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Validating measures of theoretical constructs useful in examining college persistence

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Validating measures of theoretical constructs useful in

examining college persistence

by

Margaret Anna O'Toole Healy

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CHAPTER I: STATEMENT OF THE PROBLEM

The decision to attend college is a landmark in an adolescent's life. For direct-from-high-school college students, the college years traditionally present the opportunity to assume adult roles and to determine future career directions. The appropriate culmination of this transition period is the completion of the bachelor's degree. However, between forty and fifty percent of the students who begin college do not complete their academic programs.

Historical Perspective

The issue of who drops out of college and why has been of interest to researchers throughout the twentieth century. Studies addressing the issue of persistence have varied in terms of the population of interest, the purpose of the research, and the methodology used. When identifying the populations studied, research has been carried out either within a single institution or within a region or the nation. In single institution studies, the researcher usually attempted to profile dropouts using biological data, personality characteristics, reasons for leaving, and measures of academic aptitude or attitudes about college. Single institution studies usually examined one dimension of dropouts within that institution (e.g., Barger and Hall,

1964; Brown, 1960; Chase, 1968; Dole and Weiss, 1968;
Faunce, 1968; Johansson and Rossmann, 1973; Lokitz and
Sprandel, 1976; Prediger, 1965; Rose and Elton, 1966).
National or regional studies traced students through all
institutions of enrollment attempting to determine the rate
of persistence or to identify a variety of variables
descriptive of dropouts (e.g, Astin, 1975, 1977; Chickering,
1974; Hannah, 1969; Iffert, 1957; Sewell and Shah, 1967;
Werts, 1968).

When examining the purpose of persistence research, one
sees that the purposes have shifted over time to reflect the
predominant issues in higher education admissions and
enrollment. Research in the fifties and early sixties
reflected an interest in studying the efficacy of admissions
decisions. Studies were based on the premise that students
should be admitted, enrolled, and continue to graduation.
The thrust of research during that time was to identify why
some students were "bad risks" as admissions (e.g., Carlson
and Milstein, 1958; Jackson, 1957; Merwin, 1962; Stout and
Halfter, 1963; Waller, 1964).

In the sixties, social issues caused radical changes in
higher education. If a college education was the means for
social mobility in American society, then access to higher
education should be given to all students who had the
academic skills to succeed. This belief in equal

opportunity for higher education, was reflected in the
research as a concern for the lost opportunities of the
student (e.g., Henderson, 1958; Hitt, 1965; Jefferson, 1966;
Thomas, 1968).

In the late seventies, the research began to reflect
new issues. The direct-from-high-school cohort was
decreasing; the baby boom was over. As a result, the
purpose of persistence research changed again because of the
decrease in the potential number of direct-from-high-school
students available to higher education and and an interest
in accountability most often measured by the number of
students who persisted to graduation. The need to improve
the retention rates of the institution was seen as important
to the economic stability of the institution (e.g., Dallam
and Dawes, 1981; Newlon, and Gaither, 1980; Skipper, 1975).

Thus, one can see that the purpose of persistence
research has been quite pragmatic. That pragmatic
perspective was reflected in the methodology used to examine
persistence in college. Knoell (1960) classified retention
studies by the research methodology used. The four
categories of studies she identified included: the census
study which documented the magnitude of attrition and
retention rates, the autopsy study which identified the
students who withdrew and the self-reported reasons for
leaving college, the case study which examined the retention

rates of students who were risk admissions, and the prediction study which generated prediction equations for a variety of college success measures. Marsh (1966) identified two additional categories of studies: the descriptive study which described the characteristics of the students who left and how they lived while in college and the philosophical/theoretical study which included recommendations for action based on the assumption that dropouts should be prevented. One can see that the population of interest, the purpose of a study, and the methodology shifted as predominant issues in higher education changed. In general, previous studies had a strong utilitarian focus in that all were directed towards meeting the current needs of the institution or of higher education.

Despite the fact that studies of persistence, retention and attrition abound, much criticism has been levied at this type of research through the years. In many cases, this criticism was pointed at single institution studies. Typically, these studies were single variable studies which failed to accommodate the complex relationships among the variables that would predict success in college. Another frequent criticism was that the definitions used in persistence research failed to adequately define the population, when students who left because of academic

dismissal and disciplinary action were included with other
students who left voluntarily in good academic standing.
When one combined the effect of ambiguous definitions with
single institution studies, one created even further
methodological problems because students defined as dropouts
in a single institution study may in fact have been
persisters when transfer was considered. However, the most
serious flaw in retention research was indicated by Spady
(1970) who noted that while Knoell and Marsh identified six
categories of retention studies, there was a lack of
analytical/explanatory studies based on theory. He pointed
out that "... beyond a few comfortable and familiar
generalizations about the relationships between attrition
and family background, ability, or academic performance,
this literature lacks both theoretical and empirical
coherence" (p 64).

Theory

In that same article, Spady proposed Durkheim's theory
of suicide as a useful model in examining persistence. In
1897, Emile Durkheim proposed an interpretation of suicide
as a sociological phenomenon rather than as an individual
and personal phenomenon. In contrast to psychoanalytic
theorists who proposed that a typology of causes of suicides
might eventually be developed through examination of

individual cases, Durkheim created an etiology of societal factors which motivate suicide. In a 1951 translation of Durkheim's work on suicide, three categories of suicide were identified: egoistic suicide "which results from the lack of integration of the individual in society," anomic suicide which is the result of "lack of regulation of the individual by society" because of significant life changes, and altruistic suicide which results from "the individual taking his own life because of higher commandments."

This etiology provides a useful perspective from which to examine persistence in college. Rather than carefully gathering data to develop a typology of the non-persister, one may develop an etiology of the non-persister within the framework of the university as an intact social system. By defining a single institution as a social system, one responds to the critics who perceived single institution studies as fragmented because they fail to examine the typology of dropouts across institutional types.

Conceptualizing the dropout process as an interaction between the student's characteristics and the institution's environment, Spady hypothesized that students must achieve integration into the social system. Just as individuals who commit egoistic suicide have not been integrated into the values system and social fabric of the society, dropouts fail to exhibit normative congruence (integration into the

value system) and friendship support (integration into the social fabric of the society). Spady did not identify parallels to anomic suicide or altruistic suicide.

Spady's model shows two variables having a direct relationship to the dropout decision: institutional commitment and grade performance. Two variables precede institutional commitment: normative congruence and friendship support. Through institutional commitment, as a single variable, integration into both the value system and social fabric of the university is measured while grade performance reflects the impact of institutional policy concerning academic performance. Spady's model is predicated on the assumption that enrolling in and attending a college is a process which could result in assimilation into the social/academic system and subsequent graduation from college or in lack of assimilation and subsequent dropout. This contrasts with the traditional assumption that matriculation results in a baccalaureate degree and that dropping out is a deviant behavior. Thus, it is assumed that students experience college in different ways and those experiences determine their future within the institution.

Using Spady's work, Tinto (1975) proposed a slightly different model of persistence in college. He noted that a college could be viewed as a social system with separate

value and social structures. Tinto's model (1975) shows two parallel structures, the academic structure and the social structure, rather than the single structure proposed by Spady. The two variables directly relating to the dropout decision are goal commitment which is a measure of the student's academic integration and institutional commitment which is a measure of the student's social integration. Therefore, Tinto's model allows Spady's normative congruence and friendship support to have differential impacts on the dropout decision rather than to have a single impact.

Only one team of researchers, Pascarella and Terenzini (1979a, 1979b, 1980), have published the results of research using Spady's or Tinto's model of persistence. Most of Pascarella and Terenzini's research has focused on measuring the quantity and quality of peer and faculty contacts within the collegiate environment during the first year. When developing the measures in this study, it was assumed that students' assessment of their abilities, attitudes and characteristics prior to enrollment would be meaningful in explaining academic integration and social integration. To date, the research using the Tinto model has focused on the student's interaction within the collegiate environment. This study was intended to measure the non-intellective characteristics of the student, at the time of entrance into the environment, that made it likely the student would

achieve integration into the academic value system and the social system of the university.

Purpose of the Study

This study examined persistence in college using the single institution model proposed by Spady (1970, 1971) and modified by Tinto (1975) in which goal commitment (academic integration) and institutional commitment (social integration) are related to persistence. Spady (1970, 1971) and Tinto (1975) built the case that students must be adequately regulated by the institution's values and goals in order to achieve goal commitment. Similarly, students must be adequately integrated into the social fabric of the institution in order to achieve institutional commitment. The current study extended the work of Spady and Tinto by conceptualizing goal commitment in terms of two constructs, success orientation and accuracy of self-perception, and by conceptualizing institutional commitment in terms of the construct of student fit with the environment.

To be more specific, the purpose of this study was to develop reliable measures of the concepts proposed by Spady and Tinto and to validate them in terms of whether or not they are useful in identifying direct-from-high-school students who will or will not persist from the first to the second year at Iowa State University, a large public Ph.D.

level midwestern university. The measures developed in this study were derived from available institutional data on students' personal characteristics, attitudes and behaviors at the time of entry into the institution, i.e., their non-intellective characteristics. It was hoped that these constructs would be able to explain variance in persistence left unexplained after the well-documented relationship between intellective measures and persistence is taken into account.

Description of the Constructs

Goal Commitment

Two constructs were developed in order to define the concept of academic integration or goal commitment: success orientation and accuracy of self-perception. The rationale for two separate dimensions of goal commitment was that students must both feel confident of success in college and be able to accurately assess their academic skills in order to adequately master the academic requirements of the university or to find the resources needed for success. Neither confidence nor realistic self-assessment was viewed as a sufficient indicator of academic integration by itself. In the sections that follow, the general methods for measuring these two dimensions of goal commitment, as well as the rationale on which they are based, will be explained.

For the most part, measures were developed using the information provided by students through completion of the ACT Student Profile Report.

Success orientation   The concept of success orientation was measured by several operational variables which were hypothesized to be indicative of students' confidence about attending college. Academic preparation variables give an indication of how confident students are of their academic skills. Students' overall evaluation of high school preparation for college is, perhaps, a measure of confidence in academic readiness. More specifically, interest in advanced placement or test out examinations should indicate confidence in taking on college level work. Students who indicate that help is needed in academic subjects or with study skills demonstrate a lack of confidence in their readiness to take on college level work. These variables reflect most directly on the high school academic experience and how confident the students are of their readiness for college.

The second set of operational variables was comprised of criteria students use for selecting Iowa State University. Students who are attending their first choice college are more likely to feel that they can master the academic challenge and that they are where they want to be. Students who indicate that field of study is the most

important factor in selecting a college demonstrate
appropriate academic criteria in selecting a college. These
two operational variables provide a sense of how students
are evaluating the university and its requirements.

The third set of operational variables was related to
students' commitment to academic goals. Students who are
committed to a major are able to begin academic coursework
with a sense of purpose, a feeling that the requirements of
the curriculum will provide insight into the major.
Students committed to a vocational goal have a sense of
purpose in meeting the day-to-day challenges of their
academic programs. Students committed to achieving the
bachelor's degree are more likely to persevere than students
not so committed, and students who have educational goals
beyond the bachelor's will be motivated to meet the current
challenges in order to achieve future goals.

All of these operational variables were hypothesized to
be measures of the students' confidence that they could and
must achieve success in integrating into the academic system
of the university. It was hypothesized that the higher the
student's success orientation the more likely that she or he
would persist to the second year.

Accuracy of self-perception   With reference to the
second dimension of goal commitment, accuracy of self-
perception, it is not uncommon to hear advisers and

counselors speak of students who are unable to establish goals which are congruent with their academic skills. In this study, it was hypothesized that students who accurately assess their academic skills (and evidence self-confidence or success orientation) will be able to persist regardless of intellective abilities. Students who are weak in some areas, and know that, will be able to seek help in conquering academic deficiencies. Students who perceive their academic skills as stronger than they really are risk academic difficulty because they will probably ignore signs that their mastery of the subject matter is inadequate. On the other hand, students who perceive their academic skills as weaker than they are might be unable to see the adequacy of their work; thus, they will be unable to complete assignments and to believe that they can perform satisfactorily on examinations.

In order to measure accuracy of self-perception, a student's own assessment of skills or interests on the ACT Profile was compared with ACT achievement scores or other achievement measures in order to determine if the student's self-assessment was congruent wth demonstrated ability. For example, the student's perception of ability as indicated by interest in advanced placement or testout examination or by interest in receiving help in English, mathematics, social studies, and natural science was compared with the ACT part

score in the appropriate area. Interest in the honors program was compared with high school rank and ACT composite score. A student's response to the need for help with study skills was compared to high school grades. Accuracy of the perception of overall ability was assessed by comparing the student's expected grade point average and the actual grade point average. Through such comparisons, it was possible to determine if a student's self-perception matched his or her achievement level or over- or underestimated it.

A second area in which it is important that students be accurate in their perception of self is in the area of goals. The operational variable used to assess the accuracy of perception about goals was whether or not the actual grade point average was sufficient for post-baccalaureate plans.

It was hypothesized that the more accurate a student's perception of self, the more likely he or she will persist. Students who can accurately assess their strengths and weaknesses will be more likely to persist regardless of intellective abilities.

In terms of the relationship between the two dimensions of goal commitment, it was hypothesized that the constructs of success orientation and accuracy of self-perception interrelate in defining the concept of goal commitment. The student who has a strong success orientation and is highly

accurate in terms of self-perception will exhibit a high degree of goal commitment (academic integration). As either success orientation or accuracy of self-perception or both decrease the student exhibits a decrease in goal commitment.

Institutional Commitment

The concept of institutional commitment was measured by the construct of student fit with the environment. Fit was defined as how often students are in settings which provide the opportunity to develop a sense of belonging to the institution or a sense of having personal goals and values similar to others in this environment.

With regard to measuring student fit, it was assumed that the student's involvement in extracurricular activities in high school indicates that the student has developed skills and interests that will provide the opportunity to become involved in college activities. The student's intention to become involved in activities in college will also indicate an inclination to participate in college activities. The involvement in extracurricular activities is an important opportunity for students to become involved with the institution, faculty, and other students.

A second set of operational variables which were seen as measures of student fit with the institution was the choices that students made about academic plans. It is important that the major the student selects for study is

offered at the university. If it is not, it is likely that the student will feel few others share his or her academic goals. Other indications that academic goals are shared by other students are the presence of a "critical number" of students with the same major choice and vocational goals and a "critical number" of students of the same gender in the academic department or curriculum.

Opportunities for interaction with other students and faculty was the third set of operational variables defining the construct of student fit. Students who plan to live in organized group living in either the residence halls or fraternities and sororities will experience increased opportunity for intereaction with peers. Students who are in an academic department which facilitates interaction between faculty and students are more likely to experience fit. The opportunity for interaction with faculty was measured by the average size of courses in a typical schedule for that college.

The concept of institutional commitment as measured by the construct of student fit permitted assessment of the students' opportunity to be with faculty and other students like themselves. A feeling of belonging is important if the students are to find a place within the larger institution. No one is likely to voluntarily remain at an institution where one feels out of step with everyone else.

Rationale for Validation of the Constructs

The constructs developed in this study (success orientation, accuracy of self-perception, and student fit with the environment) were related to two variables, the student's cumulative grade point average and enrollemnt status, each with two levels. Since success orientation and accuracy of self-perception were intended to reflect how much the student had assimilated the values of higher education, satisfactory academic performance and continued enrollment in college were chosen to be the measures of assimilation into the value system. Continued enrollment at Iowa State was seen as a single measure of integration into the social system. Institutional commitment or student fit with the environment was intended to reflect how much the student had been assimilated into the social system of the institution.

In terms of the variable "enrollment status," students not enrolled for the fall semester, 1982 were considered "withdrawers." Students enrolled fall and spring semesters during the 1981-82 academic year and enrolled during the 1982 fall semester were considered "persisters." In terms of the variable "cumulative grade point average," students with a cumulative grade point average of 2.00 or above were considered "academically successful;" the students with a grade point average below 2.00 were considered "academically

unsuccessful." Four groups of students resulted from the possible combinations of these levels of the two classification variables, and when validating the measures developed in this study, each subject was classified as belonging to one of them: persisters who were academically successful, persisters who were academically unsuccessful, withdrawers who were academically successful, and withdrawers who were academically unsuccessful.

Thus, the purpose of this study was to provide insight into the phenomena of persistence and of achieving academic success through an examination of differences among satisfactory persisters and withdrawers and unsatisfactory persisters and withdrawers using the concepts of goal commitment and institutional commitment.

Hypotheses

Tinto's model emphasized the dual structures of goal commitment and institutional commitment in explaining the dropout phenomenon. Using this model, the following hypotheses were made about the three constructs developed in this study to measure goal commitment and institutional commitment: success orientation, accuracy of self-perception, and student fit with the environment.

1. A. Success orientation is significantly related to enrollment status and grade point average;

that is, students with satisfactory grade point averages will have higher success orientation scores than those with unsatisfactory grade point averages. Similarly, persisters will have higher success orientation scores than withdrawers.

B. To be more specific, it is predicted that satisfactory persisters will have the highest success orientation scores followed by satisfactory withdrawers, then unsatisfactory persisters. Unsatisfactory withdrawers will have the lowest success orientation scores.

C. It is also hypothesized that success orientation will have a moderate relationship with high school rank and ACT composite score; that is, a student who has been academically successful in the past will be more likely to have higher success orientation scores.

2. A. Accuracy of self-perception is significantly related to grade point average and enrollment status; that is, students with satisfactory grade point averages will have higher accuracy of self-perception scores than students with unsatisfactory grade point averages. Similarly, persisters will have higher accuracy of self-

perception scores than withdrawers.

B. Specifically, it is hypothesized that satisfactory persisters and withdrawers will be most accurate in their self-perception followed by unsatisfactory persisters; unsatisfactory withdrawers will be least accurate.

C. It is also hypothesized that accuracy of self-perception will have a moderate relationship with high school rank and ACT composite score.

3. A. Student fit with the environment will be significantly related to enrollment status; that is, persisters will exhibit greater fit with the environment than withdrawers.

B. It is also hypothesized that there will be no relationship between student fit and the academic achievement indicators, high school rank and ACT composite score.

4. Success orientation and accuracy of self-perception are moderately positively related; that is, the greater the student's success orientation, the more likely that the student will be accurate in his or her self-perception.

5. Goal commitment (success orientation and accuracy of self-perception) and institutional commitment are not related; that is, a student may exhibit any degree of goal commitment with any degree of institutional commitment.

CHAPTER II: REVIEW OF THE LITERATURE

A comprehensive bibliography of the research done on the topic of persistence, attrition or retention includes hundreds of citations. Two major purposes of the research have been to document the magnitude of the "dropout" problem and to examine the phenomena of persistence, attrition and retention. This chapter will first summarize what is known about persistence rates in colleges and at Iowa State University. Then, the literature which examines the phenomena will be discussed.

The Dropout Phenomenon

The phenomenon of students leaving higher education without completing the baccalaureate is a common occurrence. While a very few institutions graduate 80% or more of their students, others graduate less than 15% (Summerskill, 1962). It is commonly stated that approximately 40% of the students graduate within four years from the first college of enrollment (e.g., Pantages and Creedon, 1978; Summerskill, 1962). However, there are several definitional problems in quantifying the rate of persistence in college. Perhaps the most overwhelming is the definition of dropout itself. The decision to drop out of college is a decision that can be reversed any time within the student's lifetime. A student who leaves college without the baccalaureate degree may

return to complete the requirements for the degree at any time, thus becoming a persister. The definition of dropout becomes even more complex in a single institution study when the student who is classified as a dropout does, in fact, transfer to another college and persists to graduate.

A second problem in quantifying the rate of persistence is the time period used for study. It is traditional in higher education to assume that students who attend four consecutive academic years of college will achieve the baccalaureate degree. Thus, some studies count only students who have graduated in four years as persisters, others count those who graduated in or were still enrolled after four years as persisters, and yet others use longer time periods.

There have been two major national studies of persistence in higher education conducted by the federal government. In 1931 and 1932, McNeeley (1937) of the U. S. Department of Education studied 15,535 students enrolled in 25 universities. McNeeley found that these institutions' average dropout rate over four years was 62.1%. However, 17% of the dropouts had transferred to other colleges and universities. The actual net loss to higher education was 45.2%.

Iffert (1957) directed a 1950 study of 12,667 students enrolled in 149 institutions of higher education which was

sponsored by the U. S. Department of Health, Education and
Welfare. Iffert reported that 39.5% of the students
graduated in regular progression (four academic years) from
the institution of first enrollment. Including the students
who transferred and graduated in regular progression, the
percent of students graduating jumped to 51.3%. At the time
of the study there were others still enrolled who might
eventually graduate. They brought the total to 56.8%.
Finally, including those who had stopped out but might
complete the degree at some time in the future, the total
number persisting to graduation eventually reach 59%.
According to Iffert, more than 40% of those who began
college would never complete the baccalaureate.

Summerskill (1962) reviewed thirty-five (35) studies of
persistence rates and found that the median loss in four
years was 50%; the median number graduated in four years was
37%. These numbers were lower than Iffert's statistics;
however, many of the studies which Summerskill reviewed were
single institution studies which did not incorporate
transfer and completion of the baccalaureate at another
institution. Summerskill concluded, "Apparently the
attrition rate has not changed appreciably in the past forty
years" (p. 630). He did note that there was great
variability in persistence rates among different types of
colleges.

The American Council on Education has completed three
longitudinal national studies which substantiate the
graduation rate in four years from any college as being in
the 40% to 60% range. A study of the 1961 entering class
showed a graduation rate of 53% (El-Khawas and Bisconti,
1974, p. 60); the 1967 entering class graduated 57% in four
years at any college (Bayer, Royer, and Webb, 1973, p. 24);
the 1968 entering class graduated 53% of its students
(Astin, 1975, p. 11). In a College Board Report, Ramist
reports tentative conclusions about the overall graduation
and dropout rates (see Table 1) based on a cross section of
four year colleges (1981, p. 2). He concludes that between
10% and 35% of the students never complete the degree.

TABLE 1.   Overall Graduation and Dropout Rates

Graduation within four years after entry:
    From original college of entry   35-40%
    From different college   10-20%
    Total - from any college 4 years after entry   45-60%
Graduation 5 years after entry (any college)   10-15%
Graduation 6 or more years after entry (any college) 10-15%

Total graduation (any college)   65-90%
Dropouts who never receive degree   10-35%

Similar studies have been carried out at the three Iowa
pubic universities since 1960-61. These studies compare the

persistence rates of students at the University of Northern
Iowa, Iowa State University, and State University of Iowa
four years, five years, and six years after matriculation.
Table 2 shows that the percent of students who complete the
degree in four years is 5-10% below that reported by Ramist
(1981) except for the 1970-71 entering class. However, the
percent of students who completed the degree within six
years has increased from 50% for the 1960-61 class (Note 2,
p. 4) to 57% for the 1975-76 class.

Over the past twenty years the persistence rate within
six years has increased at Iowa State; however, Table 2 also
shows that an increasing percentage of the non-persisters
leave prior to the beginning of the second year. In fact,
over half the non-persisters in the 1975-76 class remained
at the university one year or less. Within the first two
years, more than 70% of the non-persisters leave the
university.

In comparing Iowa State University's persistence rates
with national studies, it appears fewer students complete
the baccalaureate degree within four years at Iowa State,
although more students eventually complete the degree
requirements. Of the students who do not persist to
graduation at Iowa State, the greatest number drop out
during the first year and nearly 75% drop out during the
first two years.

TABLE 2. Persistence and Dropout Rates of Students Entering
Iowa State University

	Entering Class		
	1965-66	1970-71	1975-76
Source	Note 1	Note 2	Note 3
Number of Entering Students:	3336	3921	4201
Percent Graduated			
-within 4 years:	31%	41%	32%
-within 5 years:	51%	54%	52%
-within 6 years:	55%	57%	57%
Percent Still Enrolled:	3%	2%	2%
Percent of Non-Persisters:	42%	41%	40%
Percent of Non-Persisters Who Remained			
-one year or less:	38%	41%	52%
-one to two years:	31%	32%	25%
-two to three years:	17%	17%	12%
-three or more years:	14%	10%	10%

Classification of Persistence and Retention Research

At least 35% and probably more than 40% of the students
who begin college never complete the baccalaureate degree.
Understanding why some students persist in college and
others withdraw can be of benefit to both the college or

university and to students who are potential withdrawers.
While extensive study on the topics of persistence,
attrition, and retention has been done, much of the research
is of limited use because of significant flaws in design or
methodology. As stated in Chapter One, Knoell (1960) and
Marsh (1966) have classified persistence research into six
categories: the census study, the autopsy study, the case
study, the prediction study, the descriptive study and the
philosophical/theoretical study. If one examines the
definitions of these categories, two types of research are
identified: needs assessment (census study) and
institutional research (autopsy study, case study,
prediction study, descriptive study). The final category is
composed of position papers and philosophical statements.
While needs assessment and institutional research are
legitimate and useful, the absence of theoretical research
(the analytical/ explanatory research identified by Spady)
is noteworthy. The lack of theoretical models decried by
Knoell (1960), Spady (1970) and Pantages and Creedon (1978)
has been answered by two distinct theoretical models.

Starr, Betz, and Menne (1972) and Bean (1981) advanced
the theory of turnover in work organizations from industrial
psychology as useful in understanding persistence. In this
theory, if students are to persist in college, they must be
performing satisfactorily (satisfactoriness) and the college

must be meeting the needs of the student (satisfaction).
Both studies found the work turnover model useful in
examining persistence. However, the turnover model does not
appear to take the students' previous achievements and non-
intellective characteristics at the time of matriculation
into account.

Spady (1970) advanced a theory of persistence in
college based on Durkheim's theory of suicide. The theory
proposed by Spady was modified by Tinto (1975). The
importance of integration into the academic value system and
the social system is explicated in both Spady's and Tinto's
models. However, Tinto's model allowed the student's goal
commitment (academic integration) and institutional
commitment (social integration) to affect the dropout
decision independently. Integration into the academic value
system indicates that the student has assimilated the
academic values (e.g., satisfactory grade performance,
academic honesty) necessary for success in college.
Integration into the social system indicates that the
student has developed relationships which make the
university a hospitable place to be. Tinto's model also
identifies a number of pre-enrollment characteristics which
indirectly influence the dropout decision (see Figure 1).
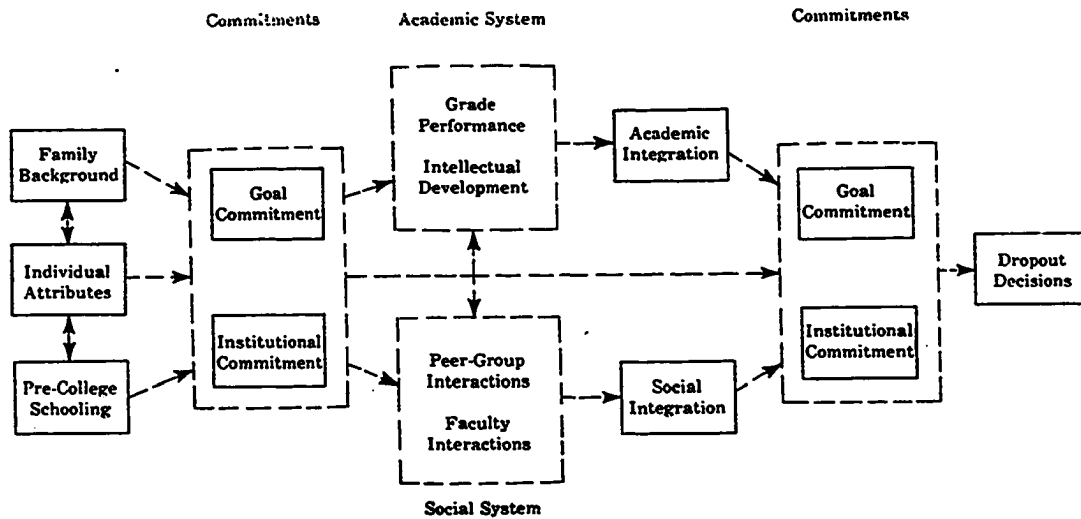
FIGURE 1. A Conceptual Schema for Dropout from College (Tinto, 1975, p. 95)

Studies Using Spady-Tinto Theory of Persistence

Spady (1971) tested his model in a longitudinal study of the 1965 freshman class at the University of Chicago. He found that men and women differed in the variance of first year dropout explained by institutional commitment and grade performance. He stated that institutional commitment explained 12% of the variance in the dropout pattern of women but only 2.5% of the variance for men. Conversely, grade performance explained 5.9% of the variance in the dropout process for men but only 1.3% for women. Long term persistence, i.e., graduation, for men was directly linked to early academic performance, followed by cosmopolitanism and social integration. For women, institutional commitment

appeared to lose its potency over time while grade performance and family relationships gained strength in explaining the persistence phenomenon. Spady did state that the attrition process for women appeared to be more complex than that for men.

Terenzini and Pascarella (1980) have completed six studies using Tinto's model. The studies were done with freshmen entering Syracuse University fall semesters 1974, 1975 and 1976. They found several patterns across the six studies. There was not a statistically reliable difference between persisters and withdrawers on student characteristics evident prior to matriculation. However, Terenzini and Pascarella's measures of the concepts of goal commitment and institutional commitment were statistically significant in explaining persistence and withdrawal. The variables used to define academic integration and social integration were primarily the number of faculty contacts for six different purposes. They state "The most striking pattern is the consistent relative importance of students' informal contacts with faculty members outside the classroom. ...(the) frequency of informal student-faculty interaction was either the most, or second most, important single variable" (1980, p. 277). The most important type of faculty contact was contact which involved discussion of intellectual and course-related matters.

Tinto's model was again validated in a multi-institutional study by Pascarella and Chapman (1983). The study included a sample of 2326 freshman from 11 2-year and 4-year post-secondary institutions during the 1978-1979 and 1979-1980 academic year and examined their persistence from the freshman to the sophomore year. The data were collected using the Student Involvement Questionnaire. The variables included student background characteristics and institutional characteristics. Academic integration was measured using a nine item scale which included "first semester freshman grade-point average," "expected grade-point average for the second semester," "hours spent studying per week," "number of assigned books read for pleasure," "number of cultural events attended," "informal contact with faculty - academic topics," "peer conversations - academic topics," "participation in honors programs or accelerated classes," and "participation in career development programs" (p. 91). Social integration was measured using an eight item scale which included "average number of weekends spent on campus each month," "participation in organized student extracurricular activities," "participation in informal social activities," "number of best friends on campus," "Is there a person on campus you date regularly?," "Do you spend time with college friends on vacation?," "peer conversations: social/personal

topics," and "informal contact with faculty: social/personal topics" (pp. 91-92).

The conclusions reached by this study are that although "...the variables operationalizing Tinto's model explained a relatively small proportion of the variance in voluntary freshman year persistence/ withdrawal decisions," they "...yielded a reduced path model which in many ways was consistent with Tinto's theoretical expectations" (p. 99). The authors concluded that Tinto's model is potentially quite useful in understanding the persistence and dropout phenomena in higher education.

Selection of Variables Used in Defining Goal Commitment and Institutional Commitment

While much of the previous research on persistence is of limited value, there are a number of variables which have repeatedly been correlated with persistence in or dropping out of college. An examination of the literature was helpful in identifying variables that correlated with persistence in or withdrawal from college and which could be used to measure success orientation, accuracy of self-perception, and student fit with the environment.

Variables Used in Defining Success Orientation

In this study, success orientation was defined as the confidence students had about their success in college. This confidence was evidenced in students' goals, assessment of preparation, and criteria for selection of the university. Several studies have found a relationship between students' goals and persistence. In the 1972 academic year at the University of Miami, Steele (1978) identified areas of university life which correlated with retention. He found that the students' perception of progress toward academic and career goals was positively related to persistence. While using a cohort survival model, Newlon and Gaither (1980) concluded that major and school selection make a significant difference over time with respect to persistence. This retention factor was greatest for those associated with vocational and professional programs and least for students in the arts and humanities. Barger and Hall (1965) and Demitroff (1974) found that lack of clarity about academic and vocational goals were related to the dropout decision.

Using the College Instrument of Academic Adjustment, Gelso and Rowell (1967) found that persisters had significantly higher scores on Curricular Adjustment, Maturity of Goals, Personal Efficiency, and Personal Relations. Bayer (1968) concluded that while ability was an

important determinant of college progress, other variables noted to have a relatively marked relation to attrition and rate of progress were types of interests, maturity and degree of college commitment.

A relationship between peristence and study skills also showed up in retention studies (Chase, 1968; Demitroff, 1974). It appeared that students who did not persist indicate that they anticipated having problems in college because of study skills or were less certain that they had good study habits. They also indicated they were less motivated to study.

It can be seen that low commitment to academic and vocational goals, self-assessment of poor study skills and habits, and institutional factors have in the past been related to dropout.

Variables Used in Defining Accuracy of Self-Perception

Very little research appears to have been done in relating students' self-perception to persistence in college. Maxey and Ormsby (1972) found that high school grades were generally accurately reported by students. This suggests that self-reported information can be used confidently in predicting college achievement. It was assumed for this study that examining the relationship between measures of ability and students' assessment of their ability could provide useful insight into the

phenomenon of persistence in college.

The only study which appeared to have examined the relationship between the accuracy of the student's self-perception and persistence was done by Hackman and Dysinger (1970). This study found that the commitment students have to the goal of obtaining a college education was a considerable force in assuring continuing enrollment in college. They found that the degree of commitment a student had to obtaining a college education was significantly related to whether or not the student persisted in college beyond the freshman year. They concluded that persisters were academically talented and committed; that students with academic competence but low commitment tended to withdraw and transfer or re-enroll; that students with poor academic qualifications and high commitment tended to persist until they were academically dismissed; and that students with low commitment and poor academic qualifications tended to withdraw. They commented that there was a need to take into account congruence between the needs and goals of the student and the demands and resources of the college environment.

Variables Used in Defining Student Fit

There are a number of findings that give credence to the concept of institutional commitment. Astin (1970) made the case that in order to study the phenomena of college

enrollment, researchers traditionally examined the student inputs and student outputs without taking into account the impact of the college environment. Astin made a strong case for the consideration of using more than student input and student output variables. First year college students were in a social situation with no history; it was necessary for them to redefine themselves both academically and socially (Lokitz and Sprandel, 1976). Several authors state that it was important to evaluate the fit between the student and the institution (e.g., Starr et al., 1972; Chickering, 1974); it was the fit between student and a specific institution that determined staying or leaving, not how the student compared to the general population.

Student input variables that have been frequently studied without examining their interaction with environmental variables are the psychological characteristics of persisters. While the results are not always consistent, there are some characteristics that frequently differentiated between persisters and dropouts. Common descriptive phrases associated with the personality characteristics of dropouts are: difficulty getting along with peers, less conforming or more individualistic, and hostile to authority (Brown, 1960; Faunce, 1968; Rose, 1965). These characteristics made it less likely that the student would be integrated into the social system of the

institution.

Several specific variables which examine the interaction between student input variables and the environmental variables have been studied and found to have a relationship to persistence. Students who lived in residence halls or fraternities and sororities had the best persistence records and, conversely, students who commuted or lived in rooming houses were more likely to drop out (e.g., Alfert, 1966; Astin, 1977; Iffert, 1957; Pantages and Creedon, 1978). The relationship between living in Greek houses or residence halls and persistence in college was positive and was consistently demonstrated in the literature. Although the literature is clear about the relationship, no explanation of causality is proposed. However, Spady's model provided a framework in which to interpret this finding; students residing in organized group living situations had more opportunities for becoming acquainted with peers.

While there is a common myth that overparticipation in campus activities frequently leads to dropping out of college, the literature did not support this notion (Iffert, 1957; Summerskill, 1962). Sexton (1965) concluded that unsuccessful students, particularly those who withdrew, participated less in campus activities. Conversely, students who persisted were reported to have participated in

more activities (Astin, 1977; Sexton, 1965; Tinto, 1975).

Chase (1968) stated that evidence of participation in activities is present before the student enrolls in college. In his study of freshmen at Indiana University, he found that students who persisted in college were more likely to have participated in extracurricular activities in high school (Chase, 1968; Spady, 1970). The research demonstrated a positive relationship between participation in campus activities and persistence in college.

There is also considerable evidence that integration into the social system within the academic field is important. Astin (1965) said that when a student's vocational goal is coupled with an institution which enrolls students with a similar orientation the student tends to persist. Steele (1978) reported that there were several variables which correlated with retention. He concluded that the quality of faculty, their availability for consultation, and the opportunity for involvement with faculty outside the classroom all related positively to students persisting.

The concept of student fit with the environment has not been extensively tested as a construct; however, many of the operational variables used to define this construct were found to relate to persistence in college. By testing these variables in this study as part of the construct, student

fit with the environment, it was assumed that the nature of the relationship with persistence would be more clearly defined.

Conclusions

One of the major criticisms of retention research is that most of the studies are descriptive and provide little insight into the causes of dropping out. However, many of the descriptive variables were used in this study to define the constructs of goal commitment and institutional commitment. It was assumed that if the descriptive variables from previous research proved useful in this study as operational variables, a step would be taken toward understanding their relationship with the phenomenon of persistence in college.

CHAPTER III: METHODOLOGY

This study examined the persistence of direct-from-high-school students from the first to the second year of college. Since the influence of intellective measures had been adequately documented in previous studies (e.g., Chase, 1968; Demitroff, 1974; Pantages and Creedon, 1978; Rossmann and Kirk, 1970; Summerskill, 1962; Waller, 1964), this study examined the beliefs, attitudes, and behaviors of students at the time of entrance into the university to determine if non-intellective characteristics at the time of entrance provide additional information about persistence. The influence of non-intellective characteristics was examined within the framework of the model proposed by Spady and modified by Tinto. The etiology of persistence using the concepts of institutional commitment and goal commitment is derived from Durkheim's etiology of suicide. Students must have demonstrated goal commitment, thus, being adequately regulated by the institution's values and goals and must have demonstrated institutional commitment, thus, being integrated into the social system of the institution in order to meet the conditions for satisfactory persistence. In this study, the concept of goal commitment was defined by the constructs of success orientation and of accuracy of self-perception; the concept of institutional commitment was defined by the construct of student fit with the

environment.

Because this study used many variables related to performance and involvement in high school, only direct-from-high-school freshmen were used. For this study the definition of direct-from-high-school included only students who graduated from high school in 1981 and who had no college experience. It is assumed that the high school performance and involvement variables used become less reliable in predicting student behavior the longer it has been since students were in high school.

Since 50% of the students who leave an institution leave before the beginning of the second year, it was also decided that persistence would be studied from the first to the second year. High school experiences have the most direct influence during the first year, while the university environment has more influence on persistence the longer students are enrolled.

Subjects

The Iowa State University Committee on the Use of Human Subjects in Research reviewed this study and concluded that the rights and welfare of the students were adequately protected, that the risks were outweighed by the potential benefits and expected value of the knowledge sought, and that confidentiality of data was assured.

The subjects for this study were 3014 direct-from-high-school freshmen who enrolled at Iowa State University in the fall of 1981. There were 4107 new direct-from-high-school students enrolled for courses at Iowa State in fall semester 1981 (Note 4). The difference between the actual number of enrolled students (N=4107) and the number of students in this study (N=3014) was attributed to the fact that international students and adult students were eliminated from the study, as were students who failed to send the ACT Student Profile Report to Iowa State, students who submitted Scholastic Aptitude Test scores instead of ACT scores, students whose ACT scores were submitted only on their high school transcripts, and students who submitted no test scores.

As pointed out in Chapter One, previous research efforts have been criticized for using faulty definitions when identifying subgroups within the population. In order to accomodate these criticisms, the following procedures were used. First, a distinction was made between dropouts and stopouts. Students who failed to enroll for spring semester, 1982 and who subsequently reenrolled for the fall semester, 1982 (i.e., stopouts) were excluded from this study. Second, a distinction was made between voluntary dropouts and those who were dropped involuntarily for disciplinary or academic reasons. Students who were

involuntarily dropped were not by definition eliminated from this study. In fact, however, there were no students who were dropped for disciplinary reasons in the 1981 freshman class. Furthermore, it was not possible to determine how many of the students who were dropped for academic reasons were included in the study.

With regard to the academic drops, the ISU Information Handbook states the following policy for academic dismissal:

> Students admitted in good academic standing will
> typically not be placed on temporary enrollment
> until they have completed two semesters at Iowa
> State University. However, students who obtain
> less than a 1.00 grade-point average their first
> semester at Iowa State University will be placed
> on temporary enrollment for their second term
> (Note 5, p. 44).

Thus, students who had less than a 1.00 grade point average for fall semester 1981 and who then did not achieve a 1.67 cumulative grade point average by the end of summer session 1982 were eligible to be academically dropped. University records show that only 164 students who were classified as freshmen were not allowed to re-enroll.

To verify that the subjects in this study had the same characteristics as the freshman class that entered Iowa State in fall, 1981, comparisons were made of three traditional measures of academic achievement, high school rank, ACT composite score and fall grade point average, as reported by the Admissions and Records Office (A&R; Note 4) and the Student Affairs Research Office (SARO; Note 6).

TABLE 3. High School Rank and ACT Composite Score by Source

SOURCE	ACTC			HSR		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Healy	23.51	4.48	3012	22.77	17.44	3012
A&R	23.42	NA	3758	23.86	NA	4092
SARO*	23.89	4.27	3077	22.54	17.49	3588

*These statistics are computed using students who completed twelve or more credits during fall, 1981.

As shown in Table 3, the difference, between the mean high school rank reported in this study and that reported by the Student Affairs Research Office is not statistically significant, $t(6598)$ = .53, p > .05. On the other hand, there is a statistically significant difference between the ACT composite average reported in this study and that reported by the Student Affairs Research Office, $t(6087)$ = -3.30, p ≤ .01. It should be noted that, while the difference is statistically significant, the actual difference between the two means scores is less than half a point. Furthermore, the Student Affairs Research Office study included only students completing 12 credits during fall semester. With regard to ACT subtests, Table 4 shows

that the mean scores on the subtests reported by the Student
Affairs Research Office were higher than those in this
study; however, the largest discrepancy (math) was only one
half point.

TABLE 4. ACT Subscore Statistics by Source

SOURCE	ACT SUBTESTS			
	English	Math	Social Studies	Natural Science
Healy	21.10	23.94	22.36	26.13
SARO	21.44	24.44	22.76	26.40

The fall, 1981 grade point average reported by
Admissions and Records (Note 4, p. 89) compared with the
students in this study showed a slight difference; however,
the data used in this study had all the grade changes posted
(see Table 5). A statistical test to determine if the
differences were statistically significant was not done
because the Admissions and Records data do not include
standard deviations.

Since the ACT composite and high school rank appeared
to be similar to those reported by both the Admissions and

TABLE 5.   Grade Point Average Means by Term and Source

SOURCE   TERM GRADE POINT AVERAGE

                     Fall   Spring

Healy   2.458   2.486

A&R   2.345   2.437

Records Office and the Student Affairs Research Office, and

since the term grade point average was similar to that

reported by Admissions and Records, it was concluded that,

in terms of academic achievement indicators, the group

characteristics of the subjects in this study were similar

to the fall, 1981 entering class.

In Table 6, the distribution of students by gender in

this study is compared to that of students classified as

freshmen according to the Admissions and Records Office

(Note 4, p. 77); there was a slight but statistically non-

significant discrepancy in the male/female proportions,

$\chi^2(1)$ = .55.

In Table 7 the college of enrollment for the students

in this study is compared to the September admissions

report; the proportion of students enrolled in the

undergraduate colleges varied between the Admissions and

TABLE 6. Enrollment Statistics by Gender and Source

SOURCE	GENDER				Total Students
	Male		Female		
	N	%	N	%	
Healy	1798	59.7	1216	40.3	3014
A&R	3923	60.5	2563	39.5	6486*

*This number includes all new students and returning
students who have earned less than 30 credits and are
classified as freshmen.

Records statistics and this study. In comparison with the

Admissions and Records statistics, the college enrollment

statistics of this study reflected a slight

overrepresentation of students from the College of

Agriculture (2%) and a slight underrepresentation of

students from the College of Engineering (2%); however, the

chi square was not statistically significant,

$\chi^2(5) = 10.71$, $p > .05$ (see Table 7).

As shown in Table 8, substantially more students in

this study resided in residence halls and fraternities and

sororities compared to total university statistics (Note 4,

p. 86). This difference in residence was expected. More

TABLE 7. Enrollment Statistics by College and Source

| COLLEGE | Statistics | SOURCE | |
		Healy	A&R
Agriculture	N	430	496
	%	14.3	12.1
Design	N	274	397
	%	9.1	9.7
Education	N	102	132
	%	3.4	3.2
Engineering	N	777	1136
	%	25.8	27.7
Home Economics	N	163	199
	%	5.4	4.8
Sciences & Humanities	N	1268	1747
	%	42.1	42.5
TOTAL		3014	4107

freshmen live in organized group housing than do upperclass or graduate students.

In conclusion, while the characteristics of the subjects of this study did not exactly replicate those of the entering class of 1981, the discrepancies appeared to be non-significant in every case except ACT composite. The difference in ACT scores was minor in value, especially when

TABLE 8.   Enrollment Statistics by Residence and Source

RESIDENCE	SOURCE			
	Healy		A&R	
	N	%	N	%
Fraternity/Sorority	518	17.2	2321	9.6
Residence Hall	2105	69.8	9524	39.3
Local Commuter	202	6.7	8955	37.0
Out-of-town Commuter	174	5.8	1111	4.6
No Information	14	0.5	2291	9.5
TOTAL	3014	100.0	24202	100.0

considering that the Student Affairs Research Office sample included only students who completed twelve credit hours in their first term. The students in this study, as a group, possessed the same demographic characteristics as the entering class of 1981.

Classification of Subjects

In order to test the major hypotheses of this study, subjects were classified as belonging to one of four groups based on their cumulative grade point average and enrollment

status. As explained in Chapter One, students who had a grade point average of 2.00 or better were classified as satisfactory; students whose grade point averages were lower than 2.00 were classified as unsatisfactory. Students who were enrolled fall 1981, spring and fall 1982 were classified as persisters; students not enrolled fall 1982 were classified as withdrawers.

As shown in Table 9, these four groups were different from each other on the intellective measures known to relate to persistence and academic success, i.e., high school rank and ACT composite score. However, these differences do not explain all the variation in persistence behaviors. In a 1982 study of the persistence rates of Iowa State University students (Note 3), it was reported that as ACT composite score and high school rank decreased, the number of students who withdrew increased; however, not all of the high ability students graduated nor did all of the low ability students withdraw. To be specific, in the 1975-76 freshman class, 30% of the high ability students (ACT composite scores above 26) did not receive the degree whereas 46% of the low ability students (ACT composite scores below 20) did. Similarly, 26% of the students who were in the top 10% of their high school class did not receive the degree, but 36% of the students who were in the bottom 60% of their high school class acutally did graduate.

TABLE 9. High School Rank and ACT Composite Score by
          Persistence Group

GROUP	ACTC			HSR		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
satisfactory persisters	24.55	4.09	1976	18.06	15.20	1976
unsatisfactory persisters	21.72	4.28	527	33.53	16.66	527
satisfactory withdrawers	22.78	4.43	254	22.07	15.69	254
unsatisfactory withdrawers	19.94	4.69	255	37.79	18.68	255

Thus, while the students with high ACT composite scores
and high school ranks are more likely to graduate, about 30%
of Iowa State's highest ability students do not persist to
graduation at Iowa State. Conversely, 40% of the lowest
ability students who enroll at Iowa State receive the
degree. While intellective measures provide insight into
who will persist and who will withdraw, they do not reveal
the entire story. When explaining persistence with
intellective measures, some questions remain unanswered:
Why do 30% of the academically most able students fail to
graduate? Why do 40% of the academically least talented

students graduate? The current study was designed to provide additional insight into the persistence phenomenon by examining the role of non-intellective characteristics.

Instruments

In designing this study, the author realized there was a wealth of information collected on Iowa State University students prior to enrollment. Assuming that students were, before matriculation, displaying characteristics that made it likely that they would persist in or withdraw from college, it seemed logical that an examination of these data might be useful in identifying students who would withdraw. The institution could then make interventions which could make it more likely a student would persist. The constructs of success orientation, accuracy of self-perception, and student fit with the environment were operationalized using variables from the ACT Student Profile Report and data entered as a part of the student's permanent record.

The Student Profile Report was selected because it is the best single source of pre-enrollment characteristics available for most students; the students complete the Profile as a part of the ACT testing. This questionnaire asks 192 questions about the student's family background, high school experience, and college plans. The variables listed in Table 10 were selected from the Profile to be used

in this study.

The Student Profile Report was matched to files from the Student Information File maintained by the Registrar's Office. The files used from the Student Information File included a master record for each student identifying the student's high school rank; fall 1981 curriculum and college; fall 1982 curriculum and college if the student returned in fall 1982; residence and identification if the student belonged to a fraternity or sorority. In addition, summary records for each term of enrollment (fall, 1981, spring, 1982, and summer, 1982) included term credit hours, term quality points, term grade point average, total credit hours, total quality points, and cumulative grade point average.

Procedures

Data Collection

The ACT Student Profile Report and the Student Information File are managed by and physically housed in the Administrative Data Processing Center at Iowa State University. The initial data sets were prepared by Administrative Data Processing and included over 41,000 ACT Student Profile Reports sent to Iowa State for Fall 1981 admissions, and from five to twenty records for each of the 4107 students who enrolled as undergraduate freshmen for the

TABLE 10. Variables Used in the Study

Sex

Year in school
Date of Birth
HS average
Year of HS
   graduation
English subscore
Mathematics subscore
Social Studies subscore
Natural Sciences subscore
Composite score
Whether ISU is first,
   second, or third choice
   college
Plans for housing

Major
Occupation
Occupation--first and
   second choice
Certainty about major

Certainty about
   occupation
Highest level of
   education anticipated
Expected freshman grade
   point average
Needs help in:
--educational and
   vocational plans
--writing
--reading
--study skills
--personal counseling
An interest in:
--independent study
--freshman honors
--foriegn study
--advanced placement in:
   -English
   -Mathematics
   -Social Studies
   -Natural Sciences

College plans to be
involved in:
--instrumental music
--vocal music
--student government
--publications
--debate
--departmental clubs
--theatre
--religious organizations
--ethnic organizations
--intramural athletics
--varsity athletics
--political organizations
--radio
--social (greek)
organizations
--special interest groups
--service organizations
Plan to apply for
      financial aid
Plans to work weekly
hours of work
Reasons for selecting
      a college:
--type
--sex
--location
--cost
--size
--major
High school
      involvement in:
--instrumental music
--vocal music
--student government
--publications
--debate
departmental clubs
--theatre
--religious organizations
ethnic organizations
intramural organizations
varsity athletics
--political organizations

Table 10. (continued)

     -French   --radio
     -Spanish   --social (greek)
     -German   organizations
     -Other foriegn   --special interest groups
      language   --service organizations
--Credit by
  examination in: Evaluation of high
    -English   school experience
    -Mathematics   High School
    -Social Studies   achievements in:
    -Natural Sciences   --leadership
                    --music
Local norms: --speech
--ACT English   --art
--ACT Mathematics   --writing
--ACT Social Studies   --science
--ACT Natural Sciences --athletics
--ACT Composite   --community service
                    --work experience
----

first time in the fall of 1981. These two data sets were sorted and matched using utility sort and matchup programs available through the Iowa State University Computation Center. The final clean-up and merging of the data sets was done with a custom program provided by the staff of the Iowa State Computation Center.

Measurement of the Constructs

Once the constructs were defined, variables were selected from the Student Profile Report to operationalize success orientation, accuracy of self-perception, and student fit with the environment. It was decided to make

each construct a linear combination of variables, giving
most variables equal weight. A few variables were not
dichotomous; these variables were assigned values as
explained in the following sections.

Goal commitment   It was assumed that the concept of
goal commitment would assess how confident the students are
about succeeding at Iowa State and how clearly the students
understand their academic strengths and weaknesses. The
concept of goal commitment, derived from Spady's and Tinto's
model of persistence, was measured by two constructs. These
two constructs were success orientation and accuracy of
self-perception.

Success orientation   In defining the construct
of success orientation, three sets of operational variables,
shown in Table 11, were used: academic preparation
variables, criteria for selection of Iowa State variables,
and variables related to commitment to academic goals.

The academic preparation variables used were not a
quantitative measure of demonstrated ability; rather, they
were the students' assessment of their abilities. As shown
in Table 11, students were asked if they were interested in
advanced placement or credit by examination; in this study
all yes responses received a value of one. If students were
interested in freshman honors courses or independent study,
their responses were assigned a value of one. Students also

TABLE 11. Variables Used to Define Success Orientation

ACADEMIC PREPARATION

Interest in:
   Advanced placement in:
      -English(0,1)
      -Mathematics(0,1)
      -Social Studies(0,1)
      -Natural Sciences(0,1)
      -French(0,1)
      -German(0,1)
      -Spanish(0,1)
      -Other language(0,1)

   Credit by examination for:
      -English(0,1)
      -Mathematics(0,1)
      -Social Studies(0,1)
      -Natural Sciences(0,1)

   Freshman honors courses(0,1)
   Independent study(0,1)

   Needs help in:
      -Educational and vocational plans(0,1)
      -Writing(0,1)
      -Reading(0,1)
      -Study skills(0,1)
      -Mathematics(0,1)
      -Personal counseling(0,1)

   Adequacy of High School Education(1 - 5)

CRITERIA

   Choice--ISU first(0,1)
   Major as first or second reason to
      select ISU(2 to 0)

COMMITMENT

   Certainty about major(3 to 1)
   Certainty about occupation(3 to 1)
   Anticipated level of education(2 to 0)
----

indicated whether they needed help in writing, reading, mathematics, study skills, educational or vocational plans, and personal counseling; in this study, each no response was assigned a value of one. Finally, the students were asked to evaluate the adequacy of their high school preparation; for the purpose of this study, when constructing the success orientation measure, a response of "excellent" was given a value of five, "good" a value of four, "average" a value of three, "below average" a value of two and "very inadequate" a value of one. An assumption was made that each of these variables was an evaluation of how confident the students felt about the adequacy of their high school preparation for college level work. The students could accumulate from one to 25 points on the academic preparation variables used in defining the success orientation construct.

The second set of operational variables used in defining success orientation consisted of the criteria students used for selection of Iowa State. The first variable was whether the students were attending their first choice college; if yes they were assigned a value of one. The second variable examined was the reason for selecting Iowa State; if field of study was their first reason then they were assigned a value of two, if it was their second reason, a one was assigned. A maximum of three points were assigned with the operational variables of criteria for

selection.

The third set of operational variables used to define
the success orientation construct were commitment variables.
Students were asked what their educational plans were.
Those who indicated they intended to pursue a vocational-
technical degree or a two year college degree were assigned
a value of zero. Those who aspired to the bachelor's degree
were assigned a one. Those who aspired to a graduate or
professional degree were assigned a two. Students were also
asked how certain they were of their field of study and of
their occupational choice. Those who indicated they were
very sure were assigned a value of three; those who were
fairly sure a two; those who were not sure a one. The
commitment variables had a minimum value of two and a
maximum value of eight.

In measuring the construct of success orientation,
students were assigned a score ranging from three to 36. It
was hypothesized that these variables would measure a
portion of students' goal commitment.

Accuracy of self-perception   The other
construct which assisted in measuring goal commitment was
accuracy of self-perception. In order to succeed in
college, it was assumed that students must accurately assess
their academic strengths and weaknesses. The operational
variables used to define accuracy of self-perception, shown

.

in Table 12, reflected the accuracy of the students'

assessment of their skills and their goals.

TABLE 12.   Variables Used to Define Accuracy of Self-
            Perception

SKILL PERCEPTION

Advanced placement in: ACT local norms on:
English(0 to 2)   vs.   English subscore
mathematics(0 to 2)   vs.   mathematics subscore
social studies(0 to 2)   vs.   social studies subscore
natural science(0 to 2)   vs.   natural science subscore

Credit by examination in:
English(0 to 2)   vs.   English subscore
mathematics(0 to 2)   vs.   mathematics subscore
social studies(0 to 2)   vs.   social studies subscore
natural science(0 to 2)   vs.   natural science subscore

Need help with:
writing(0 to 2)   vs.   English subscore
mathematics(0 to 2)   vs.   mathematics subscore
reading(0 to 2)   vs.   composite score

Interest in:
honors(0 to 2)   vs.   composite score or HSR
study skills(0 to 2)   vs.   HSR

Freshman expected gpa(1 to 5) vs.   fall semester gpa

GOAL PERCEPTION

expected level of
   education(0,2 to 4)   vs.   fall semester gpa

In this study, the accuracy of perception was measured

by comparing performance on tests and in high school against

the student's assessment of ability. Both high ability

students and low ability students who defined their

abilities in the same way as performance measures assessed

them were considered "accurate" and assigned a value of two.

High ability students who "underestimated" their abilities

were "inaccurate," and assigned a value of one. Low ability

students who "overestimated" their abilities were

"inaccurate" and were assigned a value of zero. In this

study, it was considered more dangerous to overestimate

one's abilities than to underestimate them. Students

assigned "ones" were inaccurate in their assessment in that

they appeared to be underestimating their academic skills;

however, there are many reasons, besides inaccurate

perceptions, why students may elect not to take advanced

placement courses or attempt to test out of courses. For

example, students who are interested in attending

professional or graduate school may choose to review

material previously learned to assure that they adequately

understand the material. Thus, high ability students who

appeared to underestimate their ability were given the

benefit of the doubt in this study when values were assigned

about the decisions they were making.

The procedure for assigning values to each variable

used to measure the students' perception of skills was to

determine the relationship between self-reported interests

and performance on tests and in school. Using a hit-miss table, students were classified according to the interest in a subject (yes, no) and to the performance on ACT tests (above or below a local norm). Since accuracy of self-perception was intended to measure the students' perception of their academic strengths and weaknesses, variables were created which assessed the students' skills in areas needed to complete an academic program: reading, writing, English, mathematics, social studies, natural science, and study skills. In addition, the accuracy of the students' perceptions about their overall academic skills in comparison with other students were measured in three ways: interest in honors, expected grade point average, and expected level of education. Each of these variables from the ACT Student Profile Report is a self-reported assessment of skills. The student's assessment was then matched against his or her performance on ACT subtests or other achievement variables.

The students whose ACT subtest score in English, mathematics, social studies, or natural science was above the 75th percentile and who requested advanced placement or credit by examination in that subject area, were assigned a value of two. Other students who performed at the same level but did not indicate an interest in advanced placement or credit by examination were assigned a value of one.

Students at the 75th percentile and below, who were not interested in advanced placement or credit by examination, were assigned a two. Students at the 75th percentile and below, who requested advanced placement or credit by examination were assigned a zero. In this study, students assigned twos were accurate in their assessment of their academic skills, students assigned ones and zeroes were inaccurate. Students could receive a maximum of sixteen points by accurately assessing their need for advanced placement or credit by examination in English, mathematics, social studies and natural sciences.

If students' score on the English and Mathematics subtests were below the 30th percentile and they indicated that they needed help in writing and mathematics respectively, students were considered "accurate" and received a value of two. If students were below the 30th percentile and indicated no need for help with writing and mathematics, they were considered "inaccurate" and were assigned a value of zero. The students at or above the 30th percentile who indicated no need for help were assigned a value of two; those who indicated a need for help were assigned a value of one. Students whose ACT composite score was below the 30th percentile and who indicated they needed help in reading, were assigned a value of two; those who did not indicate a need for help were scored zero. Students

above the 30th percentile who did not indicate a need for help with reading were considered "accurate" and assigned a score of two; those who indicated a need for help with reading were assigned a one.

Students in the top two deciles of their high school class who did not indicate a need for help with study skills were assigned a value of two; students in the top two deciles who indicated they needed help with study skills were assigned a value of one. Students not in the top two deciles were assigned a two if they indicated they needed help with study skills, and were assigned a zero if they did not indicate they needed help with study skills.

The student's perception about overall academic skills was assessed by examining the interest-in-honors item. The students who indicated an interest in freshman honors programs and were in the top five percent of the high school class or had an ACT composite greater than 29 were "accurate" and assigned a value of two. Students in the top five percent or who had an ACT composite greater than 29 and who were not interested in freshman honors programs, were assigned a value of one. Students not in the top five percent and who had an ACT composite less than 30 and were not interested in freshman honors programs were assigned a value of two; students not in the top five percent and who had an ACT composite less than 30 and indicated an interest

in freshman honors programs, were assigned a value of zero.

Another way in which the overall academic of skills was assessed was by comparing the students' expected grade point average with the grade point average they received for the fall term, 1981. The actual grade point averages were grouped using the same categories used on the Student Profile Report; the categories were assigned a value from eight to 14. When the students' expected and actual grade point average were in the same category, the student received a five; the students for whom the difference between expected and actual category was less than one half quality point received a four; the students for whom the difference between the expected and actual category was greater than a half quality point but less than one quality point were assigned a three; the students whose expected and actual category differed by more than one quality point but less than two quality points were assigned a two; and students for whom the discrepancy between expected and actual grade point categories was more than two points were assigned a one.

Students may be assigned from one to 31 points in assessing the accuracy of perception of academic skills. The more accurate students were in assessing their skills, the higher the students' scores were.

The second area assessed was the accuracy of the

students' goals. The actual fall term grade point was
compared first to plans for a baccalaureate, and then to
plans for graduate and professional education. Any student
who did not plan to receive the bachelor's degree and all
students who received less than a 2.00 were assigned a value
of zero. Students who had a grade point average above 2.00
were assigned values from two to four depending on the
actual grade point average and their degree aspirations.
Students who planned only to receive the bachelor's degree
and had a 2.00 or better were assigned a value of two.
Students planning to attend graduate school whose grade
point average was above 3.00 received a three; those whose
grade point average was between 2.00 and 3.00 received a
two. Students planning to attend professional school whose
grade point average was 3.50 and above were assigned a value
of four; those whose grade point averages were between 3.00
and 3.50 received a three; and those whose grade point
averages were between 3.00 and 2.00 were assigned a value of
two. Students could receive a maximum score of four on the
congruence of goals section. The total score on the measure
of the construct of accuracy of self-perception (including
the variables scored with the hit-miss table, the comparison
of the expected and actual grade point average, the
comparison of the degree plans and actual grade point
average) had a minimum of one and a maximum of 35.

Institutional commitment   The concept of

institutional commitment was measured by a single construct:

student fit with the environment. It was hypothesized that

students who feel a sense of belonging within the social

system of the institution will be more likely to persist.

The three sets of operational variables, involvement,

interaction and congruence, defined the construct and are

shown in Table 13. In previous research, it was shown that

involvement in one or more of these areas had a positive

effect on persistence in college (e.g., Alfert, 1966; Astin,

1977; Iffert, 1957; Pantages and Creedon, 1978; Sexton,

1965; Spady, 1979; Summerskill, 1962; Tinto, 1975).

The underlying assumption in assigning values to the

involvement variables was that previous experience and

involvement in activities in high school means students are

likely to get involved in college. It was also assumed that

involvement is a way of developing a sense of belonging to

the institution. As shown in Table 13, the Report listed

sixteen categories in which students could have been

involved in high school; for each category to which a

student responded yes, one point was assigned. Students

also reported out-of-class accomplishments in nine areas

(see Table 13); for each area the students have been

assigned values from zero (low) to seven (high) from their

responses on the ACT Student Profile Report. These scores

TABLE 13. Variables Used to Define Student Fit with the Environment

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INVOLVEMENT

HS involvement in:

College plans for involvement in:

instrumental music(0,1)	instrumental music(0,1)
vocal music(0,1)	vocal music(0,1)
student government(0,1)	student government(0,1)
publications(0,1)	publications(0,1)
debate(0,1)	debate(0,1)
departmental clubs(0,1)	departmental clubs(0,1)
theatre(0,1)	theatre(0,1)
religious organizations(0,1)	religious organizations(0,1)
ethnic organizations(0,1)	ethnic organizations(0,1)
intramural athletics(0,1)	intramural athletics(0,1)
varsity athletics(0,1)	varsity athletics(0,1)
political organizations(0,1)	political organizations(0,1)
radio(0,1)	radio(0,1)
social (greek) organizations(0,1)	social (greek) organizations(0,1)
special interest groups(0,1)	special interest groups(0,1)
service organizations(0,1)	service organizations(0,1)

Achievement in:

leadership(0 to 7)
music(0 to 7)
speech(0 to 7)
art(0 to 7)
writing(0 to 7)
science(0 to 7)
athletics(0 to 7)
community service(0 to 7)
work experience(0 to 7)

INTERACTION   CONGRUENCE

Plans for residence(0,1)	If major is offered(0,1)
Fall 1981 residence(0,1)	Percent of same sex in major (0 to 4)
Plans to work(0,1)	
Work hours per week(0 to 5)	If others in major have same occupational goal(0,1)
College schedule(3.4 to 5.1)	

----

are intended to be a measure of out-of-class achievement.
Students could also indicate plans to be involved in sixteen
different areas in college; for each area in which a student
indicated plans to be involved, the student received one
point. Students could have received a minimum of zero
points and a maximum of 95 points from the involvement
variables.

The student's academic plans also needed to be
congruent with other students so that the student would have
something in common with his or her peers; this was measured
in two ways. First, if the student had as an intended major
a curriculum offered by Iowa State, a value of one was
assigned. Second, if the major and occupational goal were
in the same category (agriculture, architecture, natural
sciences, business, communications, computer science, social
sciences, humanities, education, engineering, fine and
applied arts, home economics, mathematics) the student was
assigned a value of one; if the major was not in the same
category as the occupational goal a value of zero was
assigned.

Although there are fewer stereotypes today about
appropriate major based on the gender of the student, it may
still be important that other students of the same gender
are also selecting the major. The enrollment in each major
by gender was determined for the students in this study. If

less than 10% of the students were of the same sex as an individual student, a value of zero was assigned to that student; if between 10% and 20% of the students were of the same gender as the student, a value of one was assigned; if the percent of students of the same gender was between 20% and 30% percent, a value of two was assigned; if between 30% and 40% of the students enrolled in a curriculum were of the same gender, a three was assigned; and if 40% or more of the students enrolled in the same curriculum were of the same gender, a four was assigned. Thus, each student was assigned a value from zero to four depending on her/his gender and fall 1981 curriculum.

The final set of operational variables assessed the opportunities for interaction with faculty and other students. If the student indicated plans to live in or actually resided in a residence hall, fraternity, or sorority, the student received one point. If the student planned to or actually did live at home or off-campus, zero points were assigned.

The opportunity for interaction with faculty, measured by the average class size a freshman would encounter, was calculated for each college, except the College of Sciences and Humanities. Because of the diversity of curricula in Sciences and Humanities (not found in Agriculture, Design, Education, Engineering and Home Economics), interaction with

faculty was measured for students who were enrolled in the Social Sciences, Natural Sciences and Humanities and who were undecided. Thus, a total of nine measures of opportunity for interaction were calculated by examining the "typical" freshman class schedule by college (Agriculture, Design, Education, Engineering and Home Economics) or by curricula within Sciences and Humanities.

An academic adviser in each college or curriculum area provided the "typical" schedule. The average class size for each class on the student schedule was identified through the Admissions and Records Office. For each class, the class size was then multiplied by its contact hours; then the resulting figures of the classes on the "typical" schedule were totalled across classes. The sum was divided by the total number of contact hours to determine the value of the average overall class schedule for each college.

The students' plans to work were taken from the Student Profile Report which asked the students to report how many hours they anticipated working while attending school. Students reported "not planning to work," "planning to work less than ten hours per week," "ten to twenty hours per week," "twenty to thirty hours per week," or "more than thirty hours per week." The minimum number of points that was assigned from the interaction variables was 3.4; the maximum number of points was 13.1.

The construct of student fit with the environment was measured by the involvement variables, the goals variables, and the interactions variables. The range of scores was from 3.4 to 114.1.

Analysis of the Data

The analysis of these constructs was done in three basic steps. First, the measures were evaluated as hypothesized to determine if there was any relationship with persistence. Second, the reliability of the measures was assessed and the measures were modified using the reliability data. Finally, the validity of the measures was assessed by examining the relationships between them and the two criterion variables: enrollment at Iowa State University and grade point average. Depending on the analysis, the grade point average variable was either continuous or categorical (2.00 and above, below 2.00). Once the reliability and validity of the constructs was determined, the model was further assessed using regression analysis.

Analysis of the Data

Reliability

In order to ascertain whether all the items in each construct measured the same characteristic, Cronbach's alpha, a measure of internal consistency, was chosen for the

reliability analysis. Cronbach's coefficient alpha is a statistic which assesses the homogeneity of the variables assigned to the construct. When a construct has high reliability (α = .7 or above), it is assumed that all of the variables are measuring the same characteristic.

The SPSS Reliability program was used for the calculation of this statistic. One desirable feature of this program is its capability of computing alpha for subsets of items remaining after each item is deleted in turn. Using this feature, one can identify variables which, if deleted, increase the reliability of the construct.

In order to increase the reliability of the constructs in this study and to make the definition of the constructs more parsimonious, this feature was used to identify variables for deletion. When selecting variables to be deleted from the constructs, the initial concern was to remove those variables, which from an empirical point of view, would provide the greatest increase in the coefficient alpha. In the later stages of reliability analysis, when the empirical guidelines were equivocal, the decision to remove or retain variables was made on the basis of whether the variable was similar or dissimilar to other variables being retained. Variables were retained if they were similar to those remaining in the construct. Subsequently, the more parsimonious and reliable constructs were validated

using two way analysis of variance and the Scheffé Multiple Range test.

Validity

The core question in the validity study was what traits did the variables really measure. There are no definitive procedures for establishing construct validity; rather, evidence is accumulated which confirms or disconfirms the hypotheses on the assumption that the operationalized constructs in fact measure the theoretical constructs.

The first hypothesis stated that success orientation would be significantly related to enrollment in college and to grade point average because students who wanted to be in college would make certain that they performed well enough to maintain enrollment. Success orientation was hypothesized to measure the confidence students had in their ability. Since much of this confidence might have come from previous academic success it was anticipated that there would be a positive relationship between intellective measures and success orientation. The hypothesis was evaluated by examining the relationships between the success orientation measure and the intellective measures, high school rank and ACT composite score. After examining the relationship with traditional academic achievement measures, the relationship between success orientation and enrollment status and categorical grade point average was examined

using two way analysis of variance and the Scheffé Multiple
Range test.

The second hypothesis was that the construct of
accuracy of self-perception would be significantly related
to grade point average because students who know their
academic strengths and weaknesses would be able to succeed
in the classroom through careful schedule planning and use
of academic support services. Accuracy of self-perception
was also hypothesized to be significantly related to
enrollment status because those students who are accurate in
their self-assessment would know what they needed to do to
graduate. The hypothesis was evaluated by examining the
relationships between the accuracy of self-perception
measure and the intellective measures, high school rank and
ACT composite score. After examining the relationship with
traditional academic achievement measures, the relationship
between accuracy of self-perception and enrollment status
and categorical grade point average was examined using two
way analysis of variance and the Scheffé Multiple Range
test.

The third hypothesis was that student fit with the
environment would be significantly related to enrollment at
Iowa State University because if students found the
university a place where they belonged, they would want to
stay. No relationship between the intellective measures

(high school rank and ACT composite score) and student fit
was hypotheized because the sense of belonging to the
university would not be influenced by the student's academic
ability. Thus, it was hypothesized that student fit would
not be related to academic achievement measures. The
hypothesis was evaluated by examining the relationships
between the student fit with the environment measure and the
intellective measures, high school rank and ACT composite
score. After examining the relationship with traditional
academic achievement measures, the relationship between
student fit wth the environment and enrollment status and
categorical grade point average was examined using two way
analysis of variance.

The fourth hypothesis stated that success orientation
would be moderately positively related to accuracy of self-
perception because both constructs were hypothesized to
measure goal commitment, each in a different way. Success
orientation was assumed to measure the confidence students
had about college and accuracy of self-perception was
assumed to measure how realistic students were about their
skills. Both constructs provided insight into how ready
students were to meet the academic requirements of the
institution; however, students had numerous opportunities in
high school to gain confidence and assessment of academic
skills. Therefore, it was anticipated that success

orientation was related to accuracy of self-perception; this relationship was evaluated using the Pearson Product Moment correlation.

The fifth hypothesis stated that goal commitment and institutional commitment were not related because goal commitment is seen as influencing assimilation into the academic system, while institutional commitment is thought to affect assimilation into the social system. A student might have been integrated into one system without being integrated into the other. Conversely, students might have been integrated in neither the academic or social system or into both systems. It was necessary that students exhibit some degree of assimilation into both the academic and the social system of the institution in order to persist. The relationship between goal commitment and institutional commitment was examined using Pearson Product Moment correlation.

Testing the Model

Through the reliability study and the validity study the variables which contribute to the explanatory power of the model were identified. After eliminating variables which did not belong to the construct (identified through the reliability analysis) and which did not add to the prediction of persistence, regression analysis was used to further assess the model.

CHAPTER IV: ANALYSIS OF THE DATA

The results of this study will be presented by stating the hypothesis tested, the reason for the hypothesis, the statistics describing the constructs as initially hypothesized, the reliability study, and the results of the validition of the constructs. The interrelationships among the constructs will be examined last.

Assessment of Construct Reliability and Validity

The constructs of success orientation and accuracy of self-perception were hypothesized to relate to grade point average and enrollment in college. Student fit with the environment was hypothesized to relate to enrollment in college. Each construct was measured using different variables or transformations of the variables.

Success Orientation

The first hypothesis was that success orientation was significantly related to grade point average and enrollment in college; i.e., the greater the student's confidence about academic success, the more likely that the student would be enrolled in college with a grade point average of 2.00 or better. It was assumed that students who are confident of doing well in college will accept the academic values of the institution because they "know" they can meet these

expectations; therefore, they will persist because graduation is one of the tenets of the academic value system. Since students typically have little accurate information about "what college is like," their attitude about how they will do was seen as playing a major role in how effectively they will become acclimated to the academic environment.

The variables initially hypothesized to measure success orientation gave the construct a possible minimum value of three and a possible maximum value of 36. The actual range of values for this measure was three to 32 with a mean of 18.82 and a standard deviation of 4.49. Within the construct of success orientation there were three hypothesized dimensions: academic preparation (includes readiness for advanced work and requests for help), criteria for selection of Iowa State and commitment to education.

The correlations of the scores of each of the hypothesized dimensions with the total score are shown in Table 14. As can be seen, the hypothesized dimension, criteria, had the lowest correlation with success orientation, r = .37. However, there was a problem with restriction of range with this dimension, since it only took on values from zero to three.

In addition to the correlations of each dimension to the construct, Table 14 also shows the correlations among

TABLE 14. Correlation Matrix for Success Orientation as
Initially Hypothesized

	Success Orientation	Commitment	Criteria	Academic Preparation
Success Orientation	0.58	0.37		0.91
Commitment			0.19	0.24
Criteria				0.13
Academic Preparation				

the dimensions. There were low correlations among the three
hypothesized dimensions ranging from .13 to .24.

After the initial analysis, the reliability of the
construct of success orientation was determined using
Cronbach's alpha to assess the internal consistency of the
items originally hypothesized to make up success
orientation. The Cronbach's alpha for the original 26
variables was .48; following the initial analysis, variables
were eliminated using empirical guidelines and judgment. Of
the original 26 variables, 12 variables were eliminated
including interest in advanced placement in French, German,
Spanish or other foreign languages, need for help in making
vocational and educational plans, need for personal

counseling, evaluation of high school preparation, whether Iowa State was first choice college, what priority major had in selecting a college, certainty about major choice and occupational goals, and the expected level of educational attainment. Although three dimensions had been hypothesized, all of the variables in the criteria and commitment dimensions were eliminated as well as some of the academic preparation variables.

The variables which remained after the reliability analysis were all initially hypothesized to be a part of the academic preparation dimension. They primarily focused on the traditional academic areas and included an interest in advanced placement and credit by examination in English, mathematics, social studies, and natural science and not needing help with reading, writing, and mathematics. The only remaining variables which did not relate to a specific academic area were the variables not-needing-help-with-study-skills and interests in independent study and honors programs. The Cronbach's alpha for the remaining 14 variables was .74.

This final linear combination for success orientation had a possible and actual range of scores of 15 with a minimum value of zero and a maximum value of 14. The mean was 6.15 and the standard deviation was 3.06. As hypothesized, success orientation scores correlated

moderately with traditional predictors of college academic success, high school rank, r = -.37, and ACT composite score, r = .42. These correlations show that success orientation is only moderately related to previous achievement variables.

When examining the main effects of grade point average as a categorical variable (above and below 2.00) and of enrollment status, there was a significant effect of grade point average, $F(1,2951)$ = 68.26, p < .001, a non-significant effect of enrollment status, $F(1,2951)$ = 2.80, p ≤ .094, and a significant interaction effect, $F(1,2951)$ = 4.64, p ≤ .03, between grade point average and enrollment status. In terms of the main effect of grade point average, one can see in Table 15 that students whose grade point averages were satisfactory have higher success orientation scores than students who are unsatisfactory. This was the result expected with this hypothesis because it was hypothesized that satisfactory persisters and withdrawers would be higher on success orientation than unsatisfactory persisters and withdrawers. Although it had been predicted that the main effect of enrollment status would be statistically significant, it was not. Thus, it appears that confidence in academic skills is related to grade point average but is not related to the student's decision to persist in college. In terms of the interaction between

grade point average and enrollment status, it was found that

satisfactory persisters had the highest scores on success

orientation followed by satisfactory withdrawers, then

unsatisfactory withdrawers. Students who were

unsatisfactory persisters had the lowest success orientation

scores as shown in Table 15.

TABLE 15. Mean Scores on Success Orientation by Groups
after the Reliability Analysis

ENROLLMENT STATUS		GRADE POINT AVERAGE		
	Statistic	gpa $\geq$ 2.00	gpa < 2.00	Total
Persist	Mean	6.50	5.27	6.24
	Std. Dev.	3.08	2.90	3.09
	N	1976	527	2503
Withdraw	Mean	5.93	5.41	5.67
	Std. Dev.	3.05	2.74	2.90
	N	254	255	509
Total	Mean	6.44	5.32	6.15
	Std. Dev.	3.08	2.85	3.06
	N	2230	782	3012

Analysis using the Scheffé Multiple Range Test showed

that satisfactory persisters were statistically

significantly different from the other three groups and

.

satisfactory withdrawers were significantly different from unsatisfactory persisters. Thus, success orientation differentiated at a statistically significant level between persisters who are successful and unsuccessful; however, it did not differentiate at a statistically significant level between successful and unsuccessful withdrawers.

This set of variables appears to measure the students' perceptions of their academic strengths and how confident the students are about those strengths. The moderate relationship between success orientation and the traditional measures of academic achievement lends credence to the assumption that confidence in academic skills may provide explanation of the variability of grade point average in freshmen not explained by the academic achievement measures. The differences between satisfactory and unsatisfactory students are expected because success orientation was hypothesized to measure confidence about academic success in college. The underlying assumption was that students who are confident about their ability to succeed academically will be more likely to succeed, as measured by grade point average. It was also assumed that students who are satisfactory withdrawers are more likely to have transferred to another college or university while students who are unsatisfactory withdrawers are more likely to be dropouts.

Accuracy of Self-Perception

The second hypothesis stated that the measure of accuracy of self-perception developed in this study was significantly related to grade point average and enrollment status. This was based on the assumption that accuracy of self-perception measured how realistically students assessed their academic skills and goals in relationship to other students attending Iowa State. The students' assessment of their skills was obtained by items indicating an interest in advanced placement, credit by examination or needing help in English, mathematics, social studies and natural science. As described in the previous chapter, the variables in accuracy of self-perception were compared to achievement scores using a hit-miss table, and the resulting decisions were combined to develop an accuracy of self-perception score. These scores had a possible minimum value of one and a possible maximum value of 35. The actual range of values for accuracy of self-perception, as it was initially defined, was four to 35 with a mean of 24.38 and a standard deviation of 4.58. Within the construct of accuracy of self-perception there were two hypothesized dimensions: skill perception and goal perception. The correlations of the hypothesized dimensions to the construct are shown in Table 16.

The hypothesized dimension, goal perception, correlated

TABLE 16. Correlation Matrix for Accuracy of Self-
Perception

	Accuracy of Self-Perception	Goal Perception	Skill Perception
Accuracy of Self-Perception		0.45	0.97
Goal Perception			0.23
Skill Perception			

only .45 with the construct; again, this may have been a problem stemming from restriction of range since goal perception was a single variable taking on values from zero to four. There is a moderate correlation between the two dimensions, r = .23. Thus, if goal perception, as originally defined, was measuring a dimension of accuracy of self-perception, it was measuring a dimension not reflected in skill perception.

Analyzing the reliability of the accuracy of self-perception measure was problematic. The Cronbach's alpha for the original 15 variables was .52. In the first reliability analysis, a subset of the initial variables had a Cronbach's alpha of .64. Using this modified measure of accuracy of self-perception, the analysis to examine the

validity of the construct showed that both the main effects of grade point average ($\underline{F}(1,2966) = 1.05$) and enrollment status ($\underline{F}(1,2966) = .35$) were non-significant. This modified measure also correlated weakly and in the wrong direction with both indicators of academic achievement: ACT composite, $\underline{r} = -.13$, and high school rank, $\underline{r} = .15$. The variables included in this measure of accuracy of self-perception included accuracy about advanced placement and credit by exam in English, mathematics, social studies, natural sciences and interest in honors.

Because of the lack of validity of the reduced construct, it was decided to change the scale for the items scored using the hit-miss table. The scale was changed from a three-point scale to a two-point scale to eliminate the point high ability students received for underestimating their ability. Thus, high ability students who said they needed help when they did not were considered inaccurate and were assigned a score of zero instead of a score of one. Both high and low ability students who were accurate received a one instead of a score of two. In effect, this change in scoring eliminated the point high ability students received when they were inaccurate, thus, eliminating the positive effect of previous academic achievement.

Using the variables measured on the two-point scale, the reliability analysis was carried out. Results showed

that although Cronbach's alpha for all 15 variables was only
.37, an alpha of .52 could be achieved by eliminating nine
variables and measuring the construct with the remaining
six: need-help-in-writing assessed against ACT English
subscore, need-help-in-mathematics assessed against ACT
mathematics subscore, need-help-with-reading against ACT
composite score, need-help-with-study-skills assessed
against high school rank, expected grade point average
assessed against actual grade point average, and educational
goals assessed against actual grade point average. While
.52 is only a moderate reliability, further analysis was
done using this subset of variables to determine if it was
more useful than the first subset had been in understanding
the differences between academically successful and
unsuccessful students and those who differ in enrollment
status.

This final linear combination for accuracy of self-
perception had a possible and an actual minimum value of one
and a possible and an actual maximum value of 13. The mean
score was 7.86 and the standard deviation was 2.39. As
predicted, there were moderate relationships with high
school rank, r = -.45, and ACT composite score, r = .46.
However, there was a strong relationship with cumulative
grade point average, r = .77. This was stronger than the
relationship between cumulative grade point average and high

school rank, r = -.54. These results should be interpreted with caution since the correlation between accuracy of self-perception and cumulative grade point average exceeds the hypothetical error-free correlation of accuracy of self-perception (.72). This final measure of accuracy of self-perception explains more of the variance of last cumulative grade point average than previous academic achievement measures and may be useful in predicting grade point average.

Analysis of accuracy of self-perception scores showed significant main effects of both grade point average, $F(1,2966)$ = 2474.93, p < .001, and enrollment status, $F(1,2966)$ = 157.31, p < .001, as well as a significant interaction effect between grade point and enrollment status, $F(1,2966)$ = 4.03, $p \le$ .045. Satisfactory students had higher accuracy of self-perception scores than did unsatisfactory students. Students who were persisters had higher accuracy of self-perception scores than did withdrawers.

Further analysis was done to determine how the groups differed using the Scheffé Multiple Range Test. As hypothesized, the final measure of accuracy of self-perception differentiated each group from the other at a statistically significant level. As shown in Table 17, satisfactory persisters were most accurate, followed by

TABLE 17. Mean Scores on Accuracy of Self-Perception by
Groups after the Reliability Analysis

ENROLLMENT STATUS	Statistic	GRADE POINT AVERAGE		
		gpa $\geq$ 2.00	gpa < 2.00	Total
Persist	Mean	8.99	5.33	8.22
	Std. Dev.	1.64	1.37	2.18
	N	1950	520	2470
Withdraw	Mean	7.78	4.46	6.10
	Std. Dev.	2.48	1.39	2.60
	N	247	253	500
Total	Mean	8.85	5.05	7.63
	Std. Dev.	1.80	1.44	2.24
	N	2197	773	2970

satisfactory withdrawers, unsatisfactory persisters and least accurate were unsatisfactory withdrawers. The pattern among means indicates that, while enrollment status is related to accuracy of self perception, the relationship differs based on level of grade point average. Thus, while persisters are more likely to be accurate than withdrawers, this difference is greater for academically satisfactory students than for those who are unsatisfactory.

The components of the final measure of accuracy of self-perception assess academic weaknesses (need help in

writing, mathematics, reading, and study skills) and ability
to accurately predict grade point average. It appears that
if students know their academic weaknesses, they are more
likely to be academically successful in college. As
hypothesized, the less accurate the students are, the more
likely they are to achieve a grade point average below 2.00.
The lack of accuracy of self-perception also has an effect
on enrollment status; the less accurate the students are,
the less likely they will remain enrolled at Iowa State
University.

Student Fit with the Environment

The third hypothesis was that the construct of student
fit was significantly related to enrollment status because
it measured the students' likelihood of developing
relationships essential to developing a "sense of
belonging." It was assumed that this sense of belonging
develops when the student feels she or he is like other
students who attend the institution and when the student is
in settings which allows interaction with peers and faculty.
The sense of belonging makes it more likely that the
students will want to remain in the Iowa State environment.

Three dimensions were hypothesized to make up student
fit: involvement, interaction and congruence. The
involvement dimension reflected actual involvement in
extracurricular activities in high school and plans for

involvement in college activities. The interaction dimension was intended to measure whether the student would be in settings which provided opportunities to interact with other students, faculty, and staff. The settings were measured by determining the student's plans for residence and actual residential assignment, whether the student planned to work, and the average class size of the college class schedules. The dimension of congruence was intended to measure whether the students would find others like themselves at Iowa State University. Congruence was measured by assessing whether the major is offered at Iowa State, whether there are others of the same sex in the major and whether others with the same major have the same occupational goal.

The construct of student fit had a possible minimum value of 3.4 and a possible maximum value of 114.1. The actual range of values was from 10.4 to 86.9 with a mean of 44.70 and a standard deviation of 10.55. Correlations among the construct and dimensions are shown in Table 18.

While the involvement dimension showed a high correlation with student fit, the interaction and congruence dimensions had low correlations with student fit. However, the involvement dimension has a possible maximum value of 95 which is a substantial proportion of the maximum value of student fit (114.1).

TABLE 18. Correlation for Student Fit

	Student Fit	Involvement	Interaction	Congruence
Student Fit	0.98	0.27	0.03	
Involvement		0.09	-0.04	
Interaction			-0.01	
Congruence				

The initial reliability analysis of the construct yielded a coefficient alpha of .70. Results showed that elimination of the eight congruence and interaction variables would increase alpha to .75. The remaining variables (i.e., the involvement dimension variables which measured high school involvement, high school achievements and plans for college involvement) were thus internally reliable; however, further analysis using the two way analysis of variance showed that the main effect of enrollment status was non-significant, $F(1,3008)$ = .56, while the main effect of grade point average was significant, $F(1,3008)$ = 3.92, $p \leq .048$. The hypothesis predicted that there would only be a main effect of enrollment status.

Since the hypothesis was not confirmed, it was decided to combine the eight variables from the interaction and congruence dimensions that had been dropped in the reliability analysis, and to examine their reliablity and validity. These remaining eight variables included two work variables (plans to work and number of hours per week planning to work), two residence variables (housing plans and housing assignment) and four academic sector variables (average class size of the class schedule, whether the major is offered, if other students in the major had the same occupational goal, and if other students of the same sex were enrolled in the major). Results of the reliability analysis showed that Cronbach's alpha for this eight variable subset was .37. In addition, the analysis indicated that eliminating the four academic sector variables would increase the reliability to .54. In this case, the measure would include the four work and residence variables. (The reliability of the construct could have been further increased to .697 if the two residence variables had been eliminated; the usefulness of the construct when measured by only two work variables was thought to be limited.) Although the four variable measure was only moderately reliable, further analysis was done to determine if this measure was useful in understanding the difference between persisters and withdrawers. The four

variable measure of student fit with the environment had a possible and an actual minimum value of one and a maximum value of eight. As seen in Table 19, the mean was 6.19 and the standard deviation was 1.56. As hypothesized, student fit did not correlate with the ACT composite score, r = .00 and correlated weakly with high school rank, r = -.097. The weak relationship with traditional academic achievement measures was expected because it was anticipated that student fit would be related only to enrollment status and not to either previous or present academic achievement.

TABLE 19. Mean Scores on Student Fit with the Environment by Groups after the Reliability Analysis

ENROLLMENT STATUS	Statistic	GRADE POINT AVERAGE		
		gpa $\geq$ 2.00	gpa < 2.00	Total
Persist	Mean	6.37	5.95	6.28
	Std. Dev.	1.50	1.58	1.53
	N	1899	509	2408
Withdraw	Mean	5.90	5.60	5.75
	Std. Dev.	1.61	1.69	1.65
	N	249	247	496
Total	Mean	6.31	5.84	6.19
	Std. Dev.	1.52	1.62	1.56
	N	2148	756	2904

Despite this expectation, further analysis of the four variable measure of student fit resulted in a significant main effect of grade point average, $F(1,2900) = 32.68$, $p < .001$, in addition to a significant main effect of enrollment status, $F(1,2900) = 28.45$, $p < .001$. The interaction between grade point average and enrollment status was non-significant, $F(1,2900) = .58$. The main effect of grade point average revealed a relationship not hypothesized in this study and indicates a limitation of the four variable measure of student fit.

The final components of student fit with the environment are two residence and two work variables. It appears that if students plan to live in residence halls, fraternities and sororities and are able to do so and if students do not plan to work or plan to work a limited number of hours, they are more likely to develop a sense to belonging. It appears that if students have developed a sense of belonging, they are more likely to persist. As hypothesized, students with low student fit scores are less likely to continue their enrollment at Iowa State University. provided by this study.

Relationships Among the Constructs

In the fourth hypothesis it was predicted that the reduced constructs, success orientation and accuracy of

self-perception, are separate dimensions of goal commitment which are moderately positively related. As shown in Table 20, the correlation between goal commitment and accuracy of self-perception is high, r = .72, as is the correlation between goal commitment and success orientation, r = .84.

TABLE 20. Correlations Among the Constructs and
Intellective Measures

	HSR	ACT	GPA	FIT	GC	ASP	SO
High School Rank (HSR)		-0.55	-0.54	-0.10	-0.52	-0.45	-0.37
ACT Composite Score (ACT)			0.46	0.00	0.56	0.46	0.42
Cumulative Grade Point Average (GPA)				0.16	0.59	0.77	0.22
Student Fit(FIT)					0.04	0.15	-0.06
Goal Commitment (GC)						0.72	0.84
Accuracy of Self-Perception (ASP)							0.22
Success Orientation (SO)							

Table 20 also shows that there is a low correlation between accuracy of self-perception and success orientation,

r = .22. While each of the constructs makes a significant contribution to goal commitment, the shared variance between them is small; thus, each construct contributes uniquely to the definition of goal commitment.

Further analysis of goal commitment was done using the analysis of variance and the Scheffé Multiple Range Test to examine the relationship with grade point average and enrollment status. The main effects of grade point average, $F(1,2966) = 884.41$, $p < .001$, and enrollment status, $F(1,2966) = 48.87$, $p < .001$, were significant as was the interaction effect between grade point average and enrollment status, $F(1,2966) = 7.87$, $p < .01$. Thus, while satisfactory students are more likely to exhibit goal commitment than unsatisfactory students, the goal commitment score will differ based on enrollment status.

As shown in Table 21, academically successful students had higher goal commitment scores than did academically unsuccessful students. Persisters had higher goal commitment scores than did withdrawers. In addition, there was a statistically significant difference between successful persisters and withdrawers; successful persisters had the highest goal commitment scores.

The final hypothesis stated that goal commitment and institutional commitment are not related. As seen in Table 20, student fit, the four variable measure of institutional

TABLE 21. Mean Scores on Goal Commitment by Groups after
           the Reliability Analysis

ENROLLMENT STATUS	Statistic	GRADE POINT AVERAGE		
		gpa $\geq$ 2.00	gpa < 2.00	Total
Persist	Mean	15.53	10.62	14.49
	Std. Dev.	3.81	2.96	4.16
	N	1950	520	2470
Withdraw	Mean	13.79	9.92	11.83
	Std. Dev.	4.09	2.93	4.04
	N	247	253	500
Total	Mean	15.33	10.39	13.81
	Std. Dev.	3.88	2.97	4.11
	N	2197	773	2970

commitment, has a low correlation with goal commitment,

r = .04, and with its components, accuracy of self-

perception and success orientation. Thus, the fifth

hypothesis was supported.

Test of the Model

The purpose of this study was to develop reliable

measures of constructs which have validity in identifying

persisters and withdrawers who are academically successful

and unsuccessful. In developing these measures using non-

intellective characteristics, it was anticipated that they would provide explanation of persistence beyond the variance already explained by the traditional measures, high school rank and ACT composite score. Regression analysis with last cumulative grade point average as the dependent variable was used to compare the usefulness of the constructs developed in this study.

The first regression analysis examined the variance explained using the traditional achievement measures. High school rank entered first with an R = .545 which explained 30% of the variance of last cumulative grade point average. With both high school rank and ACT composite score entered, the R increased to .58, explaining 33% of the variance. This provided the benchmark against which the constructs were evaluated.

The second regression, in which only the measures developed in this study were entered, had an R equal to .775 which explained 60% of the variance. The correlation between each construct and last cumulative grade point average (Table 20), shows that accuracy of self-perception was the most powerful of the three constructs in this regression analysis.

A third regression analysis was done with the two achievement variables and the three constructs. In this analysis, accuracy of self-perception entered first,

R = .771, high school rank entered second, R = .799, student fit entered third, R = .800, and ACT composite score entered last, R = .801. Success orientation did not enter the model because it did not explain any additional variance.

Finally, an ordered regression analysis was done entering high school rank first and accuracy of self-perception second. This analysis was done to examine how the constructs improved the usefulness of high school rank in predicting cumulative grade point average. The only construct used was accuracy of self-perception because success orientation did not explain any additional variance and the construct of student fit was hypothesized to be unrelated to grade point average. As stated previously, high school rank explains 30% of the variance of last cumulative grade point average. The addition of accuracy of self-perception increased the R from .545 to .799. This increase in R increased the amount of explained variance 34%. Thus, high school rank and accuracy of self-perception together explain 64% of the variance of cumulative grade point average.

Accuracy of self-perception makes a substantial contribution to the explanation of the variance of cumulative grade point average. One concern about this measure, however, is its moderate reliability, r = .52.

If the reliability of the measure can be improved, this would be a significant measure in identifying those students who will perform satisfactorily in college.

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to develop reliable and valid measures of constructs which would be useful in explaining the phenomenon of persistence in college. These constructs were developed within the context of the theory of persistence proposed by Spady (1970) and modified by Tinto (1975). Tinto hypothesized that a student must exhibit goal commitment to achieve integration into the academic system and must exhibit institutional commitment to achieve integration into the social system. Integration into both the academic and the social systems of the university is a necessary condition for satisfactory persistence. This study hypothesized that students who have high levels of goal commitment and institutional commitment at matriculation are predisposed to persist in college. Students with low levels of goal commitment and/or institutional commitment are less likely to return for the sophomore year and/or attain a satisfactory grade point average.

Each of the original variable sets was reduced to provide a more reliable and parsimonious measure of the construct. The reduced measure of success orientation included 14 variables which focused on traditional academic skills and had a reliability of .74. This measure had moderate correlations with high school rank (r = -.37) and

ACT composite score (r = .42).

The most reliable measure of accuracy of self-perception (r = .64) contained nine variables. However, further analysis found that this measure of the construct was not valid. A revised measure, defined by six variables, had a reliability of .52. These six variables focused on academic weaknesses. This measure was moderately correlated with high school rank (r = -.45) and ACT composite score (r = .46).

The measure of student fit with the environment was initially defined using 49 variables. Forty-one of these variables were activities involvement variables. The involvement variables were reliable (r = .75) but were not valid. Therefore, the remaining eight variables were analyzed. A four variable measure of student fit, which included two residence variables and two work variables, was found to be moderately reliable (r = .54). This measure of student fit correlated weakly with high school rank (r = -.10) and did not correlate with ACT composite score (r = .00).

In this study, two constructs, success orientation and accuracy of self-perception, were used to define the concept of goal commitment. It was hypothesized that success orientation and accuracy of self-perception would be related to grade point average and enrollment status in college.

This hypothesis was partially confirmed for success
orientation: success orientation was significantly related
to grade point average but not to enrollment status. In
addition, the order of the groups was not as hypothesized;
the order of the two lowest groups was reversed. Thus,
success orientation is significantly related to grade point
average; satisfactory persisters have the highest success
orientation scores, followed by satisfactory withdrawers,
unsatisfactory withdrawers, and unsatisfactory persisters;
success orientation is moderately related to previous
academic achievement.

The hypotheses about accuracy of self-perception were
confirmed when using the revised scale. Accuracy of self-
perception was significantly related to grade point average
and enrollment status; satisfactory persisters had the
highest scores on accuracy of self-perception, followed by
satisfactory withdrawers, unsatisfactory persisters, and
unsatisfactory withdrawers; and accuracy of self-perception
was moderately related to previous academic achievement.

It was also hypothesized that institutional commitment,
defined as student fit with the environment, would be
significantly related to enrollment status and that there
would be no relationship between student fit with the
environment and previous academic achievement. While this
hypothesis was supported using a four variable measure of

student fit with the environment, the results must be interpreted with caution. Initially, the construct was defined by a subset of 41 activities involvement variables which were significantly related only to grade point average. The final four variable measure, which included two residence and two work variables, was significantly related to grade point average in addition to enrollment status.

Two hypotheses involved the relationships among the constructs. The fourth hypothesis predicted a moderate positive relationship between success orientation and accuracy of self-perception; there is a low correlation (r = .22). The fifth hypothesis postulated that there is no relationship between the two measures of goal commitment and institutional commitment. This hypothesis was supported; however, this finding should be interpreted with caution because of the limitations of the four variable measure of student fit with the environment.

Finally, regression analyses were used to determine if any of the measures explained additional variance in cumulative grade point average beyond that explained by traditional academic achievement measures. Using a forward-fit model, accuracy of self-perception entered first, high school rank second, student fit third, and ACT composite score fourth. However, student fit and ACT composite score

increased R only .002 (from .799 to .801). Using an ordered
fit model R increased from .545 for high school rank alone
to .799 when accuracy of self-perception was added.

In summary, the results of this study provide evidence
that the concepts of goal commmitment and institutional
commitment can be measured and that Tinto's model of
persistence is useful in explaining persistence in college.
Goal commitment, as measured by success orientation and
accuracy of self-perception, is related to persistence and
grade point average. Institutional commitment, as measured
by student fit with the environment, also plays a role in
explaining why students persist to the second year.
However, the analysis showed relationships with grade point
average which were not hypothesized.

Future Directions for Research

The findings of this study support Tinto's model of
persistence and provide moderately reliable and valid
measures with which to define goal commitment and
institutional commitment. However, there are several
limitations which preclude immediate application of the
findings and provide direction for future research.

Since this study examined only one society (Iowa State
University), the results of this study must be generalized
very cautiously. This study should be replicated in other

colleges and universities to determine if the results can be generalized.

The measures of success orientation, accuracy of self-perception, and student fit used in this study need additional work to improve their reliability and validity. The measure of success orientation has the best reliability; however, it would be beneficial to identify additional academic strength variables which would increase coefficient alpha and further distinguish between persisters and withdrawers. The measure of accuracy of self-perception would be enhanced if additional variables could be identified to increase its reliability. While accuracy of self-perception appears to measure the students' assessment of their academic weaknesses, this may be a reflection of the generally strong academic skills of the students in this study.

The measure of student fit with the environment appears to be quite complex. It was hypothesized that institutional commitment, as measured by student fit with the environment, would be related to enrollment status alone. One subset of variables, the activities involvement variables, was related only to grade point average while a second subset of variables, residence and work variables, was related to both enrollment status and grade point average. While the opportunity to interact with faculty and peers about

academic matters has been found to influence persistence (Pascarella and Terenzini, 1980), this study failed to measure in a substantive way any of the academic sector variables. Thus, while a work and residence measure of student fit was developed for this study which was moderately reliable and valid, student fit with the environment appears to be comprised of several dimensions. Additional research is needed to more clearly define this construct.

Only three measures were developed for this study; however, there may be additional measures which could be used to define goal commitment and institutional commitment. A large number of variables initially hypothesized as being a part of success orientation, accuracy of self-perception, or student fit were eliminated to improve the internal consistency of the measures. While these variables were not useful in defining the constructs hypothesized in this study, they may provide further explanation of the students' integration into the social and academic system of the university.

This study examined only one stage in Tinto's model. A full examination of the model would require study of the antecedant characteristics of students such as family background (e.g., family socio-economic status, parents' education), individual attributes (e.g., personality,

knowledge of the collegiate environment), and pre-college
schooling (e.g., high school characteristics). In addition,
further examination should study the student's subsequent
experience within the collegiate environment.

In addition, the effects and relationships shown in the
entire population, may vary between sub-populations (e.g.,
men and women, ethnic minorities, transfers). For example,
the literature provides substantial evidence that men and
women differ in their persistence patterns and their reason
for withdrawing (e.g., Pantages and Creedon, 1978; Spady,
1971; Summerskill, 1962; Tinto, 1975). While the impact of
gender on persistence is neither consistent nor well
explained, further examination of the data in this study by
gender may reveal that the impact of the constructs is
different for women and men.

Finally, another area which may be fruitful for future
research is to develop corresponding measures of goal
commitment and institutional commitment for upperclassmen.
The ACT Profile data is collected late during the junior
year or the senior year in high school. At that time,
students have very little information or experience about
college life in general or about the college they will
attend. As students matriculate and progress through the
freshman year, they accumulate new information about their
individual skills within the collegiate environment. This

new information should be more accurate than
prematriculation concepts. Thus, additional data collected
say at the beginning of the sophomore year, may be useful in
identifying students who persist to the sophomore year but
who do not persist to graduation.

Implications for Practicioners

In summary, it may be helpful to explore the meaning of
the constructs of success orientation, accuracy of self-
perception and student fit with the environment by examining
a profile of each of the four criterion groups:
satisfactory persisters, satisfactory withdrawers,
unsatisfactory persisters and unsatisfactory withdrawers.

About two-thirds (66%) of the students were
satisfactory persisters. Satisfactory persisters had a mean
cumulative grade point average of 2.79 and the highest mean
scores on success orientation, accuracy of self-perception,
goal commitment, and student fit with the environment. As
the constructs are hypothesized, this can be interpreted to
mean that satisfactory persisters have the highest
confidence in their ability to succeed in college (success
orientation), are the most accurate in assessing their
academic skills (accuracy of self-perception), and have the
strongest sense of belonging to the university (student fit
with the environment). These students have experienced the

most integration into both the academic value system and the social system of the university.

The profile of unsatisfactory persisters and satisfactory withdrawers is less clear. Satisfactory withdrawers (8% of the class) had a mean cumulative grade point average of 2.68 and had the second highest mean scores on success orientation, accuracy of self-perception, and goal commitment. This indicates that satisfactory withdrawers had demonstrated a high level of integration into the academic value system of the university. However, they had the second lowest mean score on student fit with the environment, indicating they had not experienced sufficient integration into the social system of the university.

Students who experience low fit seem to have two major problems. They plan to work and they do not plan to or are unable to live in a group living environment. When economic times are hard, it is difficult to suggest students should not work. However, it can be suggested that they attempt to find a job on-campus as on-campus work can provide opportunities to form relationships which may provide a sense of belonging. The implications for institutional employment policies and practices include allocating more salary dollars to student employment rather than to permanent part-time employees or temporary employees who are

not students.

Placing those who request on-campus housing in the residence halls may be beneficial in increasing persistence to the sophomore year. The most extreme action the institution could take would be to implement a policy requiring all new students to live in residence halls, fraternities or sororities. While housing assignment would no longer differentiate between persisters and withdrawers, such a policy might increase the number of students who persisted. Students who do not indicate plans to live on campus may be the group with whom the institution can make the least successful interventions.

Unsatisfactory persisters (17% of the class) present a different profile. These students had a mean cumulative grade point average of 1.66, the lowest score on success orientation and the second lowest scores on accuracy of self-perception and goal commitment. These students have not been sufficiently integrated into the academic value system of the university. However, they do have the second highest score on student fit with the environment, indicating that they felt they belonged at the institution and wanted to stay even though they were not succeeding in the classroom. Thus, the interventions for unsatisfactory persisters would focus on improving the student's success orientation and/or accuracy of self-perception.

Students with low success orientation do not feel confident about succeeding academically in college. Interventions should be designed to enhance the student's academic self-concept. In order to increase the student's confidence about academic success, the student should be well-informed about academic support services such as tutoring, writing labs, and developmental reading courses. Participation in workshops which teach time management and study skills may also increase the student's confidence. The academic adviser should make certain that the student is registered for courses in which the student feels confident of passing with a C grade or better.

Students who are low in accuracy of self-perception are either high ability students who think they need help when they do not or low ability students who think they do not need help when they do. These students need to spend time learning how to accurately assess themselves and their academic skills. Activities to help students more realistically assess their skills could include clarifying career and academic goals, learning the requirements to achieve these goals, and assessing their skills, as measured by ACT scores and high school rank, against the skills of their peer group. A group setting could be effective in helping change students' perceptions about themselves.

It is important to realize that the content and the

process of the interventions recommended for people with low success orientation and low accuracy of self-perception probably would be different. Success orientation appears to require more focus on an affective change in self-perception; the reference point for change is within the student. On the other hand, accuracy of self-perception appears to require more change in the student's cognitive knowledge about how his/her academic skills compare to other students; the reference point for change is external to the student.

Finally, 8% of the students were unsatisfactory withdrawers. Their mean cumulative grade point average was 1.04, and these students had the lowest scores on student fit with the environment, accuracy of self-perception, and goal commitment, and the second lowest score on success orientation. This means that these students were the least successful in integrating into both the academic value system and the social systems of the university.

Designing treatments to improve the likelihood that this group of students will persist would be difficult because they enter the university with little predisposition to integrate into either the academic value system or the social system. However, the interventions described previously to increase goal commitment and institutional commitment may be of some help.

From this study, it can be concluded that in order to persist with a satisfactory grade point average, students must demonstrate both institutional commitment and goal commitment. Students who perform well academically but do not remain enrolled at this university are likely to have exhibited only high goal commitment. Students who remain at the university but do not do well academically are likely to have exhibited only high institutional commitment. If the university is interested in retaining students it seems appropriate that interventions be made to increase students' goal commitment and their institutional commitment. In making these recommendations, it was assumed that the unsatisfactory persister is likely to become a voluntary or involuntary withdrawer during the second year.

Furthermore, there appears to be considerable support for the idea that pre-enrollment, non-intellective characteristics are useful in identifying which students are likely to integrate successfully into the academic value system and the social system of the university, thus persisting from the first year to the second. The measure of success orientation had high reliability and was valid in differentiating students who were academically successful from those who were unsuccessful. The measure of accuracy of self-perception, while having only moderate reliability, was useful in identifying students who were academically

successful and unsuccessful as well as students who persisted and withdrew. The construct of student fit with the environment appears to be complex and additional study is necessary in order to define its underlying structure. Further research to replicate these findings, as well as to improve the reliability and validity of the constructs, would be worthwhile.

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