053 | .234** | .102 | .230** | -.013 | -.016 |
| Miles from Home | .077 | .007* | 1.000 | .093 | -.045 | -.039 | -.071 | -.159 | -.039 | .028 |
| Highest Degree Being Pursued | .250*** | -.068 | .093 | 1.000 | .196* | -.172* | -.129 | -.308** | -.125 | -.206* |
| Perceived HS Academic Abilities | .512** | -.053 | -.045 | .243** | 1.000 | -.210** | .156 | -.005 | -.174 | -.025 |
| Gender | -.102 | .234** | -.039 | -.172* | -.210** | 1.000 | -.095 | .213* | -.170* | .048 |
| College Prep Courses | -.031 | .102 | -.071 | -.129 | .156 | -.095 | 1.000 | .020 | .074* | .077 |
| Residency Status | -.137 | .230** | -.159 | -.308** | -.005 | .213* | .020 | 1.000 | .092 | .028 |
| Marital Status | -.177* | -.013 | -.039 | -.125 | -.174 | -.170* | .074* | .092 | 1.000 | -.014 |
| Non-Credit HS Activities | .011 | -.016 | .028 | -.206* | -.025 | .048 | .077 | .028 | -.014 | 1.000 |
| Success | .269** | .136 | -.104 | .040 | .156 | -.167 | -.204* | -.018 | -.109 | -.010 |

Notes: * $p < .05$
 ** $p < .01$
 *** $p < .001$

Correlation Analysis Regarding Success (As Measured By CCGPA
At Graduation) And Academic Variables.

Correlation analysis was conducted to determine the relationship between the predictor (independent) variables and the criterion (dependent) variable success. This correlation procedure provided the correlation coefficient between the two quantitative variables. The Pearson was used to describe the relationship between academic (predictor) and the success (criterion) variables. Seven of the 16 demographic variables analyzed were significantly related to success.

Reported in Table XXV was the relationship between the academic variables and success (as measured by CCGPA at graduation). The five academic variable positively related to success were Desire to Finish ($r = .23$), Self-Reliance ($r = .25$), Sense of Financial Security ($r = .22$), Receptivity to Academic Counseling ($r = .22$), and Impression of Institution ($r = .13$). On the other hand, Academic Confidence ($r = -.22$), and Openness ($r = -.11$) were negatively related to success.

Table XXV

Summary Results Of The Relationship Between Success And Academic Variables

| Academic Variables | Success: Correlation Coefficients | | | | | | | | | |
|------------------------------------|-----------------------------------|--------------|---------------------|---------------------------|-----------------------|------------------|---------------|-------------------|-------------|--------------------|
| | CCGPA | Study Habits | Academic Confidence | Attitude toward Educators | Intellectual Interest | Desire To Finish | Self-Reliance | Leadership Skills | Sociability | Ease of Transition |
| Study Habits | .027 | 1.000 | .175 | .160 | .047 | -.076* | .335* | .168 | .249** | .160 |
| Academic Confidence | -.224 | .175* | 1.000 | .109 | .248* | .155 | -.048 | .231** | .302** | .165 |
| Attitude Toward Educators | .047 | .160 | .109 | 1.000 | .209* | .196* | .148 | .128 | .016 | .031 |
| Intellectual Interest | -.045 | .047 | .248** | .209 | 1.000 | .057 | .146 | .212 | .197 | .258** |
| Desire to Finish | .232** | -.076 | .155 | .196* | .057 | 1.000 | -.196* | .104 | -.054 | -.038 |
| Self-Reliance | .251** | .335** | -.048 | .148 | .146 | -.196* | 1.000 | .006 | .060 | .307** |
| Leadership Skills | -.018 | .168* | .231** | .128 | .212* | .104 | .006 | 1.000 | .120 | .245** |
| Sociability | -.032 | .249** | .302** | .016 | .197* | -.054 | .060 | .120 | 1.000 | .231** |
| Ease of Transition | -.042 | .160 | .165 | .031 | .258** | -.038 | .307** | .245** | .231** | 1.000 |
| Openness | -.113 | .211 | .240** | .188* | .301** | -.008 | .287** | .280** | .179 | .275** |
| Sense of Financial Security | .221*** | .185 | .227** | .035 | .171* | .276** | -.068 | .075 | .125 | .114 |
| Family (Emotional) Support | .099 | .187 | .184 | .032 | .153 | .166* | .173* | .078 | -.004 | .129 |
| Desire to Transfer | .045 | -.137 | .052 | -.034 | .096 | .062 | .100 | .077 | -.030 | .127 |
| Impression with Institution | .125 | .026 | .041 | -.031 | -.018 | -.195* | .285** | -.050 | .064 | .362** |
| Receptivity to Personal Counseling | -.032 | -.014 | .083 | -.037 | .234** | .123 | -.085 | .060 | .082 | .021 |
| Receptivity to Academic Counseling | -.221** | .013 | .105 | .070 | .391** | .021 | .080 | .084 | .052** | .357** |
| Success | 1.000 | .027 | -.224 | .047 | -.045 | .232** | .251** | -.018 | -.032 | -.042 |

Table XXV Continued

| Academic Variables | Success: Correlation Coefficients | | | | | | |
|------------------------------------|-----------------------------------|-----------------------------|----------------------------|--------------------|---------------------------|------------------------------------|------------------------------------|
| | Openness | Sense of Financial Security | Family (Emotional) Support | Desire To Transfer | Impression of Institution | Receptivity to Personal Counseling | Receptivity to Academic Counseling |
| Openness | 1.000 | .075 | -.044 | -.044 | .158 | .055 | .189* |
| Sense of Financial Security | .075 | 1.000 | .136 | .101 | -.216* | .336** | .309** |
| Family (Emotional) Support | -.044 | .136 | 1.000 | -.183* | .039 | .150 | .220** |
| Desire to Transfer | .147 | .101 | -.183* | 1.000 | .015 | .118 | .019 |
| Impression of Institution | .158 | -.216* | .039 | .015 | 1.000 | -.267** | .035 |
| Receptivity to Personal Counseling | .055 | .336** | .150 | .118 | -.267** | 1.000 | .373** |
| Receptivity to Academic Counseling | .189* | .309** | .220** | .019 | .035 | .373** | 1.000 |
| Success | -.113 | .221** | .099 | .045 | .125 | -.032 | .221** |

Notes: * $p < .05$
 ** $p < .01$
 *** $p < .001$

Research Objective # 5: Determine the best demographic and academic predictors of success.

Step-Wise Regression Analysis Regarding Success (As Measured By CCGPA
At Time Of Graduation) And Demographic Predictors

Employing the Stepwise Multiple Regression procedure, the variable High School Grade Point Average (HSGPA) was entered at the first step, resulting in a multiple correlation coefficient (r) of .444 (Table XXVI). This variable accounted for 20% of the variance in success. High School GPA carried a regression coefficient of .645, with an F-value of 33.717 ($df = 1/137, p < .001$). Thus, it was found that HSGPA did contribute significantly to the success rate of students within this study. No other predictor entered the regression model.

The second variable that entered the equation was Perceived Knowledge Level of College Academics with a multiple correlation of .494 (Table XXVII). This variable together with HSGPA accounted for 24% of the variance in Success. Knowledge Level of College Academics carried a regression coefficient of -.210, with an F-value of 21.93 ($df = 2/136, p < .001$). Therefore, it was found that knowledge Level of College Academics did contribute significantly to the success of study students.

The third and final variable that entered the prediction model was Gender, which resulted in a multiple correlation of .520. Gender, along with HSGPA and Perceived Knowledge Level of College Academics, accounted for 27% of the variance in success (i.e., criterion variable). Gender had a regression coefficient of -.243, with an F-value of

16.71 ($df = 3/135, p < .001$). Consequently, it was found that Gender was significantly related to success (Table XXVIII).

The analysis of data revealed that the excluded variables (see Tables XXVI, XXVII, and XXVIII, respectively) did not contribute significantly to the success of study students (as measured by CCGPA at graduation). The regression equation used to predict success (as measured by CCGPA at graduation) was based on the demographic variables of High School GPA, Perceived Knowledge Level of College Academics, and Gender and reads as follows:

$$y^1 = 1.169 (.645) (\text{HSGPA}) + (-.210) (\text{Knowledge}) + (-.243) (\text{Gender}) + \text{error term}$$

Table XXVI

Demographic Variable Entered On Step One: HSGPA

| Multiple | r^2 | Adjusted r^2 | Standard Error | |
|-------------------------------------|----------------------------------|------------------------------|---------------------------|----------------|
| .444 | .198 | .192 | .6604 | |
| Analysis of Variance | Degrees of Freedom (<i>df</i>) | Sum of Squares (<i>SS</i>) | Mean Square (<i>ms</i>) | F-Value |
| Regression | 1 | 14.707 | 14.707 | 33.717 |
| Residual | 137 | 59.758 | .436 | |
| Variable In The Equation | <i>B</i> | Beta | Standard Error | <i>t</i> value |
| HSGPA | .707 | .444 | .122 | 5.807 |
| (Constant) | .452 | | | |
| Variables Not In The Equation | Beta In | Partial Correlation | Tolerance | <i>t</i> value |
| Racial Origin | -.037 | .041 | .988 | .484 |
| Mother's Level of Ed. | .093 | .103 | .993 | 1.213 |
| Father's Level of Ed. | .095 | .106 | .999 | 1.239 |
| HS Graduating Class Size | -.013 | -.015 | .982 | -.174 |
| HS Senior Year GPA | -.197 | -.194 | .776 | -2.307 |
| Perceived HS Academic Standards | -.037 | -.041 | 1.000 | -.479 |
| Knowledge Level of College Academic | -.217 | -.240 | .988 | -2.888 |
| ACT Score | .217 | .240 | .984 | 2.881 |
| Age | -.046 | -.051 | .996 | -.593 |
| Miles from Home | -.020 | -.022 | 1.000 | -.259 |
| Highest Degree Being Pursued | .075 | .084 | .999 | .982 |
| Perceived Academic Abilities | .169 | .187 | .985 | 2.216 |
| Gender | -.134 | -.149 | .994 | -1.754 |
| College Prep Courses | -.153 | -.169 | .985 | -2.003 |
| Residency Status | -.029 | -.033 | .999 | -.379 |
| Marital Status | -.092 | -.103 | .999 | -1.208 |
| Non-Credit HS Activities | -.070 | -.078 | .982 | -.909 |

Table XXVII

Demographic Variable Entered On Step Two: Knowledge Level Of College Academics

| Multiple | r^2 | Adjusted r^2 | Standard Error | |
|--|----------------------------------|------------------------------|---------------------------|----------------|
| .494 | .244 | .233 | .6434 | |
| Analysis of Variance | Degrees of Freedom (<i>df</i>) | Sum of Squares (<i>SS</i>) | Mean Square (<i>ms</i>) | F-Value |
| Regression | 2 | 18.160 | 9.080 | 21.932 |
| Residual | 136 | 56.306 | .414 | |
| Variables In The Equation | <i>B</i> | Beta | Standard Error | <i>t</i> value |
| HSGPA | .669 | .421 | .119 | 5.605 |
| Perceived Knowledge of College Academics | -.190 | -.217 | .060 | -2.888 |
| (Constant) | .929 | | | |
| Variables Not In The Equation | Beta In | Partial Correlation | Tolerance | <i>t</i> value |
| Racial Origin | .042 | .048 | .987 | .560 |
| Mother's Level of Ed | .044 | .049 | .937 | .571 |
| Father's Level of Ed. | .044 | .049 | .9389 | .573 |
| HS Graduating Class Size | -.006 | -.007 | .981 | -.081 |
| HS Senior Year GPA | -.134 | -.128 | .699 | -1.504 |
| Perceived HS Academic Standards | .067 | -.076 | .982 | -.885 |
| ACT Score | .140 | .135 | .700 | 1.584 |
| Age | -.005 | -.006 | .961 | -.064 |
| Miles from Home | -.011 | -.013 | .998 | -.152 |
| Highest Degree Being Pursued | .031 | .034 | .954 | .401 |
| Perceived Academic Abilities | .067 | .063 | .666 | .729 |
| Gender | -.166 | -.189 | .976 | -2.231 |
| College Prep Courses | -.135 | -.154 | .978 | -1.805 |
| Residency Status | -.012 | -.014 | .993 | -.164 |
| Marital Status | -.060 | -.069 | .974 | -.798 |
| Non-Credit HS Activities | -.036 | -.041 | .957 | -.477 |

Table XXVIII

Demographic Variable Entered On Step Three: Gender

| Multiple | r^2 | Adjusted r^2 | Standard Error | |
|--|----------------------------------|------------------------------|---------------------------|----------------|
| .5204 | .271 | .255 | .6342 | |
| Analysis of Variance | Degrees of Freedom (<i>df</i>) | Sum of Squares (<i>SS</i>) | Mean Square (<i>ms</i>) | F-Value |
| Regression | 3 | 20.162 | 6.721 | 16.708 |
| Residual | 135 | 54.303 | .402 | |
| Variables In The Equation | <i>B</i> | Beta | Standard Error | <i>t</i> value |
| HSGPA | .645 | .405 | .118 | 5.460 |
| Perceived Knowledge of College Academics | -.210 | -.239 | .066 | -3.206 |
| Gender | -.243 | -.166 | .109 | -2.231 |
| (Constant) | 1.169 | | | |
| Variables Not In The Equation | Beta In | Partial Correlation | Tolerance | <i>t</i> value |
| Racial Origin | .052 | .060 | .984 | .697 |
| Mother's Level of Ed. | .078 | .087 | .905 | 1.066 |
| Father's Level of Ed. | .072 | .081 | .916 | .937 |
| HS Graduating Class Size | -.108 | .045 | .944 | -.526 |
| HS Senior Year GPA | -.197 | -.105 | .685 | -1.217 |
| Perceived HS Academic Standards | -.042 | .048 | .959 | .560 |
| ACT Score | .106 | -.022 | 1.000 | 1.180 |
| Age | -.042 | .047 | .893 | -.544 |
| Miles from Home | -.019 | -.022 | .996 | -.251 |
| Highest Degree Being Pursued | -.004 | -.004 | .914 | -.049 |
| Perceived Academic Abilities | .007 | .081 | .661 | .115 |
| College Prep Courses | -.120 | -.138 | .969 | -1.615 |
| Residency Status | .026 | .030 | .942 | .346 |
| Marital Status | -.086 | -.099 | .954 | -1.146 |
| Non-Credit HS Activities | 0.024 | .102 | .672 | -.341 |

Step-Wise Analysis Regarding Success (As Measured By
CCGPA At Time Of Graduation), And
Academic Predictors.

Employing the Stepwise Multiple Regression procedure, the variable Sense of Financial Security was entered at the first step, resulting in a multiple correlation coefficient (r) of .19. This variable accounted for 3.5% of the variance in success ($r^2 = .035$). Sense of Financial Security carried a regression coefficient of -3.3, with an F-value of 6.37 ($df = 1/137, p < 0.01$). Thus, it was found that Sense of Financial Security did contribute significantly to the success rate of students within this study (Table XXIX).

At the second step, the variable entered was Self-Reliance, resulting in a multiple correlation coefficient (r) of .24. Self-Reliance, along with Sense of Financial Security, accounted for 9.3% of the variance on student success. Self-Reliance carried a regression coefficient of 2.17 and an F value of 5.42 ($df = 2/136, p < 0.001$). Appropriately, Self-Reliance did contribute significantly to his or her being successful (Table XXX).

The variable Ease of Transition was entered at step three, resulting in a multiple correlation coefficient (r) of .29. When added to Sense of Financial Security and Self-Reliance, these three variables accounted for 17.8% of the variance in success. The analysis yielded a regression coefficient of -3.02. The reported F-value for this variable was 5.42 ($df = 3/135, p < 0.001$). Therefore, it was found that a significant relationship

existed between Ease of Transition and the success rate of the study students. (Table XXXI).

The analysis of data also revealed that the excluded variables did not contribute significantly to the study students' success rate. The regression equation used to predict success rate was based on academic variables such as Sense of Financial Security, Self-Reliance, and Ease of Transition, and reads as follows:

$$y^1 = 3.38 + (-2.64) (\text{Financial}) + (2.71) (\text{Self-Reliance}) + -3.02) (\text{Ease}) + \text{error term}$$

A significantly greater amount of the variance in success rate (as measured by CCGPA at graduation) can be explained through the academic variables. More specifically, a knowledge of a student's finances, the level upon which they rely upon for answers to academic challenges, and a feel for the ease by which a student moves from high school to college academia would provide a basis for the prediction of success. When this information is placed into the regression model, the researcher can predict a more accurate success rate.

Table XXIX

Academic Variable Entered On Step One: Financial Security

| Multiple | r^2 | Adjusted r^2 | Standard Error | |
|------------------------------------|----------------------------------|------------------------------|---------------------------|----------------|
| .186 | .035 | .029 | .7581 | |
| Analysis of Variance | Degrees of Freedom (<i>df</i>) | Sum of Squares (<i>SS</i>) | Mean Square (<i>ms</i>) | F-Value |
| Regression | 1 | 3.660 | 3.660 | 6.369 |
| Residual | 137 | 101.720 | .575 | |
| Variable In The Equation | <i>B</i> | Beta | Standard Error | <i>t</i> value |
| Financial Security | -3.291 | -.186 | .013 | -2.524 |
| (Constant) | 3.678 | | | |
| Variables Not In The Equation | Beta In | Partial Correlation | Tolerance | <i>t</i> value |
| Study Habits | .022 | .002 | .988 | .026 |
| Academic Confidence | -.091 | -.089 | .905 | -1.179 |
| Intellectual Interest | -.091 | -.092 | .980 | -1.224 |
| Desire to Finish | -.134 | -.131 | .931 | -1.755 |
| Self-Reliance | .153 | .155 | .988 | 2.083 |
| Leadership Skills | .000 | -.000 | .998 | .002 |
| Sociability | -.018 | -.018 | .980 | -.242 |
| Ease of Transition | -.112 | -.114 | .993 | -1.518 |
| Openness | -.082 | -.083 | .991 | -1.103 |
| Family (Emotional) Support | .059 | .060 | .995 | .800 |
| Desire to Transfer | .043 | .043 | .996 | .575 |
| Impression of Institution | -.025 | -.025 | .952 | -.333 |
| Receptivity to Personal Counseling | .013 | -.012 | .907 | -.164 |
| Receptivity to Academic Counseling | -.136 | -.136 | .964 | -1.815 |

Table XXX

Demographic Variable Entered On Step Two: Self-Reliance

| Multiple | r^2 | Adjusted r^2 | Standard Error | |
|------------------------------------|----------------------------------|------------------------------|---------------------------|----------------|
| .241 | .058 | .047 | .7510 | |
| Analysis of Variance | Degrees of Freedom (<i>df</i>) | Sum of Squares (<i>SS</i>) | Mean Square (<i>ms</i>) | F-Value |
| Regression | 2 | 6.109 | 3.054 | 5.415 |
| Residual | 136 | 99.272 | .564 | |
| Variables In The Equation | <i>B</i> | Beta | Standard Error | <i>t</i> value |
| Financial Security | -2.995 | -.170 | .013 | -2.3045 |
| Self-Reliance | 2.168 | -.153 | .010 | 2.083 |
| (Constant) | 2.027 | | | |
| Variables Not In The Equation | Beta In | Partial Correlation | Tolerance | <i>t</i> value |
| Study Habits | -.065 | -.061 | .849 | -.812 |
| Academic Confidence | -.115 | -.112 | .889 | -1.490 |
| Attitude Toward Educators | -.050 | -.051 | .965 | -.675 |
| Intellectual Interest | -.112 | -.113 | .965 | -1.507 |
| Desire to Finish | -.114 | -.112 | .913 | -1.489 |
| Leadership Skills | -.011 | -.012 | .992 | -.153 |
| Sociability | -.030 | -.031 | .974 | -.408 |
| Ease of Transition | -.173 | -.169 | .905 | -2.273 |
| Openness | -.139 | -.136 | .905 | -1.819 |
| Family (Emotional) Support | .037 | .038 | .972 | .498 |
| Desire to Transfer | .034 | .035 | .993 | .457 |
| Impression of Institution | -.081 | -.077 | .862 | -1.026 |
| Receptivity to Personal Counseling | .018 | .018 | .906 | .235 |
| Receptivity to Academic Counseling | -.138 | -.139 | .964 | -1.860 |

Table XXXI

Demographic Variable Entered On Step Three: Ease Of Transition

| Multiple | r^2 | Adjusted r^2 | Standard Error | |
|------------------------------------|----------------------------------|------------------------------|---------------------------|----------------|
| .292 | .085 | .069 | .7423 | |
| Analysis of Variance | Degrees of Freedom (<i>df</i>) | Sum of Squares (<i>SS</i>) | Mean Square (<i>ms</i>) | F-Value |
| Regression | 3 | 8.956 | 2.985 | 5.4188 |
| Residual | 135 | 96.424 | .551 | |
| Variables In The Equation | <i>B</i> | Beta | Standard Error | <i>t</i> value |
| Financial Security | -2.836 | -.149 | .013 | 2.037 |
| Self-Reliance | 2.706 | -.205 | .010 | 2.688 |
| Ease of Transition | -3.023 | -.173 | .013 | -2.273 |
| (Constant) | 3.382 | | | |
| Variables Not In The Equation | Beta In | Partial Correlation | Tolerance | <i>t</i> value |
| Study Habits | -.053 | -.051 | .846 | -.675 |
| Academic Confidence | -.076 | -.072 | .831 | 1.956 |
| Attitude Toward Educators | -.041 | -.042 | .962 | -.556 |
| Intellectual Interest | -.085 | .086 | .936 | -1.145 |
| Desire to Finish | -.112 | -.111 | .913 | -1.479 |
| Leadership Skills | .022 | .023 | .953 | .302 |
| Sociability | .007 | .007 | .927 | .092 |
| Openness | -.101 | -.097 | .848 | -1.284 |
| Family (Emotional) Support | .055 | .056 | .962 | .745 |
| Desire to Transfer | .047 | .049 | .986 | .646 |
| Impression of Institution | .019 | -.017 | .748 | -.224 |
| Receptivity to Personal Counseling | .004 | .004 | .900 | .058 |
| Receptivity to Academic Counseling | -.109 | -.109 | .926 | -1.453 |

CHAPTER V

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Problem Statement

An important truth giving credence to this research is the question consistently being asked by OSU officials: Why do twenty-seven percent of incoming freshmen who initially enroll in OSU's CASNR not re-enroll in that college as sophomores, but are lost to either: 1) their leaving the university before completing their course of study in CASNR; or 2) other departments on the campus.

Purpose Of This Study

The purpose of this descriptive study was to identify factors related to OSU's College of Agricultural Sciences and Natural Resources, Fall, 1995 freshmen population for predicting retention and success within that College.

Research Objectives

The following objectives were necessary to accomplish the purpose of this study:

1. Identify demographic and academic characteristics of incoming freshmen in OSU's College of Agricultural Sciences and Natural Resources which might affect retention and success, including those measured by the College Student Inventory, High School GPA (HSGPA), ACT scores, and College Cumulative GPA (CCGPA).
2. Determine the relationship between retention (i.e., completion of 2nd semester at OSU), and the identified demographic and academic characteristics.
3. Determine the best demographic and academic predictors of retention
4. Determine the relationship between success (i.e., as measured by CCGPA at graduation), and the identified demographic and academic characteristics.
5. Determine the best demographic and academic predictors of success.

Major Findings

Major finding for objective number 1 included:

1. In this study it was found that 53.2 percent were females. Thirty seven percent of the study students reported their high school graduating class size to be less than 50. Eighty-nine percent of the participants identified their racial origin to be majority while 11.3 percent reported their racial origin as minority and 80 percent reported to be 18 years old. Fifty-two percent reported their mother had

one to three years of college, 28.8 percent revealed their mothers had a bachelor's degree, and 17.6 percent reported them to have a master's degree. Likewise, 22.5 percent revealed their fathers had one to three years of college, 33.3 percent indicated they had a bachelor's degree and 21.2 percent reported them to have a master's degree.

2. In addition, 92 percent of the respondents reported taking college prep courses, while 82 percent of them reported they would reside on campus even though 42.3 percent indicated they were less than 100 miles from home while attending college.
3. In comparison to the average high school graduating senior in this country, 40.5 percent of the participants reported their (perceived) knowledge level of college academics to be in the highest twenty percent. Thirty-two percent indicated their academic ability to *slightly above average*. Furthermore, 27.5 percent of the respondents reported they would be pursuing an advanced degree. In fact, 45 percent expressed a desire to pursue a Doctoral degree.

Major findings for objective number 2 included:

1. The data indicated that a high number of study students returned to CASNR and completed the 2nd semester of college. In fact, 193 (or 87 percent) were retained at the end of 2nd semester (i.e., did return for and completed the Spring, 1996 semester), but only 180 of them fully completed the CSI) so it was usable for

data analysis. Additionally, 140 (or 73 percent) of the 222 students were successful (i.e., graduating from OSU).

2. The demographic variables High School GPA, College Cumulative GPA (2nd semester), Mother's Level of Education, Father's Level of Education, HS Senior Year GPA, Gender, and College Preparatory Courses were significantly correlated to retention.
3. The academic variables Study Habits, Academic Confidence, Intellectual Interest, Desire to Finish, Leadership Skills, and Ease of Transition were significantly correlated to retention
4. A linear relationship did exist between High School GPA, College Cumulative GPA, Racial Origin, Mother's educational level, Father's educational level, Graduating Class Size, Senior Year GPA, Student's Knowledge Level of College Academics, ACT scores, Age, Miles from Home, Highest Degree being Pursued, Perceived Academic Ability, College Preparatory Courses, Residency Status and retention.
5. A significant correlation was found between 7 of the 19 demographic and 6 of the 16 academic variables and retention.

Major findings for objective number 3 included:

1. College Cumulative GPA (at end of 2nd semester) independently contributed significantly to predict retention of study students.

2. A significant linear relationship was found between the 19 demographic variables and retention. Collectively, the 19 demographic variables accounted for 48% (42% adjusted) of the variance in retention. But, only one of the 19 demographic variables, College Cumulative GPA (at end of 2nd semester), contributed significantly to prediction of retention.
3. A significant linear relationship was found between the 16 academic variables and retention. Collectively, the 16 academic variables accounted for 30% (22% adjusted) of the variance in retention. But, only 3 of the 16 academic variables, Intellectual Interest, Desire to Finish, and Desire to Transfer contributed significantly to prediction of retention.

Major findings for objective number 4 included:

1. Twelve of the 19 demographic variables were significantly related to success. Eight demographic variables were positively related to success (as measured by CCGPA at graduation). Cumulative College GPA (at graduation) was positively related to High School GPA, both Mother's and Father's Level of Education, High School Senior Year GPA, Perceived Knowledge of College Academics, ACT scores, Age, and Perceived High School Academic Abilities. Additionally, 4 demographic variables were negatively related to CCGPA (at time of graduation). Cumulative College GPA (at time of graduation) was negatively correlated with Miles from Home, Gender, College Prep Courses, and Marital Status.

2. Seven of the 16 academic variables analyzed were significantly related to success (as measured by CCGPA at graduation). The five academic variables positively related to success were Desire to Finish, Self-Reliance, Sense of Financial Security, Receptivity to Academic Counseling, and Impression of Institution. On the other hand, Academic Confidence and Openness were negatively related to success.

Major findings for objective number 5 included:

1. The demographic variable High School GPA did contribute significantly to the prediction of the success rate of students. This variable alone accounted for 20% of the variance in success.
2. The demographic variable Knowledge Level of College Academics did contribute significantly to the prediction of the success of study students. This variable, together with HSGPA, accounted for 24% of the variance in success.
3. The demographic variable Gender was also significantly related to success. This variable, along with HSGPA and Perceived Knowledge Level of College Academics, accounted for 27% of the variance in success.
4. The academic variable Sense of Financial Security did contribute significantly to the prediction of the success rate of students within this study. This variable contributed 3.5% of the variance in success.

5. The academic variable Self-Reliance also contributed significantly to success. Self-Reliance, along with Sense of Financial Security, accounted for 9.3% of the variance in success.
6. It was also found that a significant relationship existed between Ease of Transition and the success rate of the study students. When added to Sense of Financial Security and Self-Reliance, these three variables accounted for 17.8% of the variance in success.
7. The analysis of data also revealed that the excluded variables did not contribute significantly to the prediction of the success rate of the study students.

Conclusions

Conclusions for objective number 1 included:

1. Based on the information collected with the CSI the average study student was an 18-year old Caucasian female or male. Both parents had at least a high school degree or better. They took college prep courses while in high school, and graduated from high school with 49 other students, was attending college 100 or so miles from home and was residing on campus. They perceived their knowledge level of college academics to be in the highest 20 percent, perceived academic abilities to be considerably above average, and desired to accomplish an advanced degree.

Conclusions for objective number 2 included:

1. Regarding demographic variables, it appears that, on the average, the CASNR retainee was Caucasian, female or male, maintained at least a 2.61 High School Senior Year GPA and initiated post secondary education with at least a 3.65 High School GPA. This retainee had accumulated a 2.87 GPA by the end of the 2nd semester in college.
2. Regarding academic variables, the data suggested that, on the average, a retainee was one with good study habits, possessed academic confidence, was intellectually stimulated by academia, and desired to finish his or her program of study. The transition from high school to college posed very few disadvantages to them. Conversely, it appeared that a study student who did not take College Preparatory Courses and lacked leadership skills was the one least likely to be retained at the end of the 2nd semester of college.

Conclusions for objective number 3 included:

1. The data specifically implied that College Cumulative GPA (i.e., CCGPA at 2nd semester) was the determining factor in a study student being retained. The higher the student's CCGPA (at end of 2nd semester) the more likely he or she would be retained.
2. Three academic variables Intellectual Interest, Desire to finish, and Desire to Transfer were the best predictors of retention.

Conclusions for objective number 4 included:

1. Based on the both the positive and negative relationships between CCGPA (at time of graduation) and demographic characteristics, it appeared that study students with at least a HSGPA of 3.65, whose parents have at least a masters degree, scored high on their ACT test, were 18 years old, and perceived themselves to have *above average* Academic Ability were the ones most likely to succeed (i.e., graduate from OSU).
2. The data suggested that study students who had an innate desire to finish their core curriculum, who were self-reliant, had a sense of well-being about their school finances, received family (emotional) support, was impressed with the institution they were attending as well being receptive to academic counseling were more likely succeed (graduate from OSU). On the other hand, the results also indicated that study students lacking academic confidence and not open to brave academia challenges were not likely to become successful.

Conclusions for objective number 5 included:

1. It appeared that High School GPA was the major factor in a study students' becoming successful (as measured by CCGPA at graduation). The higher the student's CCGPA (at graduation) the more likely he or she would become successful.

2. Regarding demographic variables, High School GPA, Perceived Knowledge of College Academics, and Gender were the best predictors of success, accounting for 27% of the variance in success.
3. Regarding academic variables, Sense of Financial Security, Self-Reliance, and Ease of Transition were the best predictors of success, accounting for 17.8% of the variance in success.

Implications

One of the most interesting findings of the present study was the influence of academic variables on the *retention* and *success* of study students. To be sure, a positive relationship was found to exist between the academic variable College Cumulative GPA and *success* as well as *retention*. These findings were consistent with those of Tinto (1987, 1993), Dryfoss (1990) and Ross (1988). All of these researchers found that academic variables such as College Cumulative GPA, High School GPA, and ACT scores were significant predictors of both *success* and *retention*. The data offered in this study seem to suggest that the academic performance of students was a determining factor in retention as well as success.

Another notable finding of the present study was the influence of Gender as a reliable predictor of *success*. Not only was Gender a reliable predictor of *success* but was linearly related to *retention* along with other demographic and academic variables.

These findings correspond to those of Albert and Dunham (1986) and Ross (1988). It appeared that female college students have a higher success average than their

male counterparts. Also, female college students in CASNR were more likely to graduate during a six- year period than male college students (see Ross, 1988).

Moreover, another significant finding of the current study was the effect of parental education on the retention of study students. Significantly, the variable Mother's Level of Education and Father's Level of Education, in conjunction with other demographic variables, were linearly related to retention. These findings were favorable to those of Borg and Gall (1989), Milne et. al. (1989), Burley et. al. (2001), and Santa Rita and Scranton (2001). These researchers found that the higher the educational level of the parents the more likely the students would not leave college before graduating.

Additionally, the variable Ethnicity was found to be linearly related to retention. Again, this variable, along with other demographic variables, were found to be significant predictors of retention. However, it should be noted that even though ethnicity, gender, parental education, and the remaining demographic and academic variables were linearly related to retention, only the variable College Cumulative GPA (at 2nd semester) had an independent effect on retention.

The present findings regarding the influence of ethnicity on retention parallel those of Ross (1988). Ross found a difference in the student retention rates between black and white students as well as other minority students. She reported that the retention of black students after one year lags seven percentage points behind their white peers.

Finally, another important finding of this study was the significant influence that the academic variables Sense of Financial Security, Self-Reliance, and Ease of Transition had on the success of the study students. These variables, along with College

Cumulative GPA (both at 2nd semester and at graduation) and Gender, were found to be reliable predictors of success for study students. Descriptive studies, especially those conducted by Brotherton and Phaedra (2001), revealed the importance of variables reflecting how student's background impact on success in college.

Recommendations For The College Of Agriculture

The following recommendations are offered for consideration by agricultural educators:

Regarding Objective # 1: Agricultural educators, especially those who are responsible for the retention of students, should be aware of the influence selected demographic and academic variables have on retention. An understanding of the variables that would best predict those students who would return to CASNR would assist administrators in their efforts to develop retention models to identify these students.

Regarding Objective # 2: CASNR administrators should have an awareness of the demographic factors as well as the school related ones which can be used to reliably predict student retention. An understanding of the correlation between retention and demographic and school related factors can assist in improving the recruiting and screening of students from diverse background and cultures.

Regarding Objective # 3: CASNR administrators and faculty alike should be cognizant of the importance of demographic and academic variables, particularly College Cumulative GPA (both end of 2nd semester and at graduation). It would be wise for administrators and faculty alike to be aware of the effects Intellectual Interest, Desire to Finish, and Desire to Transfer have on retention efforts. An appreciation for these variables on the part of CASNR administrators and faculty members will help them in the long run implement strategies not only to improve student's retention but to complete the total pedagogical process at the university.

Regarding Objective # 4: CASNR administrative officials should have not only an understanding of the correlation between *success* and demographic and school related factors but be awareness of the selected background as well as the school related factors which can be used to reliably predict the success of students in completing a college degree.

Regarding Objective # 5: The academic and demographic variables of Study Habit, Receptivity to Academic Counseling, Attitude Toward Educators, Intellectual Interest, Leadership Skills, Sociability, Ease of Transition, Openness, Sense of Financial Security, Family (Emotional) Support, Impression with Institution, Receptivity to Personal Counseling, Miles from Home, Highest Degree being Pursued, Perceived Academic Abilities, Gender, Residency Status, Non-Credit High School Activities, Perceived HS Academic Standards, Marital

Status, College Standards or Expectations, and Familiarity with OSU should not be strongly considered the success rate of study students. The variables Sense of Financial Security, Self-Reliance, and Ease of Transition should be considered instead.

Recommendations For Further Study

In order to expend the findings of this study, the researcher recommends that:

1. A study be conducted to compare and contrast the impact of retention models on the success rate of white, black, and other minority students.
2. A follow-up study be conducted that will further examine the influence of selected demographic and academic variables on the retention and success rate of students, not only in CASNR but other colleges and schools within the OSU system.
3. A study be done over time to investigate the effect of school-related factors on the retention and success of college students.

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APPENDICES

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 08-10-95

IRB#: AG-96-003

Proposal Title: OSU AGRICULTURAL SCIENCES AND NATURAL RESOURCES
RETENTION STUDY

Principal Investigator(s): James P. Key, Alvin Ray Landry

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

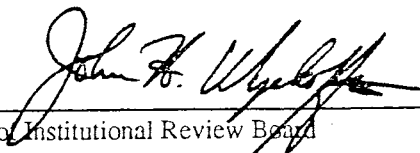
ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD
AT NEXT MEETING.

APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A
CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD
APPROVAL.

ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR
APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval
are as follows:

Signature:



Chair of Institutional Review Board

Date: August 18, 1995

APPENDIX B

COLLEGE STUDENT INVENTORY INSTRUMENT

START HERE.

OVERVIEW

Our minds have an immense capacity for knowledge. But **each of us learns in a different way**. We focus attention on somewhat different dimensions of the world, we have somewhat different understandings of the world, and we strive for quite different kinds of personal growth. We can only achieve our full potential when these forces of individuality are meshed smoothly with the learning process.

Your school wishes to help you discover and engage the full richness of your individuality. It would like to see you discover the learning path that best suits your unique personality. Completing the COLLEGE STUDENT INVENTORY™ is the first step in a carefully designed program to achieve that end. The Inventory is a communication channel between you and your school. It records your thoughts and feelings on many issues related to college. The results will be used in two ways.

First, you will receive a computerized interpretation of your data. Your advisor will discuss these results with you and help you join any follow-up activities that fit your interests and needs.

Second, the general results for your class as a whole will be used to plan a campus-wide program of support services. Staff members will determine how much need exists for certain types of services and how these services can be best provided.

Completing the Inventory and participating in the follow-up activities are entirely voluntary. But I strongly urge you to take advantage of these opportunities. They are likely to have a very beneficial effect on your entire education.

The Inventory has four sections, each with its own set of instructions. So you can gain full benefit from the results, please complete each part as accurately and honestly as you can. It is especially important that you **answer every question** (except where a blank response is allowed). If you change an answer, be sure to fully erase your initial response.

Best wishes for a deep and rewarding experience at college.

Michael L. Stratil

Go now to Part A and read the instructions.

PART A

Instructions. Please be advised that by -completing and returning this answer sheet, you give consent to its release to Noel/Levitz Centers for the purpose of scoring, processing, and preparation of reports for yourself, your advisor, and your college or university.

Use a No.2 (medium) black lead pencil in answering all parts of this questionnaire. Do **not** use ink or ball point pen

1. On the front of the answer sheet, find the area for your name. It looks like this:

| LAST NAME | | | | | | | | | | | | FIRST NAME | | | | | | | MI |
|-----------|--|--|--|--|--|--|--|--|--|--|--|------------|--|--|--|--|--|--|----|
| | | | | | | | | | | | | | | | | | | | |

Print your last name in the 12 spaces provided. If your last name is too long, abbreviate it. Do not go past the line that divides the last and first name. Do the same for your **first name** (which goes in the next 7 spaces) and **your middle initial** (which goes in the last column).

2. **Now blacken the circles** that represent the letters in each part of your name. Be sure to completely fill each of the appropriate circles. Erase any stray marks or errors.
3. Move down to the area marked "GROUP #." The examiner has written this number on the board (or will read it to you). **Print the number** in the spaces provided. Be sure to include any O's that are in the number.
4. **Print your age in the next section.**
5. In the section labeled "SEX," blacken one of the circles (either "M" or "F").
6. In the last section, **print your social security number.** This number will enable your counseling staff to avoid misidentifications in cases where more than one person has the same name. If you do not know your social security number or do not wish to provide it, enter 123456789.
7. Now **blacken the appropriate circles** under GROUP #, AGE, and SOCIAL SECURITY NUMBER. Again, be sure to completely fill each appropriate circle and to erase all stray marks and errors.

GO TO PART B.

PART B

Instructions. The main body of the questionnaire contains 194 questions. The questions in the present section offer various options, which are represented on the answer sheet as numbered circles. Thus, question #1 appears as follows on the answer sheet:

| Question # | Options |
|------------|---------------|
| 1 | ① ② ③ ④ ⑤ ⑥ ⑦ |

Notice that the answer sheet always provides seven circles, even though some questions offer fewer than seven options. Ignore the extra circles.

You are to answer each question by deciding which option is most appropriate to you. Then use your pencil to blacken the circle that corresponds to the option you have chosen.

If you have difficulty in answering any of the questions in this section, see the examiner. Begin with the first question and continue to the end of the section.

- My graduating class in high school had:
 - less than 50 students
 - 50 to 99 students
 - 100 to 149 students
 - 150 to 299 students
 - 300 to 499 students
 - 500 or more students
 - None of the above, as I received a General Education Degree (G.E.D.)
- The program of courses that I took in high school was to prepare me for:
 - a manual trade (auto mechanics, farming, plumbing, carpentry, manufacturing, etc.)
 - a technical trade (electrical, electronics, data processing, commercial art, medical technician, nursing, etc.)
 - secretarial work (typing, filing, dictation, etc.)
 - general commerce (sales, purchasing, banking, bookkeeping, etc.)
 - a college education leading to various occupations
 - other
- The average of all my grades during my senior year in high school was approximately:

Note: If your school did not use letter grades, do your best to translate your grades into the above system.
- Based on its general reputation, I would say that my high school's academic standards were:
 - far below the average high school
 - somewhat below the average high school
 - about equal to the average high school
 - somewhat above the average high school
 - far above the average high school
- The following question is about your current knowledge of college preparatory courses (e.g., English, Mathematics, Science, and Social Studies).

Compared to the average high school graduating senior in this country, I consider my academic knowledge to be in the:

 - highest 20%
 - next to the highest 20%
 - middle 20%
 - next to the lowest 20%
 - lowest 20%

6. In college, I am currently (or will be when school starts) a:
- 1) freshmen
 - 2) sophomore
 - 3) junior
 - 4) senior
 - 5) graduate student
 - 6) special (non-degree) student
7. While attending college, I am living in (or plan to live in):
- 1) a residence hall
 - 2) my parents' home
 - 3) a relative's home
 - 4) my own off-campus apartment or house
 - 5) married student housing
 - 6) a fraternity or sorority
 - 7) other
8. The highest degree I plan to pursue is:
- 1) none
 - 2) 1-year certificate
 - 3) a 2-year college degree (associate)
 - 4) a 4-year college degree (bachelor's)
 - 5) a master's degree
 - 6) a doctoral degree [medicine (M.D.), dentistry (D.D.S.), law (J.D.), philosophy (Ph.D), or other similar degrees]
9. Academic ability is one's capacity to learn from books, lectures, and written assignments. Its key ingredient is the ability to understand and remember complex ideas.
- In relation to the general population of our society, I consider my academic ability to be:
- 1) considerably below
 - 2) slightly below average
 - 3) average
 - 4) slightly above average
 - 5) considerably above average (in the top 20%)
 - 6) extremely high (in the top 5%)
10. While attending college, the amount of time I expect to spend studying outside of class is approximately:
- 1) 3 hours or less per week
 - 2) 6 hours per week
 - 3) 9 hours per week
 - 4) 12 hours per week
 - 5) 15 hours per week
 - 6) 18 hours per week
 - 7) 21 hours or more per week
11. Based on the information I currently have, I feel that my college's academic standards and expectations are:
- 1) much too high for me
 - 2) somewhat too high for me
 - 3) slightly too high for me
 - 4) just right for me
 - 5) slightly too low for me
 - 6) somewhat too low for me
 - 7) much too low for me
12. My native language is:
- 1) English
 - 2) Spanish
 - 3) French or Italian
 - 4) German or Slavic (Russian, Polish, Czech, Bulgarian, etc.)
 - 5) Arabic
 - 6) Chinese, Vietnamese, Korean, or Japanese
 - 7) other
13. I would describe my racial origin as:
- 1) Afro-American (Black)
 - 2) American Indian, Alaskan Native
 - 3) Asian-American, Pacific Islander
 - 4) Caucasian-American (White)
 - 5) Hispanic American (Mexican, Puerto Rican, Cuban, etc.)
 - 6) Other
 - 7) I prefer not to respond.
14. What is the highest level of education completed by your mother?
- 1) 8 years or less of elementary school
 - 2) some high school but no diploma
 - 3) a high school diploma or equivalent
 - 4) 1 to 3 years of college (including study at a technical, community, or junior college)
 - 5) a 4-year undergraduate college degree (bachelor's degree)
 - 6) a master's degree
 - 7) a doctoral degree
15. What is the highest level of education completed by your father?
- 1) 8 years or less of elementary school
 - 2) some high school but no diploma
 - 3) a high school diploma or equivalent
 - 4) 1 to 3 years of college (including study at a technical, community, or junior college)
 - 5) a 4-year undergraduate college degree (bachelor's degree)
 - 6) a master's degree
 - 7) a doctoral degree

16. My present marital status is:
- 1) single, with no plans to get married
 - 2) single, with a close relationship to someone I plan to marry
 - 3) single, with children
 - 4) married, without children
 - 5) married, with children
 - 6) divorced, without children
 - 7) divorced, with children

17. The distance between my college and my family home (residence of parents, guardians, or spouse) is:
- 1) less than 10 miles
 - 2) 10 to 50 miles
 - 3) 51 to 100 miles
 - 4) 101 to 300 miles
 - 5) 301 to 600 miles
 - 6) more than 600 miles

Complete the following question if you have taken the ACT Assessment. Otherwise skip this question and go on to the next one.

18. My **composite score** on the ACT was:
- 1) 0 or less
 - 2) between 11 and 14
 - 3) between 15 and 18
 - 4) between 19 and 22
 - 5) between 23 and 26
 - 6) between 27 and 30
 - 7) 31 or higher

Complete the following question if you have taken the Scholastic Aptitude Test (SAT). Add your scores for the Verbal and Mathematics sections to get your total score. If you have not taken the SAT, skip this question and go to the next one.

19. My total SAT score (verbal plus mathematics) was:
- 1) 600 or less 1%
 - 2) between 601 and 720
 - 3) between 721 and 840
 - 4) between 841 and 960
 - 5) between 961 and 1080
 - 6) between 1081 and 1200
 - 7) 1201 or higher

The following two questions are the only ones in the inventory that allows for more than one response.

20. Before deciding to enroll my familiarity with my present college consisted of (select all options that apply):
- 1) reports from acquaintances
 - 2) reading the description in a general college guide
 - 3) reading its catalog and brochures
 - 4) a brief drive through the campus on my own
 - 5) talking briefly with a college representative
 - 6) an interview and/or guided tour of the campus conducted by staff members
 - 7) extensive contact over a period of years (e.g., attendance at activities sponsored by the school).

21. From the list below, fill in the circle for each type of voluntary, non-credit activity in which you participated during high school. Do not indicate activities for which you received course credit.
- 1) art exhibit or musical, theatrical, or dance production
 - 2) school newspaper, yearbook, literary magazine, or writing contest
 - 3) debate team, speech contest, or radio/TV production
 - 4) scientific research project
 - 5) member of a special interest, social, honorary, or service organization
 - 6) member of an athletic team or active in intramural sports
 - 7) class officer, member of student council, team captain, or officer of any other type of school organization

ANSWER ANY QUESTIONS THAT HAVE BEEN LEFT BLANK, EXCEPT FOR THOSE THAT ALLOW FOR A BLANK ANSWER (QUESTIONS # 18-21).

THEN GO TO PART C.

PART C

INSTRUCTIONS. The present section measures a variety of attitudes related to college. Students usually find it to be quite interesting.

As you answer the questions, keep in mind that attitudes are hard to measure. Different individuals often interpret the meaning of a question differently, and a fleeting thought or feeling may influence how one responds.

For these reasons, a good questionnaire should contain a number of similar items about every topic covered. Each item reduces the chances of error. So please be patient with the questions. Also, don't try to recall your previous responses-- just answer each question as spontaneously and naturally as you can.

Answer each question by selecting one number from the following rating scale:

| | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|--------------------|
| RATING SCALE | | | | | | | | |
| NOT AT ALL TRUE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | COMPLETELY TRUE |

Thus, if you agree completely with a statement, you should answer with a "7." Agreement that is fairly strong but not total is indicated by selecting a "5," while "3" indicate agreement that is fairly weak. Selecting "1" indicates total disagreement. Use any number between 1 and 7.

Keep in mind that there are no "right" or "wrong" answers. Simply give the answer that best fits you. In answering the questions on study habits and teachers, you should draw primarily on your pre-college experiences.

Read each question carefully, but do not spend a lot of time on any one question. As before, blacken the appropriate circle on the answer sheet. Give only one response for each question.

22. When I think about my career choice, I find that I have very little solid information to go on.

23. Most of my teachers have been very caring and dedicated.

24. Books have never gotten me very excited

25. I study all of the assigned readings in my courses.

The next question has a special purpose, which is to confirm that you are putting your answers in the correct position in the answer sheet. There will be others like it throughout the inventory.

26. Enter a "2" for this question.

27. I have financial problems that are very distracting and troublesome.

28. It is wise to avoid people with strange and unusual ideas.

29. Often I get so uptight about an exam that I can't concentrate on studying.

30. I would like to talk with someone about the qualifications needed for certain occupations.

| RATING SCALE | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|--------------------|
| NOT AT ALL TRUE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | COMPLETELY TRUE |

- | | |
|--|--|
| <p>31. I often rely on my own ideas when making a decision, and I'm prepared to make an unpopular decision if necessary.</p> <p>32. I am having a hard time breaking away from my family, and attending college is going to make the situation worse.</p> <p>33. My teachers did a very poor job of explaining the purpose of our studies.</p> <p>34. I would like to receive some help in improving my study habits.</p> <p>35. Of all the things I could do at this point in my life, going to college is definitely the most satisfying.</p> <p>36. I try to avoid long conversations with people.</p> <p>37. Most people have a lot of trust in my judgment and respect for my opinion.</p> <p>38. I have family problems that interfere (or will interfere) with my studies.</p> <p>39. I would like to talk with someone about a problem that I'm having (or expect to have) with a roommate.</p> <p>40. I have a good memory for the information that teachers' present in class.</p> <p>41. In trying to plan a career, I have explored several possibilities and have weighed their advantages and disadvantages.</p> <p>42. It is likely that even our most hostile enemies have some good ideas.</p> <p>43. I have great difficulty concentrating on schoolwork.</p> <p>44. I would like to talk to someone about getting a part-time job during the regular school year.</p> <p>45. I often get confused when trying to reach major decisions, and I seek a lot of help with them.</p> | <p>46. I expect to make friends easily at college.</p> <p>47. I have some serious misgivings about my decision to come to college.</p> <p>48. While I was growing up, I felt that the rest of my family was firmly behind me.</p> <p>49. There are many sensitive subjects that people should never talk about.</p> <p>50. I like to go to large, lively parties.</p> <p>51. Enter a "7" for this question.</p> <p>52. Other people don't think of me as a leader.</p> <p>53. I often have a hard time trying to imagine the people and actions described in a novel.</p> <p>54. I would like to attend an informal gathering where I can meet some new friends.</p> <p>55. I get a great deal of personal satisfaction from reading.</p> <p>56. I would like some information or counseling on the best way to eliminate an unwanted habit (e.g., involving food, drugs, cigarettes, or alcohol).</p> <p>57. I have gathered information about the salaries, job openings, and working conditions for several occupations, and I'm taking this into account in trying to choose a career.</p> <p>58. I have had (or expect to have) much difficulty adapting to my living arrangements while attending college.</p> <p>59. I am strongly dedicated to finishing college--no matter what obstacles get in my way.</p> <p>60. I take very clear notes during class, and I review them carefully before a test.</p> <p>61. I resent the large amount of power that teachers have had over me throughout my days in school.</p> |
|--|--|

| | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|--------------------|
| RATING SCALE | | | | | | | | |
| NOT AT ALL TRUE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | COMPLETELY TRUE |

- | | |
|--|---|
| <p>62. I have a lot of faith in my own reasoning, and I'm not discouraged when someone else disagrees with my conclusions.</p> <p>63. I plan to transfer to another school sometime before completing a degree at this college or university.</p> <p>64. When faced with a tough decision, I like to open my imagination to many possible solutions.</p> <p>65. I would like to talk to someone about the current job market for college graduates.</p> <p>66. I would like to find out more about student government and the various student activities on campus.</p> <p>67. I usually put off doing school assignments until it's too late.</p> <p>68. I would like to receive some instruction in the most effective ways to take college exams.</p> <p>69. My parents have paid little attention to my schooling, and they haven't done much to help me.</p> <p>70. I am very confused about what occupation to go into.</p> <p>71. I can think of many things I would rather do than go to college.</p> <p>72. People with extreme political views should not be allowed to speak in public, as they tend to upset the community.</p> <p>73. When I need to, I can work quickly on an exam without getting uptight.</p> <p>74. Because I know very few people at my college, I expect my overall social situation to be very difficult during the coming term.</p> | <p>75. I would like to talk with a counselor about my general attitude toward school.</p> <p>76. Enter a "1" for this question.</p> <p>77. I often don't know what to say when I'm in a group of people, so I try to get away as soon as I can.</p> <p>78. My teachers were very interesting and lively, and they made the learning process quite enjoyable.</p> <p>79. Over the years, I have frequently been selected as a spokesperson or group leader.</p> <p>80. I feel comfortable discussing important issues with my parents.</p> <p>81. I have the financial resources that I need to finish college.</p> <p>82. I think a lot about the future, and I try to plan my current life around my long-range goals.</p> <p>83. On controversial issues, my opinions are often strongly influenced by what other people think.</p> <p>84. My vocabulary is fairly limited, and I have a hard time understanding textbooks.</p> <p>85. I spend a lot of time with other people.</p> <p>86. I would like to receive some individual help in improving my writing skills.</p> <p>87. Our ideas about life are far from perfect, and we can all benefit greatly from studying the beliefs and values of other societies.</p> <p>88. I would like some help selecting an occupation that is well suited to my interests and abilities.</p> <p>89. When studying, I am able to keep my attention clearly focused on the material.</p> <p>90. I expect to get a lot out of college.</p> |
|--|---|

| RATING SCALE | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|--------------------|
| NOT AT ALL TRUE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | COMPLETELY TRUE |

- | | |
|--|--|
| <p>91. My family has a one-sided way of looking at me, and they don't understand my feelings.</p> <p>92. I feel confident of my own opinions, and I'm willing to act on them.</p> <p>93. Most teachers have a superior attitude that I find very annoying.</p> <p>94. I hardly ever go to a bookstore, and I've bought few, if any, serious books.</p> <p>95. I feel very comfortable with the changes in lifestyle that my going to college will require.</p> <p>96. Most <i>people avoid</i> me or take me for granted.</p> <p>97. I have not talked with any knowledgeable individuals about the training required for the occupation that most interests me.</p> <p>98. When the odds are stacked against a person, it's best to throw in the towel early and avoid a painful failure.</p> <p>99. Studying is only a small part of life, and I don't take it very seriously.</p> <p>100. I would like to talk with a counselor about some emotional tensions that are bothering me.</p> <p>101. Enter a "4" for this question.</p> <p>102. I find it very hard to get into the joking and casual conversation that goes on at parties.</p> <p>103. I am good at figuring out what material is most important for an exam and what is secondary.</p> <p>104. I don't express unpopular opinions, even when something important is at stake.</p> <p>105. I have spent a lot of time thinking about how best to <i>prepare</i> myself for a career.</p> <p>106. I would like to talk with someone about getting a loan to help me through school.</p> | <p>107. In striving for an important goal, it is sometimes sensible to take a few calculated risks.</p> <p>108. I would readily leave college if I found a well paying job.</p> <p>109. I know many of the students at my college, and I feel (or expect to feel) very much at home.</p> <p>110. My parents have been very helpful in teaching me how to get along with people.</p> <p>111. My studying is very irregular and unpredictable.</p> <p>112. Books have widened my horizons and stimulated my imagination.</p> <p>113. I am in a bad financial position, and the pressure to earn extra money will probably hinder my studies.</p> <p>114. I would like to receive some individual help with basic mathematics.</p> <p>115. Most teachers do a very good job of explaining their objectives.</p> <p>116. I have no respect for people who openly reject the group and do things differently than everyone else.</p> <p>117. Many people consider me an effective leader, and they look to me for direction.</p> <p>118. During the coming term, I expect to feel somewhat lonely and to have a strong desire to see more of my friends and family.</p> <p>119. I study hard for all my courses, even those I don't like.</p> |
|--|--|

| | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|--------------------|
| RATING SCALE | | | | | | | | |
| NOT AT ALL TRUE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | COMPLETELY TRUE |

- | | |
|---|---|
| <p>120. I like to make my own decisions, and I have a lot of trust in my judgment.</p> <p>121. I get so nervous during an exam that I tend to lose track of what I'm doing.</p> <p>122. The total college experience--including both the studying and the social life--is very attractive to me.</p> <p>123. Although school administrators may pretend to have their students' interest at heart, they really don't.</p> <p>124. At this point, my college plans are not directed toward achieving any particular occupational goal.</p> <p>125. There is too much tension and emotional turmoil in my family.</p> <p>126. Enter a "5" for this question.</p> <p>127. On those occasions when I've tried to lead other people, I things have turned out badly.</p> <p>128. I would like some help selecting a program of courses that will prepare me to get a good job after I graduate.</p> <p>129. I tend to be adventurous and fun loving.</p> <p>130. I often wonder if a college education is really worth all the time, money, and effort that I'm being asked to spend on it.</p> <p>131. I like to explore new ways of doing things--despite the frustrations and disappointments that sometimes result.</p> <p>132. I let my friends have too much influence on my life.</p> <p>133. When I try to study I usually get bored and quit after a few minutes.</p> | <p>134. The teachers I had in school were very professional and objective in assigning grades.</p> <p>135. My mind is able to grasp complicated ideas.</p> <p>136. I would like to talk with a counselor about some family problems.</p> <p>137. I have no desire to transfer to another school before finishing a degree at this college or university.</p> <p>138. It has been (or will be) very easy for me to adapt to my living arrangements while attending college.</p> <p>139. I would like to meet an older student who can show me around and give me some advice.</p> <p>140. Our enemies have nothing valuable to say, and we should ignore them.</p> <p>141. When I was a child, my parents usually understood me, respected my judgment, and treated me in ways that helped me grow.</p> <p>142. I have found at least one occupation that seems to fit well with my personality and interests.</p> <p>143. When I'm doing something with a group of people, they often turn to me as the group's natural leader.</p> <p>144. I am quite confident that my decision to go to college was the right thing for me.</p> <p>145. I avoid most types of social activities.</p> <p>146. I have developed some very effective study techniques.</p> <p>147. In my opinion, many teachers are more concerned about themselves than they are about their students.</p> |
|---|---|

| | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|--------------------|
| RATING SCALE | | | | | | | | |
| NOT AT ALL TRUE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | COMPLETELY TRUE |

148. Listening to a frank discussion on some emotional issue can be very interesting.
149. I like to find out more about the fraternities and sororities at my college.
150. Enter a "3" for this question.
151. I would like to receive some training to improve my reading skills.
152. I have done a lot of reading about different occupations that interest me.
153. My life at college is (or will be) quite different from what I'm used to, and the adjustments will be very hard for me to make.
154. The notes I take during class are very spotty and incomplete.
155. I get no enjoyment out of browsing in a library.
156. I would like to talk to someone about getting a scholarship
157. I often take the initiative in solving my own problems.
158. I don't agree with many of the lessons my parents tried to teach me.
159. I would like to talk with someone about the advantages and disadvantages of various occupations.
160. I dread the thought of going to school for several more years.
161. Some national problems are so hopeless that we should stop worrying about them.
162. I liked my teachers, and I feel they did a good job.
163. People show little regard for my views, and they hardly ever seek my advice.
164. I feel very good about my capacity to adapt to my new social environment at college.
165. When taking notes in class I often get confused and can't keep up.
166. I have not yet found a potential career that strongly attracts me.
167. I enjoy activities that bring me into close contact with people.
168. I would like to receive tutoring in one or more of my courses.
169. My family and I communicate very well and we understand each other's point of view.
170. I don't have any financial problems that will hinder my schoolwork.
171. I would like to talk with a counselor about some difficulties in my dating or social life.
172. I have developed a solid system of self-discipline; which helps me keep up with my schoolwork.
173. Enter a "6" for this question.
174. I often feel unsure of my opinions on important matters.
175. I would like to talk to a placement officer about the opportunities available for summer employment.
176. Our true feelings are often hidden, and it's healthy to explore them to gain a greater understanding of ourselves.
177. I like to spend some of my free time reading serious books and articles.

178. I have not talk with any knowledgeable people about the advantages and disadvantages of a particular occupation.
179. During an exam, I'm able to concentrate and keep my thoughts well organized.

CHECK TO MAKE SURE YOU HAVE ANSWERED EVERY QUESTION IN THIS SECTION (QUESTIONS 22 TO 179). ANSWER ANY THAT HAVE BEEN LEFT BLANK.

THEN GO TO PART D.

TURN OVER



PART D

INSTRUCTIONS. The present section measures your current impressions of your institution. It is recognized that most of the students completing this questionnaire have had little or no direct contact with their institution, so they do not have well formed impressions. But everyone comes to college with at least some knowledge--which is acquired from catalogs, the institution's general reputation, the reports of friends, preliminary contacts, and so forth.

So if you have just arrived on campus, don't let this fact bother you. Just give your initial impressions

Each question describes a different characteristic. You are to rate how you currently feel about your institution in relation to these characteristics. Answer by selecting a number from the following scale:

| | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|-------------------|
| VERY DISSATISFIED | 1 | 2 | 3 | 4 | 5 | 6 | 7 | VERY SATISFIED |
|----------------------|---|---|---|---|---|---|---|-------------------|

You may select any number from 1 to 7. As before, blacken the appropriate circle on the answer sheet. Blacken only one circle for each question. 180. The location of the institution

- | | |
|--|--|
| 181. The kinds of academic courses and majors available. | 192. Shopping facilities at or near the institution. |
| 182. The variety and quality of food available (both on- and off- campus). | 193. My living arrangements while attending the institution (whether at home, in a residence hall, or in an apartment). |
| 183. The cost of tuition, housing, and food. | Note that the following is not a rating question. Select option 1 if you agree with the statement; select option 2 if you do not. |
| 184. The condition and appearance of buildings and grounds. | 194. I authorize the counseling center at my institution to send the student and advisor reports from this inventory to my academic advisor, who will help me select courses and make other educational decisions: |
| 185. The general characteristics of the student body. | 1) YES |
| 186. The entertainment available at or near the institution. | 2) NO (If you select this option, all of your reports will be kept on file at your counseling center (or its equivalent); as soon as the Student Report is available, you will be able to obtain it from that office.) |
| 187. The adequacy of financial aid. | |
| 188. Enter a "2" for this question. | |
| 189. The intercollegiate athletic program. | |
| 190. The faculty in general. | |
| 191. The social life (both on- and off-campus). | |

CHECK TO MAKE SURE YOU HAVE ANSWERED EVERY QUESTION IN THIS SECTION (QUESTIONS 180-194). ANSWER ANY THAT HAVE BEEN LEFT BLANK.

THEN RETURN THE QUESTIONNAIRE AND THE ANSWER SHEET TO THE EXAMINER.

Thank You!

APPENDIX C

GLOSSARY

Academic Advisor: A faculty member with whom a student works with to plan and supervise their college experience (Stratil, 1988).

Attrition: herein defined as the gradual reduction of membership within the OSU student body .

Central Tendency: measure of averages (such as mean, median, and mode) commonly used to summarize the data in a frequency distribution (Shavelson, 1996).

- a. The mean is defined as the sum of the scores divided by the number of scores that entered that sum (Shavelson, 1996).
- b. The median is defined as the point or score value below which 50 percent of the scores fall (Shavelson, 1996).
- c. The mode is simply the score value that occurs most often in the distribution (Shavelson, 1996).

College of Agricultural Sciences and Natural Resources: herein defined as the College within OSU which offers educational programs in the fields of Agricultural Communications, Agricultural Economics, Agricultural Education, Agricultural Engineering, General Agriculture, Agronomy, Animal Science, Biochemistry, Entomology, Forestry, Horticulture/ Landscape Architecture, and Pre-Veterinary Science.

College Student Inventory: the dropout proneness instrument used in this study. This instrument measured the following demographic and academic characteristics:

Part A. DEMOGRAPHIC CHARACTERISTICS: The participant selected from 7 categories on the CSI when reporting these attributes. Most are self-explanatory.

Family Background:

- Racial Origin
- Mother's Level of Education
- Father's level of Education

High School Experiences:

- High School Graduating Class Size
- College Prep Courses (taken in High School)
- Knowledge Level of College Academics
- Perceived H/S Academic Standards
- H/S Senior Year GPA
- H/S GPA
- ACT test scores (only the actual test scores obtained from the OSU registrar's office were used)

Status During Enrollment:

Age
Gender
Marital Status
Miles from Home
Perceived Academic Abilities
Highest College Being Pursued
Perceived College Standards and/or Expectations
Residency Status
Source of Familiarity with Institution

Part B: **ACADEMIC CHARACTERISTICS:** The participant reported their responses on a Likert-type scale.

Academic Motivation:

1. Study Habits: measures the amount of time and effort that one puts into their studies (Stratil, 1988) .
2. Intellectual Interest: measures the degree to which one enjoys reading and discussing serious ideas (Stratil, 1988).
3. Academic Confidence: measures the degree to which one feels capable of doing well in college (Stratil, 1988).
4. Desire to Finish College: measures the strength of one's commitment to completing a degree (Stratil, 1988).
5. Attitude Toward Educators: measures the degree to which one sees teachers and administrators as competent, reasonable, and caring (Stratil, 1988).
6. College Cumulative GPA: herein defined as the measure of success accomplished by the study student.

Social Motivation:

1. Self-Reliance: measures the degree that one trust their own judgment and make their own decision (Stratil, 1988).
2. Sociability: measures one's desire for companionship and social entertainment (Stratil, 1988).
3. Leadership Skills: measures the degree to which one feels accepted as a leader (Stratil, 1988).

General Coping Skills:

1. Ease of Transition: measures the degree to which one feels comfortable with the various changes brought on by college life (Stratil, 1988).
2. Family (Emotional) Support: measures the satisfaction one feels with the communication that occurs in their family (Stratil, 1988).
3. Openness: measures one's receptivity to new ideas and to the sensitive, sometimes threatening; an aspect of our complex world (Stratil, 1988).
4. Sense of Financial Security: measures one's satisfaction with the amount of money available to them while attending college (Stratil, 1988).
5. Desire to Transfer: measures one's desire to transfer to another institution (Stratil, 1988).
6. Initial Impression of Institution: measures the marked influence or effect on feelings, sense or mind that the institution initially had on a student (Stratil, 1988).

Receptivity To Support Services:

1. Receptivity to Academic Counseling: measures one's interest in receiving help with their academic skills (Stratil, 1988).
2. Receptivity to Personal Counseling: measures one's interest in receiving counseling for personal matters (Stratil, 1988).

Connotative: refers to the associations or suggestions that a word calls up (Stratil, 1988).

Construct: An abstraction at a higher level than a concept used to explain, interpret, and summarize observations and to form part of the conceptual content of a theory (Ary, Jacobs, & Razavieh, 1996).

Correlation: A technique for determining the covariation between sets of scores; paired scores may vary directly (increase or decrease together) or vary inversely (as one increases, the other decreases) (Campbell, 2001).

Correlation coefficient: A statistic that shows the degree of relationship between two variables; its value ranges between -1.00 and $+1.00$ (Campbell, 2001).

Denotative: refers to the dictionary meaning of a word (Stratil, 1988).

Descriptive statistics: Techniques for organizing, summarizing, and describing observations (Shavelson, 1996).

Frequency Distribution: defined as tabular arrangement of score values (i.e., numbers on a scale of numbers) showing the frequency with which each value occurs (Campbell, 2001).

High-risk course: Defined as a course that traditionally has a high percentage of D's, F's and/or withdrawals (Stratil, 1988).

High-risk student: any student exhibiting one or more of the following academic behaviors:

1. Pushout: a student who has encountered a negative experience in school, and subsequently, is discouraged from continuing with their educational pursuits (e.g., suspended or expelled students) (Stratil, 1988).
2. Stopout: student who has temporarily interrupted their college attendance but intends to return at a later date to resume pursuit of their educational goals (Stratil, 1988).
3. Fade-out: student who misses class sporadically with the intentions of eventually dropping out (Stratil, 1988).
4. Dropout: student who has interrupted their college attendance and has no intentions of returning to school to resume pursuit of their educational goals (Stratil, 1988).
5. At-risk student: a student failing three or more subjects (Bradshaw, SFU, Burnbay, British Canada, Canada); A student who has repeated at least one grade (United States Department of Education, (1994). The Pocket Condition of Education

Histogram: A graph in which the frequency distribution of scores is represented by vertical bars (Ary, Jacobs, & Razavieh, 1996).

Institutional Review Board (IRB): A committee that determines whether proposed research meets federal and other legal and ethical standards (Ary, Jacobs, & Razavieh, 1996).

Instrument: A device for operationally defining a variable (Stratil, 1988).

Inventory: A collection of statements to which subjects respond by indicating whether the statement describes them or not; used in assessing personality (Ary, Jacobs, & Razavieh, 1996).

Likert-type scale: A measurement scale consisting of a series of statements followed by an odd number of response categories (usually five to seven), typically ranging from strongly agree to strongly disagree (Ary, Jacobs, & Razavieh, 1996).

Measurement: the assignment of numbers to attributes of persons, objects, or events, according to logically acceptable rules (Campbell, 2001).

Non-Successful study student: herein defined as study students leaving OSU before completing a degree.

Plan-of-study: an outline sequencing the courses a student will take to complete his or her degree program (OSU Graduate Student Handbook, 2003. p. 9).

Range is herein defined as the difference between the highest and lowest score in the distribution (Campbell, 2001).

Reliability: The extent to which a measure yields consistent results (Ary, Jacobs, & Razavieh, 1996).

Retention: herein defined as the percent of study students who chose to enroll in CASNR for the Fall, 1995 semester and returned for the following spring semester.

Scale: A continuum, usually having quantitative units, that measures the extent to which individuals exhibit certain traits or characteristics (Ary, Jacobs, & Razavieh, 1996).

- a. Nominal scale: a number that represents different names/categories of people/objects (Campbell, 2001).
- b. Ordinal scale: a number that represents order/rank of people/objects on some continuum (Campbell, 2001).
- c. Interval scale: a number that reflects the amount of difference between people/objects in equal units (zero is arbitrary) (Campbell, 2001).
- d. A ratio scale is the same as an interval scale, but also has a meaningful zero (i.e., zero reflects total absence of the attribute of people/object being measured) (Campbell, 2001).

School-leaver: herein refers to an individual who leaves any formal educational system before completion.

Semantic Differential Scale: A method of assessing subjects' attitudes by having them mark points on a continuum between bipolar adjectives (Campbell, 2001).

Example:

| | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|-------------------|
| VERY DISSATISFIED | 1 | 2 | 3 | 4 | 5 | 6 | 7 | VERY SATISFIED |
|----------------------|---|---|---|---|---|---|---|-------------------|

Statistical Tests: 3 Examples —

1. F-value: A mathematical distribution providing a model of what happens when repeated random samples of two or more means are drawn from the same population and compared with one another (Shavelson, 1981).
2. t-value: Statistical results when testing hypotheses concerning the difference between two means (Ary, Jacobs, & Razavieh, 1996).
3. Standard Error (of estimate): provides a measure of the dispersion of points about the regression line (Ary, Jacobs, & Razavieh, 1996).

Standard Deviation: A measure of the extent to which individual scores deviates from the mean of the distribution; a measure of dispersion used with interval data (Campbell, 2001).

Statistic: a characteristic of a sample (Campbell, 2001).

Study student: herein defined as a Fall 1995 freshmen who chose to enroll as a CASNR student.

Success: herein defined as a study student's College Cumulative GPA upon graduation from OSU.

Successful completers: herein defined as a study student's accomplishing a college degree from OSU.

Validity: The extent to which a measure actually taps the underlying concept that it purports to measure (Ary, Jacobs, & Razavieh, 1996).

Variable: A representation of a concept or construct; it can take a range of values (Shavelson, 1996).

- a. Independent Variable: a variable that is manipulated, measured, or selected by the research in order to observe its relation to the subjects' "response" on some other observed variable (Campbell, 2001).
- b. Dependent Variable: a variable that is observed and measured in response to the independent variable (IV) (Campbell, 2001).

Variance is herein defined as the square of the standard deviation (Campbell, 2001).

Appendix D

THE RMS RESEARCH AND TECHNICAL GUIDE

By: Michael L. Stratil, Ph.D., author of the College Student Inventory™

Managing retention in the years ahead will require us to extend our programs, services and people to the student we are here to serve. When we help freshmen think through their futures and explore their talents and learn, the sense of motivation and involvement that is fostered carries them through to the sophomore year and beyond.

- Noel and Levitz

To understand retention fully is to understand that we cannot do anything on a campus that in some way does not affect the institution's ability to retain students. This means we have to think about how we bring students to our campus and the "mind-sets" and expectations we create as we recruit. Then we must apply what we've learned with the students who come to us. Institutions with the best retention rates change student behaviors in ways that promote student success and retention.

Contrary to popular belief, students don't bring a cogent map of their future to campus — they need help building a plan one step at a time. We find there is a tremendous difference between being academically prepared or having the "right" academic credentials and being ready to persist and succeed academically. What works is to provide adequate support early on-and enough to make a difference. By "front loading" the first term with the appropriate resources, we can then unlock the academic potential and the capacity for success that each student brings to campus.

In far too many cases, students drop out before the institution is even aware of their needs. Many campuses continue to rely on poor academic performance, spotty attendance, and other visible indicators to trigger early interventions. Unfortunately, these approaches are often too late. With the Retention Management System (RMS), institutions can now identify dropout-prone students as they walk on campus and put in

their path a prevention plan before the student experiences the feelings of being lost, confused, overwhelmed, underprepared and uncertain.

The Retention Management System

This assessment tool provides an effective means of promoting the academic and social integration of the student into the campus, and allowing each student to attain the intellectual and personal growth that lies within his or her capacity. The primary purpose of the RMS is to foster effective communication between students and their advisors, a purpose that is accomplished by identifying students' needs, attitudes, motivational patterns, resources, coping mechanisms and receptivity to intervention. More specifically, this proactive approach to student retention is designed to enable institutions to:

- 1 . Assess students' individual academic and personal needs.
2. Recognize students' specific strengths and coping mechanisms so that successful intervention techniques in areas of need can be implemented.
- 3 . Identify students who are at risk for academic and/or personal difficulties and who may even drop out.
4. Understand students' attitudes and motivational patterns so that intervention is more successful.
5. Enable advisors to have effective and rewarding personal contact with students early in the first term.

The four basic components of the RMS that enable institutions to address student characteristics that lead to attrition are:

1. The College Student Inventory
2. The Advisor/Counselor Report
3. The Student Report
4. The Summary and Planning Report

The College Student Inventory (CSI)

The History

The College Student Inventory is the foundation of the RMS and was designed especially for incoming first-year students. In 1981, Michael L. Stratil, Ph.D., the author of the CSI, began research in the area of academic and social motivation with the goals of:

- creating a coherent framework for understanding human motivation in general;
- identifying the specific motivational variables that are most closely related to persistence and academic success in college;
- developing a reliable and valid instrument for measuring these variables (Stratil, 1988).

As a result of his research, the original version of the CSI (titled the "Stratil Counseling Inventory") was published in 1984. The current versions of the College Student Inventory — Form A and Form B — were published in 1988 and 2000 respectively.

Implementing The CSI

Students complete the CSI as part of early orientation programs or during the first weeks of classes. Most students can complete Form A, a 194-item inventory that assesses a variety of motives and background information related to college success, in about an hour. Form B, a 100-item inventory, can be completed in approximately 30 minutes. Both are available in the traditional paper-and-pencil format; Form B is also available online. Canadian and Spanish variations are offered as well.

A number of scales are constructed from the inventory items to provide a detailed view of each student's motivation, coping ability, and receptivity to assistance.

The main categories include:

| CSI-Form A | CSI-Form B |
|---------------------------------|---------------------------------|
| Academic Motivation | Academic Motivation |
| Social Motivation | General Coping Ability |
| General Coping Ability | Receptivity to Support Services |
| Receptivity to Support Services | Internal Validity |
| Initial Impressions | |
| Internal Validity | |

The Scales

The heart of the CSI rests with the independent motivational scales constructed for each of the categories above. The specific scales for Form A and Form B are as follows:

ACADEMIC MOTIVATION

Form A

Study Habits
Intellectual Interests
Academic Confidence
Desire to Finish College
Attitude Toward Educators
Attitude Toward Educators

Form B

Study Habits
Intellectual Interests
Verbal Confidence
Math Confidence
Desire to Finish College

GENERAL COPING ABILITY

Form A

Family Emotional Support
Sense of Financial Security
Openness
Ease of Transition
Career Planning

Form B

Family Emotional Support
Sense of Financial Security
Opinion Tolerance
Career Closure
Sociability

RECEPTIVITY TO SUPPORT SERVICES

Form A

Academic Assistance
Personal Counseling
Social Enhancement
Career Counseling

Form B

Academic Assistance
Personal Counseling
Social Enhancement
Career Counseling
Financial Guidance

SOCIAL MOTIVATION

Form A

Self Reliance
Sociability
Leadership

Form B

[Sociability appears under General Coping Ability]

The Initial Impressions Scale, included in Form A, focuses on a student's first impressions of the institution and is intended to identify predispositions toward the institution since these perceptions are highly correlated with dropout-proneness.

Internal Validity assesses a student's carefulness in completing the inventory.

This scale enables the institution to determine the care and attention the student gave to the test-taking.

The Advisor/Counselor Report

This report provides information about the student's attitudes and motivations in percentile ranks. At a glance advisors can see the student's greatest areas of strength and need. The most distinctive feature of this report (which does not appear on the student's report) is the Summary of Academic Motivation. The summary provides an assessment of a student's:

- Dropout Proneness
- Predicted Academic Difficulty
- Educational Stress
- Receptivity to Institutional Help

In addition to the Summary of Academic Motivation, a minimum of seven specific recommendations for each student are listed in this report, ranging from suggestions to "get help with writing skills" to "discuss emotional tensions with a counselor" (p. 4). The strength of each recommendation is indicated by its priority score.

The motivational scales are reported in two ways: as a percentile rank and as a point on a visual profile. Background information about the student's high school academics, non-credit activities, family background, and admissions test scores are also included in the profile.

The Student Report

The RMS Student Report is intended to give students insight into their own strengths and weaknesses. It contains written information which explains a student's score on each scale and is designed to give students encouragement and guidance. This report parallels the RMS Advisor/Counselor Report but omits the Summary of Academic Motivation.

The Summary And Planning Report

This report provides significant planning data and specific contact lists that name the students with the highest scores in specific areas that student services offices use to schedule individual sessions and groups work or to trigger an invitation to stop by for an appointment. Some key areas included in this report are:

- Dropout proneness
- Receptivity to institutional help
- Need for academic assistance
- Need for personal counseling
- Social enhancement needs
- Negative internal validity

Institutional Data

Print copies of the Advisor/Counselor Report, the Student Report, and the Summary and Planning Report are provided to institutional users. Data disks are available for institutions that wish to perform further analyses of their data.

Norms

The current norms for CSI-Form A were developed in 1998, with samples drawn from institutional data collected from 1995-1998 with stratification based on gender, ethnicity, region, and size of institution. Norms for CSI-B were developed from a diverse sample representing institutional data collected in the summer and fall of 2000. (Separate norms for four-year public and four-year private institutions will be developed for Form B prior to the fall of 2002.) A summary of these normative parameters is shown in Table 1.

TABLE 1. SUMMARY OF NORMATIVE PARAMETERS FOR CSI-A AND CSI-B.

| CSI-Form A | | CSI-Form B | |
|-----------------------------|--------|------------------------|--------|
| Sample Size | 14,999 | Sample Size | 12,614 |
| 2-year institutions | 4,999 | 2-year institutions | 5,826 |
| 4-year public institutions | 5,000 | 4-year institutions | 6,788 |
| 4-year private institutions | 5,000 | | |
| Number of Institutions | 181 | Number of Institutions | 62 |
| 2-year institutions | 49 | 2-year institutions | 37 |
| 4-year public institutions | 44 | 4-year institutions | 25 |

Based on these data, all scale scores are reported as either percentiles or stanines, which provide a very solid frame of reference for interpreting the scores of individual students.

Reliability

General statistical principles indicate that, when other factors are held constant, scale reliability tends to increase as scale length increases up to a point of diminishing returns. Throughout the CSI's development, a central goal has been to maximize the homogeneity (internal consistency reliability) of each scale while keeping the inventory's total length relatively short. To achieve that goal, the research design incorporated the following features:

- A large initial pool of preliminary items for each scale
- Item testing with large samples;
- An item-selection procedure that reduced content redundancy and maximized inter-item correlations;
- Pilot testing of preliminary scales that resulted in further refinements to the final inventory.

As a result of these procedures, CSI-A's 21 major independent scales have an average homogeneity coefficient (coefficient alpha and Spearman-Brown split-half reliability) of .80 despite an average length of only 7.8 items. CSI-B's 18 major independent scales (with an average length of 5.2) also have an average homogeneity

coefficient of .80. These data are shown in Table 2. As a point of comparison, the 20 major scales in Jackson's (1984) well-respected Personality Research Form (PRF Form E, which has 16 items per scale), obtained an average homogeneity coefficient of .72 (N=84). The Myers-Briggs Type Indicator, often used by college counseling centers, has an average coefficient alpha reliability of .81 and the California Psychological Inventory (CPI) has an average coefficient alpha reliability of .72.

With this solid homogeneity as a base, the CSI-A's stability (test-retest reliability) is also quite good. Data from the latest research indicate that the average stability coefficient for the CSI's 19 major scales is .80. In a comparable study of the PRF's 20 major scales (Form A, 20 items per scale, N= 135), the main stability coefficient was also .80 (Bentler, 1964). The stability coefficient of the Myers-Briggs is .70 and the CPI's test-retest reliability coefficient is .70.

In addition to demonstrating the CSI's reliability, this research brings to light the efficiency with which the CSI measures motivation. Overall, the CSI's reliability appears to be quite similar to that of several leading personality inventories despite its reliance on far fewer items per scale, which contributes to its practicality in many situations (Stratil, 1988).

TABLE 2: CSI FORM A AND FORM B

Homogeneity Coefficients
Diverse 4-Year Institutions

| Scale | Form A Homogeneity Coefficient* (N = 4088) | Form B Homogeneity Coefficient* (N = 6305) |
|-------|--|--|
| | | |

| ACADEMIC MOTIVATION | | |
|--|-------|-------|
| Study Habits | .90 | .82 |
| Intellectual Interests | .89 | .86 |
| Academic Confidence | .82 | N/A |
| Math/Science Confidence | N/A | .83 |
| Verbal Confidence | N/A | .81 |
| Desire to Finish College | .84 | .84 |
| Attitudes toward Educators | .84 | .80 |
| SOCIAL MOTIVATION | | |
| Self-reliance | .75 | N/A |
| Sociability | .81 | .77 |
| Leadership | .84 | N/A |
| GENERAL COPING | | |
| Ease of Transition | .86 | N/A |
| Family Emotional Support | .87 | .84 |
| Openness | .76 | N/A |
| Opinion Tolerance | N/A | .79 |
| Career Planning | .85 | N/A |
| Career Closure | N/A | .88 |
| Sense of Financial Security | .83 | .83 |
| RECEPTIVITY TO SUPPORT SERVICES | | |
| Academic Assistance | .79 | .81 |
| Personal Counseling | .74 | .82 |
| Social Enhancement | .61 | .67 |
| Career Counseling | .80 | .83 |
| Financial Guidance (used in both formulas A & B but reported in form B only) | .63 | .62 |
| MISCELLANEOUS | | |
| Initial Impression | .83 | N/A |
| Sense of College Preparedness (used in formulas but not reported) | .76** | .78** |
| Transfer Prone | .75** | .85" |
| Mean Homogeneity Coefficient | .80 | .80 |

Validity

Assessing the CSI's validity is an on-going process. The present report will address the four major areas of validity: content, concurrent, predictive, and construct validity.

Content Validity

Content validity is the degree to which the content of the measurement procedure is directly and obviously relevant to the conceptual definition of the variable that one intends to measure. A measure of arithmetic, for example, possesses content validity to the degree that it requires the testee to perform arithmetic operations accurately.

Inventory Construction Validity

A number of methods have been used to build a high degree of validity into the CSI. Rather than rely on post hoc factor analysis to define scales, for example, the items for each scale were written with the express intent of measuring a particular background or motivational variable as accurately as possible. Great care was taken to ensure that the nuances in each item were appropriate to that intent. In addition, a defensiveness scale (Stratil, 1984) was used to eliminate items eliciting a tendency to generate falsely positive responses. Through a five-year course of empirical testing, modification and

further testing, a concerted effort has been made to maximize the discrimination between the scales. As a result of these efforts, all of the CSI's scales have a very high level of content validity (Stratil, 1988).

Factor Structure Validity

The CSI's content validity is evidenced in the relationship between its practical purpose and its factor structure. The general purpose of the CSI (both Forms A and B) is to measure the background and motivational underpinnings of college success. Its primary scales form into factors that accord very closely with that goal. A principal components factor analysis using a varimax rotation extracted six factors with CSI-A. Table 3 reports the results of this analysis, focusing on scales loading at .40 or higher.

TABLE 3. FACTOR STRUCTURE OF CSI-A'S PRIMARY SCALES

| Factor | Major Factor Loadings (absolute Value > .40) | Conceptual Relationship with CSI's Primary Purpose |
|-------------------------|---|---|
| Social Adjustment (SOC) | 4-Year Sociability (.77), Leadership (.70), Self-Reliance (.70), Ease of Transition (.68) and Openness (.51) 2-Year.- Sociability (.80), Leadership (.75), Ease of Transition (.66), Self-Reliance (.64), and Openness (.50) | Social adjustment is widely believed to be an indication of the student's capacity to obtain well socialized gratifications from campus life and, hence, to find the emotional reserves required for study and persistence; but strong social interest can compete excessively with studying and, hence, impede academic achievement. |
| Receptivity (REC) | 4-Year Career Counseling (.77), Social Enrichment (.74), Academic Assistance (.63), Personal Counseling (.46*) | Receptivity to institutional assistance is believed to be an indication of the needy student's capacity to accept the reality of his or her needs and a foundation of self-esteem that allows him or her to accept outside influence; but low need can be a favorable |

| | | |
|----------------------------|--|--|
| | 2-Year Social Enrichment (.76), Career Counseling (.73), Financial Guidance (.70) Academic Assistance (.65), Personal Counseling (.59) | indication in students with strong academic records |
| Academic Competence (COMP) | 4-Year, Sense of College Preparation (item 5 [academic knowledge] and item 9 [academic ability]) (.82), self-reported senior year high school grades (.72), (as Academic Confidence (.53), and Academic Assistance (-.53). 2-Year, Sense of College Preparation (item 5 [academic knowledge and item 9 (academic ability)] (.77), self-reported senior year high school grades (.71), Academic Confidence (.55), and Academic Assistance (-.53) | Academic competence is related to the students intellectual capacity to cope with the breadth and complexity of information involved in a college education. Note: This factor is a combination of actual competence and demonstrated by high school performance) and the student's sense of competence. |
| Academic Motivation (MOT) | 4-Year, Study Habits (.69), Intellectual Interests (.68), Attitude toward Educators (.65), Career Planning (.57), and Desire to Finish (.48*). 2-Year Intellectual Interests (.79), Study Habits (.66), Attitude toward Educators (.59), Openness (.59), and Desire to Finish (.58), and Academic Confidence (.51) | Academic motivation is related to the student's capacity to develop and maintain long-term goals that provide broad self-direction to the students work, to obtain immediate gratifications from the learning process, and to maintain daily self-discipline in the pursuit of immediate academic success. |
| Family support (FAM) | 4-Year, Financial Security (.77), Financial Guidance (-.66), and Family Emotional Support (.59). 2-Year, Financial Security (.76) and Family Emotional Support (.68). | Family background is widely believed to contribute to the student's core self-esteem and sense of security, and, hence, the capacity to recover from defeats and overcome obstacles. Note: This factor is most heavily weighted on financial concerns, suggesting that scores presumably indicate the student's belief that he or she can count on financial support from his or her family. Financial problems hinder a |

student by arousing distracting anxieties and feelings of inferiority.

| | | |
|---------------------------------------|---|--|
| Attitude Toward the Institution (ATT) | 4-Year. Transfer Proneness (-.88) and Initial Impressions (.77). 2-Year. Transfer Proneness (-.86), and Initial Impressions (.77). | Attitudes toward the student's institution are believed to relate to the student's general feelings of attraction or aversion that affect persistence and sense of well-being. It is essential to recognize that this factor derives from two underlying motivational forces: (a) the degree of actual fit between the student and the institution and (b) the student's general attitude toward the world (friendly, trusting, and optimistic vs. hostile, distrusting, and pessimistic). It is believed that many (but not all) of the students with very low scores on this factor are generally unhappy with multiple issues. Such unhappiness tends to sour them any environment in which they find themselves, which undermines their achievement. |
|---------------------------------------|---|--|

*Marginal loadings (absolute value greater than or equal to .4 and less than .5).

A similar factor analysis of CSI-B also yielded six factors. These factors were generally similar to those obtained with CSI-A, but some differences were also found due to differences in the scales comprising each. Table 4 reports the results of this analysis.

TABLE 4: FACTOR STRUCTURE OF CSI-B'S PRIMARY SCALES 4-YEAR COLLEGES

| Factor | Major Factor Loadings (absolute value >.40) | Conceptual Relationship with CSI's Primary Purpose |
|-------------------------|---|--|
| Social Adjustment (SOC) | Sociability (.85) and Opinion Tolerance(.42*) | Social adjustment is widely believed to be an indication of the student's capacity to obtain well-socialized gratifications from campus life and, hence, to find the emotional reserves required for study and persistence; but excessive social interest can compete with studying and impede |

| | | |
|----------------------------|--|---|
| | | achievement. |
| Receptivity (REC) | Career Counseling (.77), Social Enrichment (.73), Academic Assistance (.68), Personal Counseling (.42*). | Receptivity to institutional assistance is believed to be an indication of the needy student's capacity to accept the reality of his or her needs and a foundation of self-esteem that allows him or her to accept outside influence; but low need can be a favorable indication in students with strong academic records. |
| Academic Competence (COMP) | Sense of College Preparation (item 3 [academic knowledge] and item 8 [academic ability]) (.78), self-reported senior year high school grades (.70), of Math-Science Confidence (.69), and Academic Assistance (-.45*). | Academic competence intellectual capacity to cope with the breadth and complexity of information involved in a college education. Note: This factor is a combination actual competence (as demonstrated by high school performance) and the student's sense of competence. |
| Reading Motivation (READ) | Intellectual Interests (.81), Verbal Confidence (.74), and Study Habits (.42*). | Reading motivation is focused on a primary mode by which students acquire formal information in college: reading. This factor focuses on the student's capacity to obtain immediate gratifications from this process. Having an interest in intellectual material and feeling confident of one's ability to understand and retain it enhances one's motivation to study. Many of the items on the Study Habits scale also focus on the reading process. |
| Family support (FAM) | Financial Security (.67), Family Emotional Support (.65), Attitude toward Educators (.54), Personal Counseling (-.48*), Financial Guidance (.43*). | Family background is widely believed to contribute to the student's core self-esteem and sense of |

security, and, hence, the capacity to recover from defeats and overcome obstacles. Notes: (a) This factor is most heavily weighted on financial concerns, suggesting that scores primarily indicate the student's belief that he or she can count on financial support from his or her family. Financial problems hinder a student by arousing distracting anxieties and feelings of inferiority. (b) Attitude toward Educators appears to relate to this general dimension due to students' perception of educators 'parent-like' today.

| | role | |
|--------------------------------|--|--|
| <i>Career Commitment (CAR)</i> | Career Closure (.76), Transfer Proneness (-.59), and Desire to Finish (.55). | Career Commitment is believed to relate to the student's capacity to sustain his or her academic motivation based on the expectation of significant long-term financial and self-esteem rewards. |

*Marginal loadings (absolute value greater than or equal to .4 and less than .5).

It can be seen from Tables 3 and 4 that the obtained factors relate very closely to the CSI's general purpose. These analyses clarify the structural relationships between Forms A and B. Both forms load on factors involving (a) social adjustment, (b) receptivity to institutional assistance, (c) academic competence, and (d) family support as they pertain to college success. These four factors represent the primary continuities between the two forms. It should be noted, however, that the social adjustment factor in Form B is somewhat narrower than in Form A due to the elimination of several of its

scales.

The two forms differ primarily in how they structure academic motivation and attitudes toward the institutions. Consider first the area of academic motivation. The partition of the Academic Confidence scale into two separate scales (Math-Science Confidence and Verbal Confidence) has had an appreciable impact on factor structure. Even though the wording of both scales emphasizes the academic confidence, Math-Science Confidence is weighted primarily on the competence factor and Verbal Confidence is weighted primarily on the new factor of reading motivation. This finding suggests that many students feel much more comfortable with verbal activities than mathematics and science because verbal activities are more closely related to everyday life. By contrast, they appear to experience mathematical and scientific activities as more specialized, erudite, and challenging. As a result, their attitudes toward this area load more heavily on the general confidence factor. Although it is true that some students may experience the two scales quite differently, the majority appear to organize their attitudes along the lines described in the factor weightings.

The second factor change from Form A to B occurs in the social relations area. In order to obtain a shorter instrument capable of being used where time constraints prevent use of CSI-A, CSI-B omits the Initial Impressions scale and several social relations scales (Self-Reliance, Leadership, and Ease of Transition). As a result of the first omission, the attitudes toward the institution disappears as a separate factor because the Transfer Proneness scale cannot by itself sustain the factor.

A new factor, career commitment, emerges from the above changes introduced in CSI-B. The emergence of this new factor does not imply that a new conceptual

dimension has been introduced, only that it is given more weight in CSI-B. Given that Career Closure is a replacement for Career Planning, the scales in this factor are essentially unchanged; it is only the way they emerge in factor analysis that has changed due to the new alignments of other scales.

Overall, both forms show very clear conceptual relationships with the CSI's general goal of measuring background and motivational factors related to college success. They possess significant overlap in their content, and the changes merely reflect different emphases. Therefore, these analyses demonstrate the strong content validity of both CSI-A and CSI-B

Concurrent Validity

An instrument's concurrent validity is the degree to which its measurements correspond to the measurements provided by other instruments of known validity. The term concurrent implies that the two sets of instruments are administered during the same period of time so that extraneous causal variables do not contaminate their relationship.

Correspondence with Admission Decisions

The first study of concurrent validity to be examined involves an assessment made by the student's institution. One can conceptualize an institution's admissions

procedures as constituting a systematic method of assessing student preparedness for college. This procedure consists of examining a set of students' aptitude test scores, high school records of performance and extracurricular activity, and recommendations by teachers and others. A decision is then made as to the students' fitness to meet the institution's academic standards. These decisions can thus serve as a concurrent standard against which a psychometric instrument can assess its validity.

Based on these premises, Morrison's (1999) research on the CSI-A can be considered a study of concurrent validity. She compared the CSI-A's scale scores for a group of conditionally admitted students ($n = 46$) at a private comprehensive liberal arts college with the scores for the general freshman class ($n = 874$). (Note: The total student freshman population was $N = 1000$; some freshmen did not take the CSI-A). The assumption is that the conditionally admitted students were academically less prepared than the rest of the freshman population. If the CSI-A is valid, then scores of the conditionally admitted students should be less favorable than those of the overall freshman class. The results of her analysis are reported in Table 5 (adapted with permission from Morrison, 1999). Out of the 17 scales examined, 13 of the comparisons were statistically significant at $\alpha = .05$. Eleven of these comparisons were consistent with Morrison's hypotheses. All 5 of the comparisons in the area of academic motivation (Study Habits, Intellectual Interests, Academic Confidence, Desire to Finish, and Attitudes toward Educators) were significant and concordant with predictions. Of the 4 scales not showing a significant difference, 3 were in the area of social adjustment (Self-Reliance, Sociability, and Ease of Transition) and 1 involved receptivity to career counseling. The emphasis on academic motivation in these findings is consistent with

the fact that the admissions process probably weighted high school academic performance and test scores more heavily than social and career-decision variables. ,

Morrison (1999) had predicted that the conditional admits would be lower on receptivity to academic assistance and receptivity to personal counseling. But the scores on these scales are, in fact, often associated with greater student need for assistance. For example, Stratil's exploratory study reported later in this manual (N = 4088) found a correlation of -.17 between cumulative freshman GPA and Academic Assistance, and it found a correlation of -.07 between cumulative freshman GPA and Personal Counseling. In general, the performance implications of receptivity scales are complex and multidimensional. Theoretical considerations suggests that receptivity scores are indications of at least three underlying motivational components: (a) the degree of objective need in the area, (b) the degree of openness to acknowledging whatever need exists, and(c) the degree of willingness to cope actively and constructively with whatever need exists. The higher scores of the conditional admits may reflect the (a) component--their higher than average level of need. By contrast, the stronger members of the general freshman class may have scored lower on these scales because they did not perceive themselves as having needs in the areas involved. It should also be noted that wording of the receptivity items usually focuses on the student's "interest" in receiving a given kind of service. Students are not likely to be interested in types of assistance they feel they do not need.

TABLE 5: COMPARISON OF CONDITIONAL ADMITS AND ALL FRESHMEN AT PRIVATE 4-YEAR LIBERAL ARTS COLLEGE¹

| CSI-a Scale Admits (n = 46) | All Conditional All Freshmen | Local Mean of conditional students | Z* | Percentage of Taking CSI |
|--------------------------------|---------------------------------|---------------------------------------|----|-----------------------------|
|--------------------------------|---------------------------------|---------------------------------------|----|-----------------------------|

below local mean of (N = 874)

freshmen population

| ACADEMIC MOTIVATION | | | | |
|---------------------------|------|------|-------|-----|
| Study Habits | 36.0 | 56.2 | -3.9' | 72% |
| Intellectual Interests | 35.1 | 54.9 | -3.9* | 74% |
| Academic Confidence | 39.6 | 62.9 | -4.5* | 75% |
| Desire to Finish College | 35.6 | 51.0 | -3.6' | 74% |
| Attitude toward Educators | 43.2 | 54.5 | -2.3' | 66% |
| SOCIAL MOTIVATION | | | | |
| Self-Reliance | 44.6 | 47.0 | -0.5 | 52% |
| Sociability | 57.4 | 52.0 | 1.0 | 37% |
| Leadership | 46.9 | 57.6 | -2.2* | 56% |
| GENERAL COPING | | | | |
| Ease of Transition | 47.6 | 46.4 | 0.3 | 47% |
| Family Emotional Support | 43.4 | 57.7 | -3.0* | 61% |
| Openness | 41.5 | 50.0 | -1.7* | 72% |
| Career Planning | 30.0 | 39.8 | -2.1* | 63% |
| Financial Security | 50.9 | 57.9 | -1.8* | 54% |
| RECEPTIVITY | | | | |
| Academic Assistance | 50.3 | 32.9 | 3.6** | 26% |
| Personal Counseling | 48.7 | 37.6 | 2.5** | 37% |
| Social Enrichment | 32.4 | 42.4 | -2.4* | 72% |
| Career Counseling | 46.5 | 43.3 | 0.9 | 44% |

¹ Table adapted from Morrison, B. (1999). Acknowledging student attributes associated with academic motivation. *Journal of developmental Education*, 23, 10-31. * alpha (1-tailed) = .05. These differences were statistically significant with a 2-tailed alpha = .05 (see discussion in text).

Correspondence with Testing Data

Stratil (1988) conducted a study of the relationship between high school grades and admissions test scores reported by students on the CSI and their actual grades and test scores. The CSI's self-report measure of senior year high school grades correlated .72 with the grades appearing on high school transcripts. The self-report measure of

ACT scores correlated .91 with actual ACT composite scores, and the self-report measure of SAT scores correlated .75 with the actual SAT total score. These findings suggest that the students taking the CSI are fairly accurate in remembering and reporting their high school grades and academic aptitude scores.

Predictive Validity

Predictive validity involves the degree to which a measurement taken of a given process at a given point in time predicts a measurement of some derivative process at a later point in time. Usually the two measurements are taken in situations where one or more forces of change are believed to operate. One expects a given entity (e.g., a motivational trait) to interact with a given set of other entities (e.g., a new social environment, a new set of intellectual demands). The researcher is hypothesizing that the initial, entity is sufficiently distinct and robust as to be capable of interacting with the new environment in a coherent, stable manner—that is, capable of generating a set of distinct effects readily traceable back to the initial entity.

In a simple situation involving a very stable entity, this prediction is easy to confirm. For example, one might wish to validate a device for measuring the mass of a cue ball. One might measure the cue ball's mass, roll the ball down an incline, and then measure its mass again. The first measurement is likely to be an extremely accurate prediction of a second measurement taken after the ball has completed its roll because the variable being measured is relatively simple (at least on earth) and the intervening forces are minimal. But suppose the situation involves a much more powerful set of intervening factors, such as exposure to temperatures varying from 100 to 400 degrees Fahrenheit and a wind tunnel blowing varying mixtures of hydrocarbon vapor at

200miles per hour. Predicting the final mass of the cue ball from its initial measurement would be much more difficult. Predictive validity in the latter type of situation is a very challenging criterion to meet.

These principles of measurement can be applied to the type of situation of interest here. The CSI is a psychometric instrument designed primarily to measure the motivational traits and social background factors related to student academic outcomes. It was designed primarily to assist advisors and counselors in rapidly gaining an understanding of a student's attitudes toward the self, the educational process, and her or his institution. If each of the traits it measures is considered a distinct entity and if these entities interact with one another within the primary system (i.e., the student), then it is clear that the situation is a very complex one. The initial entities certainly do not possess sharp, stable boundaries. They can be expected to change, in some cases substantially, over the course of the study. In addition, they can be expected to interact with one another during this period. Furthermore, they can be expected to interact with a large array of environmental variables during the study. Moreover, their interactions with one another will influence how they interact with the environment.

Added to the above complexity is another measurement problem that arises in studying persistence. Freshman GPA, which is often studied in educational research, is a fairly unambiguous outcome variable. Grades are a good indicator of the amount learned. But persistence at a given institution is quite a different matter. It can be compared to studying the simple persistence of patients in a hospital without regard to their reason for leaving. That is, suppose a medical researcher conducts a study of the predictive validity of a set of patient factors in predicting continued patient residence in

the hospital after a two-week delay. The researcher gathers data on patient blood pressure, skin condition, blood chemistry, breathing, heart rate, and so forth at time 1. Then the researcher returns 2 weeks later and ascertains whether the patient is still residing in the hospital, which is the dependent variable. This research design has a very serious flaw: Some patients will leave the hospital because they have recovered from whatever illness they had, but others will leave because they died! If the researcher does not take this fundamental differentiation of outcome into account, the results of the study will be very difficult to interpret.

Yet in conducting research on student outcomes, we are often reduced to designs comparable to the one described above. It is very appealing to think that students leave an institution because there is a problem. If we adopt this premise, indications of pre-existing problems ought to predict the problems existing after a given period (e.g., one year of study). But the truth is that students leave college for a wide variety of reasons. Although some of these reasons are related to problems (poor grades, discouragement, failures in social adjustment), students also leave because of success: They may have demonstrated their ability to do college work to themselves, to their parents, and to the admission officers at other institutions. They may have made significant progress in attaining career closure and have decided to transfer to another institution that offers a major not offered by their initial institution. They may have developed a solid emotional relationship with a student at another institution, leading them to transfer. A family member may have fallen ill, and the student may have decided to stop out so as to help that person. Thus, one cannot assume that leaving a given institution should be clearly and directly related to the types of motivational and background factors measured by the

CSI. In a typical population of freshman, those leaving for favorable reasons will counterbalance to an unknown extent those leaving for unfavorable reasons.

The problems of studying persistence have been aptly summarized by Turnbull (1986):

Everyone who works with students knows how varied their circumstances are, how different their goals, and how individualized their reasons for staying in postsecondary education or dropping out. This diversity makes it extraordinarily difficult to grapple with the problem of attrition, either theoretically or practically. Further, attrition itself means many different things. It is a term used to cover students who have gotten what they came to college for and left, or students who discovered a different institution better prepared to offer what they wanted and transferred, or students who flunked out. Including all these components under one term creates a recipe for confusion. (p. 6)

Even though this principle is very clear when stated in the above terms, often the constraints of working in a field setting force us to deal with data that are more ambiguous than we would like. Unfortunately, the persistence data available for this report fit that category: they do not provide a basis for partitioning leaving behavior into its various subtypes. As a result, they contain a significant confounding of favorable and unfavorable types of departure. In trying to interpret these data, we might be inclined to assume that the ratio of unfavorable causes of student departure probably outweigh the favorable ones. That assumption is likely to be accurate to some degree, so that the findings reported here probably underestimate the true relationships between the CSI and unfavorable types of leaving. But that is merely a speculation at this point. Additional research is underway that attempts to distinguish the various types of leaving and, thereby, to gain a clearer understanding of these phenomena.

Even though this principle is very clear when stated in the above terms, often we

are forced to proceed with the flawed research design because we do not have the resources necessary to ascertain the true status of each student after departure. We assume that the ratio of unfavorable causes of student departure outweigh the favorable ones. Although that assumption is probably accurate to some degree, we must not ignore the very significant confounding that inevitably occurs with such a methodology. Due to limited resources, the research on persistence reported here does not partition leaving behavior into its various subtypes, so that this confounding is a significant attenuating factor.

We must also keep in mind the complexity of the processes involved in persistence. As describe above, motivational traits interact with one another in ways that preclude simple linear relationships between predictor and outcome variables. As a way of dealing with the issue of trait interactions, a study will be reported later that identifies motivational styles based on cluster analysis. It examines the relationship between these configural styles and various concurrent and outcome variables.

The 1991 National Validity Study

Some evidence of the CSI-A's predictive validity is found in an analysis of covariance conducted by Laurie Schreiner comparing the CSI-A scale scores of persisters and leavers. This study was conducted with the 1991 data set using high school GPA as the covariate. The results indicated that there is indeed a significant difference in nine of the scale scores between these two groups ($p < .001$; see Table 6). Students who did not persist into their second year had significantly higher Dropout

Proneness scale scores, lower Desire to Finish College, lower levels of Family Emotional Support and Financial Security, a poor Initial Impression, a lower Receptivity to Social Enrichment, a lower Receptivity to Career Counseling and a stronger Desire to Transfer than those who did persist.

TABLE 6. SUMMARY OF ANALYSES OF COVARIANCE COMPARISONS OF PERSISTERS' AND DROPOUTS' CSI SCALE SCORES

| Source | SS | df | MS | F |
|---|-----------|------|----------|----------|
| Desire to Finish College | | | | |
| Covariate | 4174.59 | 1 | 4174.59 | 42.73*** |
| Main Effect | 6941.57 | 1 | 6941.57 | 71.05*** |
| Explained | 12825.06 | 2 | 6412.52 | 65.64** |
| Residual | 472667.58 | 4838 | 97.70 | |
| Total | 48549.64 | 4840 | 100.31 | |
| Family Support | | | | |
| Covariate | 7224.35 | 1 | 7224.35 | 53.34** |
| Main Effect | 2640.36 | 1 | 2640.36 | 19.50*** |
| Explained | 11285.86 | 2 | 5642.93 | 41.66*** |
| Residual | 653218.78 | 4823 | 135.44 | |
| Total | 664504.63 | 4825 | 137.72 | |
| Sense of Financial Security | | | | |
| Covariate | 621.12 | 1 | 621.12 | 13.70*** |
| Main Effect | 1662.24 | 1 | 1662.24 | 3.66*** |
| Explained | 2048.00 | 2 | 1024.50 | 22.59*** |
| Residual | 211127.14 | 4656 | 45.34 | |
| Total | 213176.13 | 4658 | 45.77 | |
| Initial Impression | | | | |
| Covariate | 7395.80 | 1 | 7395.80 | 6.75** |
| Main Effect | 10012.93 | 1 | 10012.93 | 63.29*** |
| Explained | 20126.19 | 2 | 10063.10 | 63.61 |
| Residual | 770785.52 | 4872 | 158.21 | |
| Total | 790911.71 | 4874 | 162.27 | |
| Receptivity to Career Counseling | | | | |
| Covariate | 18.55 | 1 | 18.55 | .36 |
| Main Effect | 449.37 | 1 | 449.37 | 8.64** |
| Explained | 451.43 | 2 | 225.71 | 4.34** |
| Residual | 253441.51 | 4872 | 52.02 | |
| Total | 253892.94 | 4874 | 52.09 | |
| Receptivity to Social Enrichment | | | | |
| Covariate | 335.29 | 1 | 335.29 | 12.23** |

| | | | | |
|--------------------|-----------|------|----------|-----------|
| Main Effect | 762.21 | 1 | 762.21 | 27.79* |
| Explained | 1258.56 | 2 | 629.28 | 22.95** |
| Residual | 133613.54 | 4872 | 27.43 | |
| Total | 134872.11 | N | 4874 | 27.67 |
| <hr/> | | | | |
| Study Habits | | | | |
| Covariate | 5195.64 | 1 | 75195.64 | 469.36*** |
| Main Effect | 1730.10 | 1 | 1730.10 | 10.80*** |
| Explained | 8166479 | 2 | 40832.39 | 254.87*** |
| Residual | 765640.04 | 4779 | 160.21 | |
| Total | 847304.83 | 4781 | 177.22 | |
| <hr/> | | | | |
| Desire to Transfer | | | | |
| Covariate | 506.95 | 1 | 506.95 | 29.74*** |
| Main Effect | 2350.14 | 1 | 2350.14 | 137.86*** |
| Explained | 3203.78 | 2 | 1601.89 | 93.97*** |
| Residual | 78248.19 | 4590 | 17.05 | |
| Total | 81451.96 | 4592 | 17.74 | |
| <hr/> | | | | |
| Dropout-Proneness | | | | |
| Covariate | 2056.03 | 1 | 2056.03 | 803.69** |
| Main Effect | 109.97 | 1 | 109.97 | 42.99*** |
| Explained | 2338.91 | 2 | 1169.46 | 457.14*** |
| Residual | 124r33.68 | 4872 | 2.56 | |
| Total | 14802.59 | 4874 | 3.04 | |

** p < .01

*** p < .001

The 1987 National Validity Pilot Study

Using the CSI's 1987 pilot version, this research investigated dropout-proneness with 3048 first-year college students. The students were divided into four groups, depending on whether or not they remained in school and whether or not they had obtained a GPA of at least 2.0. Standard (z) scores were computed for each group on all scales of the CSI. Significant differences between persisters and leavers, regardless of GPA, were found in Desire to Finish College. This finding indicates that the desire to finish scale was an effective predictor of enrollment status for both the academically successful and the unsuccessful. Significant differences were also found between the academically successful students and academically unsuccessful students, regardless of

enrollment status. These two groups differed on four scales: Study Habits, Intellectual Interests, Academic Confidence and Attitude Toward Educators. Since theory would lead one to expect these scales to be related to academic performance, this pattern offers evidence of their predictive validity (Stratil, 1988).

A second aspect of the 1987 validity study correlated first-semester, first-year student grades with each scale. First-semester GPA were significantly correlated with scores on the following scales: Study Habits, Academic Confidence, Desire to Finish College, Attitude Toward Educators, Openness, self-reported SAT/ACT scores and self-reported high school GPA. These results formed the basis for the CSI's global predictor of academic difficulties.

The Dropout Proneness Scale was derived empirically from data collected in the 1987 study. Through a series of multiple regression analyses, poor predictor variables were dropped from further consideration. The final analysis contained eight predictors and yielded a multiple r of .301 ($p < .001$). A prediction equation was derived from this analysis, which, when applied to the original data, yielded a correlation of .245 ($p < .001$) with the criterion of enrollment status at the end of the first semester. Although the probability levels of both of these coefficients are very high, the results also indicate that the final equation will not be very accurate in predicting who will drop out during the first semester of college. As the number of dropout students increases over a four-year (or two-year) period, one may expect the equation's performance to improve (Stratil, 1988). It should also improve when tested with a design that distinguishes between various types of leaving.

The 1988-1991 Validity Study

In a study conducted by Schreiner, 46 colleges and universities were selected to participate in research on the validity of the newly revised CSI beginning in the Fall of 1988. These institutions administered the CSI to 4,915 students within the first weeks of the term and sent completed CSI forms to the publisher for scoring. In the Fall of 1989 each institution supplied information regarding each CSI respondent's cumulative GPA, credit hours attempted, credit hours completed, terms of enrollment, and, current enrollment status. Table 8 contains descriptive information regarding this sample.

TABLE 8. SUMMARY OF CHARACTERISTICS OF THE SAMPLE OF CSI RESPONDENTS

| Variable | Percentage | n |
|---|------------|-------|
| Type of Institution | | |
| Public | 39% | 18 |
| Private | 61% | 28 |
| Highest Degree Offered | | |
| AAIAS | 33% | 15 |
| BAIBS | 33% | 15 |
| MA/MS | 26% | 12 |
| Ph.D. | 9% | 4 |
| Total Enrollment | | |
| Less than 1,000 | 35% | 16 |
| 1,000 to 4,999 | 46% | 21 |
| 5,000 to 9,999 | 15% | 7 |
| Over 10,000 | 4% | 2 |
| Average ACT/SAT Scores of Entering Class | | |
| ACT \geq 26; SAT \geq 1100 | 0% | 0 |
| ACT 22 - 25.9; SAT 931 - 1099 | 20% | 9 |
| ACT 18 - 21.9; SAT 800 - 930 | 37% | 7 |
| ACT 15 - 17.9; SAT 700 - 799 | 22% | 10 |
| ACT < 15; SAT < 700 | 7% | 3 |
| No response | 15% | 7 |
| Enrollment Status After One Year | | |
| Enrolled | 69.6% | 3,422 |
| Academically Dismissed | 2.5% | 122 |

| | | |
|--------------------|-------|-------|
| Stopped Out | 1.4% | 68 |
| Transferred | 5.1% | 252 |
| Withdrawn | 21.3% | 1,048 |
| <hr/> | | |
| GPA After One Year | | |
| > 3.00 | 30.7% | 1,507 |
| 2.49 - 3.00 | 23.1% | 1,134 |
| 2.00 - 2.50 | 21.9% | 1,074 |
| < 2.00 | 24.4% | 1,200 |
| <hr/> | | |

Two criteria were used to assess the predictive validity of the revised CST (CSI-A) in the present study: college GPA at the end of the first year of enrollment and enrollment status at the beginning of the second year. The various CSI-A scales were regressed on first-year college GPA, with a resulting multiple R of .61, which is an exceptionally high validity coefficient. This indicates that CSI-A was highly predictive of student success, when that success is defined in terms of first-year college GPA.

Three additional methods were used to estimate the predictive validity of the CST. Several discriminant analyses were computed using enrollment status as the dependent variable. Secondly, analyses of covariance were conducted, using high school GPA as the covariate and enrollment status and first-year college GPA as the independent variables. Finally, regression equations were computed using enrollment status and first-year GPA as separate criterion variables.

Several discriminant analyses were computed using enrollment status as the dependent variable. When computed using all the CST scale scores as the predictor, 71.96 percent of the cases were correctly classified, but the use of all the scales tended to overpredict re-enrollment. Therefore, a second discriminant analysis was computed using only Dropout-Proneness scores as the predictor. Since predicting enrollment status is only one intent of the CSJ (and not its primary intent), it would seem appropriate that

Dropout-Proneness scores should predict enrollment status more accurately than all the scales combined. In this analyses, 58.84 percent of the students were correctly classified as to their enrollment status. Although this was a substantial decrease in prediction using dropout proneness scores, it was accompanied by a substantial decrease in the false negative rate. This lower false negative rate means that students who actually do drop out after one year are less likely to be predicted by the CSI to persist when using only the Dropout-Proneness scores instead of all the scale scores. Because the CSI has a two-fold intention (to assess risk level and to assess a broad spectrum of student needs), it is to be expected that the Dropout-Proneness score would be a more useful predictor of enrollment status than all the other CSI scale scores. A comparison of the Dropout-Proneness scale score to high school GPA as a predictor also indicated that using high school GPA alone, 51.96 percent of the students could be accurately classified as to their enrollment status, with a comparable false negative rate of about 45 percent. This seems to indicate that using the Dropout-Proneness scores of the CSI enables colleges to do a somewhat better job of predicting enrollment status after one year than when using high school GPA alone.

Discriminant analyses using first-year college GPA as the dependent variable were also computed; these indicate that 71.2 percent of the students could be correctly classified as to their GPA after one year. The discriminant function was significant ($p < .001$) and included five scales: Dropout-Proneness, Family Emotional Support, Desire to Finish College, Study Habits and Receptivity to Academic Assistance. These five scales accounted for 94.04 percent of the variance and were reduced to one function in the analysis. This means that these five scales can essentially be reduced to one scale

which can correctly classify about 71 percent of students by college GPA. A similar analysis using high school GPA as the predictor found that 54 percent of the students could be correctly classified by college GPA. Therefore, it seems apparent that, when compared to the predictive validity of high-school GPA alone, the CSI allows schools to predict academic success with a much higher level of efficiency than they had previously been able to attain.

The second method used to examine the predictive validity of the CSI was to ascertain its effectiveness after taking into account students' high school GPAS. Accordingly, analyses of covariance were conducted, using high school GPA as the covariate and enrollment status and first-year college GPA as the independent variables. Using only enrollment status as the independent variable and high school GPA as the covariate, nine of the CSI scales contributed significantly to the differences between persisters and leavers, as mentioned earlier in Table 7. It should be noted that the scales which specifically measure affective factors are primarily the ones which significantly contribute to the differences between these two groups: Desire to Finish College, Family Emotional Support, Sense of Financial Security, Initial Impression, Receptivity to Career Counseling, Receptivity to Social Enrichment, Study Habits, Desire to Transfer and Dropout-Proneness. These nine scales provide a picture of the mind set or characteristics a student possesses upon entering college which appear to predispose him or her to difficulties succeeding and persisting.

A second analysis of covariance was computed on the CSI scale scores of students grouped by first-year college GPA and enrollment status. Using high school GPA as the covariate, this analysis indicated that 17 of the 19 CSI scales contributed

significantly to the differences between persisters and leavers grouped by first-year college GPA (see Table 9). The two scale scores which did not reach significance were Career Planning and Ease of Transition. Apparently, virtually all students have some difficulty making the transition to college; high school GPA was not a significant contributor to group differences, either. Career planning scores were affected by high school GPA, indicating that perhaps career maturity is strongly related to a student's academic achievement.

TABLE 9: SUMMARY OF ANALYSES OF COVARIANCE COMPARISONS OF CSI SCALE SCORES OF STUDENTS GROUPED BY ENROLLMENT STATUS AND FIRST-YEAR COLLEGE GPA

| Source | Ss | df | Ms | F |
|--|-----------|------|----------|----------|
| Academic Confidence | | | | |
| Covariate | 27146.37 | 1 | 27146.37 | 276.88** |
| Main Effect | 3325.57 | 7 | 475.08 | .85** |
| Explained | 44233.10 | 8 | 5529.14 | 56.40** |
| Residual | 464433.17 | 4 | 4737 | 98.04 |
| Total | 508666.27 | 4745 | 107.20 | |
| Attitude Toward Educators | | | | |
| Covariate | 8333.50 | 1 | 8333.50 | 6.80** |
| Main Effect | 3934.13 | 7 | 562.02 | 6.53** |
| Explained | 19095.37 | 8 | 2386.92 | 27.73** |
| Residual | 408083.34 | 4740 | 86.09 | |
| Total | 427178.71 | 4748 | 89.97 | |
| Desire to Finish College | | | | |
| Covariate | 2002.39 | 1 | 2002.39 | 20.54** |
| Main Effect | 8434.76 | 7 | 1204.97 | 12.36** |
| Explained | 14318.14 | 8 | 1789.77 | 18.35** |
| Residual | 471174.50 | 4832 | 97.51 | |
| Total | 485492.64 | 4840 | 100.31 | |
| Desire to Transfer | | | | |
| Covariate | 479.13 | 1 | 479.13 | 28.32** |
| Main Effect | 3040.50 | 7 | 434.36 | 25.67 |
| Explained | 3894.15 | 8 | 486.77 | 28.77** |
| Residual | 77557.82 | 4584 | 16.92 | |
| Total | 81451.96 | 592 | 17.74 | |
| Dropout-Proneness Summary Scale | | | | |
| Covariate | 1349.22 | 1 | 1349.22 | 533.03** |

| | | | | |
|-------------------------------|-----------|------|---------|-----------|
| Main Effect | 256.81 | 7 | 36.39 | 14.49*** |
| Explained | 2485.76 | 8 | 310.72 | 122.76** |
| Residual | 12316.83 | 4866 | 2.53 | |
| Total | 14802.59 | 4874 | 3.04 | |
| <hr/> | | | | |
| Family Emotional Support | | | | |
| Covariate | 5476.38 | 1 | 5476.38 | 40.47*** |
| Main Effect | 4001.99 | 7 | 571.71 | 4.23*** |
| Explained | 12647.49 | 8 | 1580.94 | 11.68*** |
| Residual | 651857.14 | 4817 | 135.32 | |
| Total | 664504.63 | 4825 | 137.72 | |
| <hr/> | | | | |
| Financial Security | | | | |
| Covariate | 290.16 | 1 | 290.16 | 6.40* |
| Main Effect | 1912.58 | 7 | 273.23 | 6.03*** |
| Explained | 2299.34 | 8 | 287.42 | 6.34*** |
| Residual | 210876.79 | 4650 | 45.35 | |
| Total | 213176.13 | 4658 | 45.77 | |
| <hr/> | | | | |
| Initial Impression | | | | |
| Covariate | 5576.15 | 1 | 5576.15 | 35.36*** |
| Main Effect | 13383.29 | 7 | 1911.90 | 12.12*** |
| Explained | 23496.55 | 8 | 2937.07 | 18.62*** |
| Residual | 767415.16 | 4874 | 157.71 | |
| Total | 790911.71 | 4874 | 162.27 | |
| <hr/> | | | | |
| Intellectual Interests | | | | |
| Covariate | 3841.01 | 1 | 3841.01 | 46.84*** |
| Main Effect | 4424.39 | 7 | 632.06 | 7.71*** |
| Explained | 13689.20 | 8 | 1711.15 | 20.87** |
| Residual | 383176.65 | 4673 | 82.00 | |
| Total | 396865.85 | 4681 | 84.78 | |
| <hr/> | | | | |
| Leadership | | | | |
| Covariate | 3015.56 | 1 | 3015.56 | 47.05*1* |
| Main Effect | 1064.44 | 7 | 152.06 | 2.37* |
| Explained | 6329.56 | 8 | 791.20 | 12.35*1 |
| Residual | 301741.68 | 4708 | 64.09 | |
| Total | 308071.24 | 4716 | 65.33 | |
| <hr/> | | | | |
| Openness | | | | |
| Covariate | 3429.45 | 1 | 3429.45 | 33.21*** |
| Main Effect | 7937.60 | 7 | 1133.94 | 10.98*** |
| Explained | 18989.55 | 8 | 2373.69 | 22.99*** |
| Residual | 499878.15 | 4841 | 103.26 | |
| Total | 518867.70 | 4849 | 107.01 | |
| <hr/> | | | | |
| Predicted Academic Difficulty | | | | |
| Covariate | 8411.80 | 1 | 8411.80 | 640.13*** |
| Main Effect | 2392.98 | 7 | 341.85 | 26.02*** |
| Explained | 17573.66 | 8 | 2196.71 | 167.17*** |
| Residual | 63943.03 | 4866 | 13.14 | |
| Total | 81516.69 | 4874 | 16.73 | |

| | | | | |
|---|-----------|------|----------|-----------|
| Receptivity to Academic Assistance | | | | |
| Covariate | 9294.42 | 1 | 9294.42 | 149.29*** |
| Main Effect | 2662.24 | 7 | 380.32 | 6.11 *** |
| Explained | 17436.87 | 8 | 2179.61 | 35.01*** |
| Residual | 302944.78 | 4866 | 62.26 | |
| Total | 320381.64 | 4874 | 65.73 | |
| Receptivity to Career Counseling | | | | |
| Covariate | 105.79 | 1 | 105.79 | 2.04 |
| Main Effect | 1213.69 | 7 | 173.38 | 3.34*** |
| Explained | 1215.74 | 8 | 151.97 | 2.93*** |
| Residual | 252677.20 | 4866 | 51.93 | |
| Total | 253892.94 | 4874 | 52.09 | |
| Receptivity to Personal Counseling | | | | |
| Covariate | 1157.44 | 1 | 1157.44 | 28.26*** |
| Main Effect | 652.72 | 7 | 93.25 | 2.28* |
| Explained | 2989.72 | 8 | 373.72 | 9.12** |
| Residual | 199333.63 | 4866 | 40.97 | |
| Total | 202323.35 | 4874 | 41.51 | |
| Receptivity to Social Enrichment | | | | |
| Covariate | 514.35 | 1 | 514.35 | 18.79*** |
| Main Effect | 1137.91 | 7 | 162.56 | 5.94*** |
| Explained | 1634.25 | 8 | 204.28 | 7.46*** |
| Residual | 133237.85 | 4866 | 27.38 | |
| Total | 134872.11 | 4874 | 2767 | |
| Self-Reliance | | | | |
| Covariate | 862.00 | 1 | 862.00 | 10.96*** |
| Main Effect | 1447.63 | 7 | 206.81 | 2.63** |
| Explained | 2504.03 | 8 | 313.00 | 3.98** |
| Residual | 375366.47 | 4773 | 78.64 | |
| Total | 377870.50 | 4781 | 79.04 | |
| Sociability | | | | |
| Covariate | 9.92 | 1 | 9.92 | .15 |
| Main Effect | 2187.67 | 7 | 312.52 | 4.82*** |
| Explained | 2585.26 | 8 | 323.16 | 4.98*** |
| Residual | 311232.13 | 4800 | 6484 | |
| Total | 313817.38 | 4808 | 65.217 | |
| Study Habits | | | | |
| Covariate | 40538.49 | 1 | 40538.49 | 57.81*** |
| Main Effect | 16866.56 | 7 | 2409.51 | 15.32** |
| Explained | 96801.25 | 8 | 12100.16 | 76.11** |
| Residual | 750503.57 | 4773 | 157.24 | |
| Total | 847304.83 | 4781 | 177.22 | |

p < .05

**p < .01

*** p < .001

Integrating the above results, it is possible to develop a profile of the typical at-risk student using all but two of the CSI scale scores. Particularly when one defines risk not only in terms of enrollment status after one year, but also in terms of first-year college GPA, the profile becomes clearer. Thus a student "at risk" might be described as possessing the following:

- A poor academic preparation for college
- A negative initial impression of the institution
- An unrealistically high level of academic confidence
- Poor study habits
- Little sense of the value of a college education
- Negative prior experiences with educators
- Little support from family
- A low level of openness
- Significant doubts about their ability to finance their college education
- A higher level of sociability coupled with low self-reliance which makes them susceptible to peer pressure
- Lower levels of perceived acceptance as a leader
- Higher levels of receptivity to academic assistance and personal counseling
- Lower levels of receptivity to career counseling and opportunities to become engaged in the social life of the campus

The third method used to examine predictive validity was the use of multiple regression analyses. A logistic regression equation was computed using enrollment status after one year as the criterion and all the CSI scale scores as the predictors. This

analysis indicated that the use of all the scale scores could not significantly predict enrollment status. Thus, a forward stepwise regression equation was computed using first-year college GPA as the criterion and found that an equation including 14 of the CSI scales could account for 23 percent of the variance in first-year GPA (multiple $r = .48$), a figure which compares favorably to that found in other research conducted on student persistence, (Ethington, 1990; Fox, 1986; Pascarella, Duby, & Iverson, 1983; Stoecker, Pascarella, & Wolfle, 1988). Those scales and their beta weights are presented in Table 10.

TABLE 10: RESULTS OF THE FORWARD STEPWISE REGRESSION ANALYSIS OF CSI-A SCALES WITH FIRST-YEAR COLLEGE GPA AS THE DEPENDENT VARIABLE

| CSI-A Scale | Beta Weight |
|------------------------------------|-------------|
| Dropout-Proneness | -2.69 |
| Desire to Finish College | -1.06 |
| Family Emotional Support | -1.03 |
| Study Habits | -.97 |
| Receptivity to Academic Assistance | .66 |
| Sociability | -.13 |
| Openness | .12 |
| Self-Reliance | -.09 |
| Leadership | .07 |
| Desire to Transfer | -.05 |
| Altitude Toward Educators | -.05 |
| Receptivity to Career Counseling | .05 |
| Receptivity to Social Enrichment | -.05 |
| Initial Impression | -.04 |

A final indication of predictive validity involved correlating the various CSI scale scores with first-year college GPA. This process found the following scales significantly correlated to college GPA:

- Receptivity to Academic Assistance
- Academic Confidence
- Career Planning
- Desire to Finish College
- Attitude Toward Educators
- Family Emotional Support
- Initial Impression
- Intellectual Interests
- Leadership
- Openness
- Receptivity to Personal Counseling
- Sociability
- Study Habits
- Desire to Transfer
- Receptivity to Career Counseling• Dropout-Proneness
- Perceived Academic Difficulty
- Educational Stress
- Receptivity to Institutional Help (p<.00 1)

In integrating the findings from the present study, we can conclude that the CSI effectively predicts academic success in terms of first-year college GPA and enrollment status, even after controlling for high school GPA. This conclusion is supported by the

high correlation between the CSI and college GPA, in the ability of the CSI to correctly classify 71 percent of the students by GPA, in the multiple regression equation accounting for 23 percent of the variance in college GPA, and in the analyses of covariance indicating that all but two of the CSI scales significantly contribute to differences between groups after taking into account high school GPA. We can also conclude that certain scales of the CSI are effective predictors of enrollment status after one year, although these predictions are quite naturally not as accurate. Although the CSI as a whole does not predict enrollment status as well as it does first-year college GPA, it is still a more efficient predictor of enrollment status than is high school GPA alone.

Institution-Specific Predictive Validity

An institution-specific study of the predictive validity of the CSI was conducted by Schreiner (1989) at two private liberal arts colleges. A total of 379 first-year students were administered the CSI, and their enrollment status was ascertained the following year. An analysis of variance conducted on the Dropout-Proneness scores indicated that there was a significant difference in the scale scores of persisters and leavers ($p < .001$). A discriminant analysis was also computed using enrollment status after one year as the dependent variable. The results indicated that 64.37 percent of the students could be correctly classified, with a false negative rate of 35 percent.

As Pascarella (1986) notes, "the substantial body of empirical evidence generated by the Tinto model has supported the notion of person-environment fit" (p.

100). The ability to identify at-risk students has been shown to vary significantly from institution to institution in previous studies (Pascarella, 1986) and indeed this can be seen in the higher predictive validity of the instrument found at two specific colleges, as compared to the national sample (Schreiner, 1989). Specific institutions are encouraged to develop local prediction equations over a period of several years using CSI variables. These equations are likely to enhance the prediction of student outcomes than because they will capture the specific configuration of motivation forces operating at that institution. Thus, they will take into account such factors as student body characteristics, faculty characteristics, institutional history, characteristics of the extracurricular activities available on campus (e.g., the presence or absence of salient athletic programs), and community characteristics. All of these dimensions can influence how students respond to their college environment, both academically and socially.

Construct Validity

Construct validity is the degree to which a given set of findings is consistent with a coherent, well developed theory. In validating an instrument that purports to measure mass, a medieval researcher who somehow managed to take his or her instrument to the moon may be dumbfounded to discover that the cue ball weighs less there than on earth. But such a finding would be considered evidence of the instrument's validity today because of the coherent conceptual framework and supporting data provided by Newton's (1687/1999) seminal work on motion and gravitation.

This section will evaluate the CSI's construct validity through 2 types of analyses. First, it will briefly examine the theoretical and empirical basis for selecting CSI-A's scales. To be a valid measure of the background and motivational variables pertinent to student outcomes in college, CSI-A's scales should measure variables that general research in education and psychology have shown to be relevant to that goal. Second, the section will review several empirical studies relating CSI-A to variables that relate theoretically to the educational process or to the characteristics of successful students rather than directly to student outcomes.

Overview of Theoretical and Empirical Literature

Accompanying Morrison's (1999) empirical results is an overview of some of the CSI-A's theoretical and empirical background. Table 11 presents a summary of many of the points she cites; it also includes a number of additional findings in the literature on academic performance and persistence among college freshmen. The table is merely an initial effort to examine this voluminous literature. But it gives the reader a general sense of the research foundations that informed the design of the CSI.

TABLE 11: OVERVIEW OF THEORETICAL AND EMPIRICAL LITERATURE
RELEVANT TO GSI-A SCALES

Motivational Scale

Theoretical Concepts and Empirical Literature

ACADEMIC MOTIVATION

Study Habits

Using Weiner's attribution theory (1985) as a general framework, Smith and Price (1996) found that many developmental students have an external locus of control (attributing the major causal factors in their lives to task difficulty and luck rather than to effort). Students

low on the Study Habits scale are considered to possess such an external locus of control. Elliott, Godshall, Shrout, & Witty (1990) found that students who were high on self-reported study habits earned higher grades. Richardson and Sullivan (1994) found that the CSI-A's Study Habits scale correlated more strongly with freshman GPA for at-risk students than did the SAT.

Intellectual Interests

Cote and Levin (1997) found that the motivation for intellectual growth was a significant factor in predicting GPA, but they also found that the college experience does not strengthen this motivation as one might expect.

Academic Confidence

Richardson and Sullivan (1994) found that the CSI-A's Academic Confidence scale correlated more strongly with freshman GPA for at-risk students than did the SAT. Ethington (1990) found that academic self-confidence predicted college persistence. Lent, Brown, and Larkin (1986) found that a scale measuring self-efficacy predicted grades, persistence, and range of perceived career options among science and engineering students. Himmelstein (1992) found that expected grades predicted GPA and completion of at least 1 course at a community college.

Desire to Finish College

Allen (1999) found that the CSI-A's Desire to Finish scale predicted persistence among minority students in a causal model. Schutz and Lanehart (1994) found that possession of long-term educational goals is related to academic performance. Wilder (1992) found that a low commitment to college is related to a pattern of declining GPA. Kaufman and Creamer (1991) found that students with higher goals showed the best academic performances in college.

Attitude toward Educators

Stratil (1988) has argued that students' general attitude toward educators may transfer to the educational process and facilitate or interfere with the learning process.

SOCIAL MOTIVATION

Self-Reliance

Geiger and Cooper (1995) and Smith (1968) found that self-reliance was related to academic success. Pascarella and Terenzini (1991) review evidence that autonomy increases during college.

Sociability

See Stoecker, et al. below.

Leadership

Ting (2000) found that leadership skills were positively related to GPA among Asian American freshmen. Tracey and Sediacek (1985) and Sediacek (1999) found that leadership success was related to student success in higher education.

GENERAL COPING

Ease of Transition

Stoecker, Pascarella, & Wolfie (1988) have argued that social integration promotes commitment to education and that commitment promotes persistence. Himmelstein (1992) found that feeling that one will fit in socially predicted course completion and GPA.

| | |
|--------------------------|---|
| Family Emotional Support | Reitzes and Mutran (1980) develop and test a theoretical model relating family background and perceived importance of significant others to academic success. Just (1999) and Lapsley, Rice, and FitzGerald (1990) found that parent attachment was related to college adjustment. Ferry, Fouad, and Smith (2000) found that parental encouragement was directly related to grades in math and science courses. |
| Openness | Perry (1970) found that intellectual development in college is characterized by an increasing acceptance of the validity of multiple perspectives and the use of increasingly complex integrative processes. Similar results are reviewed by Pasarella and Terenzini (1991). |
| Career Planning | Himmelstein (1992) found that clarity of career goal was related to completing at least one course at a community college. Thompson (1980) describes two retention-enhancement programs emphasizing career planning. |
| Financial Security | Himmelstein (1992) found that feeling able to meet the financial burdens of going to college predicted rate of course completion and GPA at a community college. |

RECEPTIVITY

| | |
|---------------------|---|
| Academic Assistance | Polansky (1993) found that training in study habits improved retention among high-risk students. Karabenick and Knapp (1988) found a curvilinear relationship between need and seeking assistance with academic skills, such that students with moderate need sought more help than those with very high and very low need. They discussed this finding in terms of Weiner's (1985) attribution theory, in which (a) repeated academic difficulty is related to attributions of stable low ability and (b) these attributions arouse negative emotions (e.g., sadness, guilt, embarrassment, hopelessness, and resignation). Covington and Beery (1976) discuss how help seeking is threatening to the self-esteem of low achieving students. |
| Personal Counseling | Frank and Kirk (1975) found that personal counseling was related to greater rates of academic success and higher rates of retention. Glennen (1975) found that academically oriented intrusive counseling improved grades and persistence. |
| Social Enrichment | See literature cited under Ease of Transition. |
| Career Counseling | Although Lewallen (1993) found that the degree to which entering students have made a career choice is unrelated to persistence, Pasarella, Terenzini, and Hibel (1978) found that career counseling during college improved GPA. |
| General Receptivity | Himmelstein (1992) found that willingness to seek help with a problem is related to completion of at least one course and GPA at a community college. |

MISCELLANEOUS

| | |
|---------------------------|---|
| Initial Impression | Himmelstein (1992) found that institutional satisfaction is related to completion of at least one course and to GPA at a community college. Richardson and Sullivan (1994) found that the CSI-A's Initial Impression scale was more strongly related to freshman GPA for at-risk students than was the SAT. |
| Degree Aspirations (item) | Ethington (1990) found that degree aspirations predicted persistence. |

Concluding Comments

The results of these studies seem to indicate that we can identify at-risk students with a fairly high degree of accuracy with the CSI. Particularly when we define "at-risk" in the sense of academic risk, the CSI enables institutions to improve their predictive efficiency considerably. Using the CSI is certainly more predictive than mere intuition, and it is also better than the traditional means used, such as high school GPA.

VITA



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