A study of the effects of a pre-college academic skills program for high risk students in a public four year college.

Leonard F. Farrey
University of Massachusetts Amherst

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A STUDY OF THE EFFECTS OF A 
PRE-COLLEGE ACADEMIC SKILLS PROGRAM 
FOR HIGH RISK STUDENTS IN A PUBLIC FOUR YEAR COLLEGE 

A Dissertation Presented 
By 
Leonard F. Farrey 

Submitted to the Graduate School of the University of Massachusetts in Partial Fulfillment of the requirements for the degree of 
DOCTOR OF EDUCATION 
February 1979 
Education
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A STUDY OF THE EFFECTS OF A PRE-COLLEGE ACADEMIC SKILLS PROGRAM FOR HIGH RISK STUDENTS IN A PUBLIC FOUR YEAR COLLEGE

A Dissertation Presented by Leonard F. Farrey

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ACKNOWLEDGMENTS

I am deeply grateful to my wife Margaret for her constant encouragement and continual sacrifices which have enabled me to complete my graduate education.

Appreciation is extended to my committee chairman, Dr. Harvey Scribner who was consistently available and who provided both professional and personal assistance beyond obligation as well as reassurance at all stages. My sincere gratitude also goes to Dr. Alfred Karlson and Dr. Kenneth Schoen who served on my committee and offered their constant support and guidance in all phases of the development of this dissertation. Others in the Graduate School of Education to whom I am indebted are Dr. Kenneth Ertel, Dr. Ronald Fredrickson and Dr. William Lauroesch.

I am also deeply indebted to Professor John Hayes a member of the faculty at Worcester State College who guided me through the statistical analysis of the dissertation. My gratitude is also extended to the many students whom I have known throughout the years who have made this effort possible and have contributed immensely to my personal and educational growth.
TABLE OF CONTENTS

CHAPTER | PAGE
--- | ---
I. INTRODUCTION. | 1
  Background of the Problem | 3
  Need for the Study. | 6
  Statement of the Problem. | 7
  Basic Assumptions | 8
  Design of the Study | 9
  Scope of the Study. | 12
II. REVIEW OF RELATED LITERATURE. | 15
  Overview. | 15
  Predictors of Academic Success for the Traditional Applicant | 17
  Non-Intellective Predictors | 28
  The Rejected Applicant. | 30
  Conclusion | 34
III. DESIGN OF THE STUDY | 36
  Description of the Sample | 36
  Treatment of the Data | 37
  Classification of the Variables | 38
  Null Hypotheses | 42
  Data Collection and Instrumentation | 43
  Survey Questionnaire. | 44
IV. FINDINGS. | 45
  Analysis of Variance. | 45
  Null Hypotheses | 51
<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV. FINDINGS (continued)</td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation Coefficients</td>
<td>54</td>
</tr>
<tr>
<td>T-Score</td>
<td>55</td>
</tr>
<tr>
<td>Results of Survey Questionnaire</td>
<td>60</td>
</tr>
<tr>
<td>Conclusion</td>
<td>72</td>
</tr>
<tr>
<td>V. DISCUSSION OF FINDINGS AND PERSONAL OBSERVATIONS</td>
<td>78</td>
</tr>
<tr>
<td>Discussion of Findings</td>
<td>78</td>
</tr>
<tr>
<td>Recommendations</td>
<td>96</td>
</tr>
<tr>
<td>Conclusion</td>
<td>97</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Coefficients of Correlation Between High School Average and College Grade Point Average Found in Six Summaries of the Literature.</td>
<td>19</td>
</tr>
<tr>
<td>2. Analysis of Variance: Block I</td>
<td>46</td>
</tr>
<tr>
<td>3. Analysis of Variance: Block II</td>
<td>48</td>
</tr>
<tr>
<td>4. Analysis of Variance: Block III</td>
<td>50</td>
</tr>
<tr>
<td>5. Mean Quality Point Averages ofRejected Applicants</td>
<td>58</td>
</tr>
<tr>
<td>6. Rate of Withdrawal</td>
<td>58</td>
</tr>
<tr>
<td>7. Means and Standard Deviations of Independent Variables</td>
<td>59</td>
</tr>
</tbody>
</table>
ABSTRACT

A STUDY OF THE EFFECTS OF A PRE-COLLEGE ACADEMIC SKILLS PROGRAM FOR HIGH RISK STUDENTS IN A PUBLIC FOUR YEAR COLLEGE

FEBRUARY 1979

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Higher education today is confronted with the problem of how to meet the needs of a new type of student who is often characterized as a high risk. For purposes of this study the high risk student will be defined as a rejected applicant. A rejected applicant is a student who has been denied admissions to college based on the traditional predictors of academic success.

It was the purpose of this study to examine records of students who were denied admission based on the traditional predictors of academic success, and to see if they can succeed in college by attending a pre-college academic skills program. The major purpose of the study will be to attempt to identify predictors of success in the group, once rejected for admissions. Results of this study will enable faculty and administrators to develop a profile of success predictors for the rejected applicant. The research deals with a unique student population. It is concerned with those once rejected for admission to a four year college. These students failed to meet
the traditional criteria of predicting academic success but, after completing a pre-college summer skills program matriculated in a four year program and thirty-four percent successfully completed the program of studies for the baccalaureate degree. The study group is made up of applicants to Worcester State College, a publicly supported state college in Massachusetts.

Data sources for this study include both the high school and college records of the students in the study. High school transcripts will provide high school rank in class and college entrance examination will provide board scores. College records relate to the pre-college academic skills program as well as academic performance as a matriculated student. Selected variables to be evaluated include age, sex, veterans status, pre and post diagnostic reading scores, college board verbal score, college board mathematical score, college board composite score, first and second semester Quality Point Average, cumulative Quality Point Average for sophomore, junior and senior years as well as high school rank in class.

The statistical package for the Social Sciences (SPSS) was used to compute an Analysis of Variance for all variables. The study group was divided into two groups, Success Group (S) and Withdrawal Group (W). Each group received a survey questionnaire designed to measure attitudes relating to the
college environment and factors influencing academic performance. The two approaches used in analyzing the data measured both cognitive and non-cognitive factors that influenced student success or withdrawal.

An analysis of variance of selected variables was completed in an attempt to identify those factors in the rejected group of applicants which enabled them to achieve such a high rate of success. The results found three variables as being significant at better than the .05 level. These factors were age of student, scores on post diagnostic reading test and Quality Point Average at the end of the second semester.

The survey questionnaire revealed that significant factors which influenced attrition for the withdrawal group were "change of career plans", "tired of being a student", "wanted time to consider interest and career goals", and "attractive job opportunity."

The success group reported that a concerned faculty member, advising services in major area of study, a definite career goal and support and encouragement received from peers and family were significant factors in enabling them to complete college.

Research also established that the Nelson-Denny Reading Test was a valid predictor of success for the special study group. Faculty members involved in the
special pre-college skills program were able to accurately predict academic success for the group of rejected applicants in thirty-four percent of the cases presented. It was also found that a negative correlation existed between first semester Quality Point Average and academic success. However, data obtained from the second semester established a positive correlation with success. College board scores and high school rank were found to be non-predictors of success for the group of rejected applicants.

Results of this study that would relate to policies and procedures affecting the pre-college skills program, and more broadly admission policies and academic rules and regulations affecting all students at Worcester State College would be as follows: Adjustment of the first and second semester Quality Point Average for the rejected applicant. Mandatory minimum Quality Point Averages should be applied at the end of the sophomore year. Career counseling seminars should be implemented for all students. These career seminars should be given during the first and second semesters. Undecided majors should be assigned a concerned and skilled faculty member to serve as an advisor until a major is declared. Greater use should be made of the Student Descriptive Questionnaire provided by College Entrance Examination Board.
The theme of this study can best be summarized by a statement made by Tribilicock (1938) some forty years ago:

While it is wasteful and otherwise undesirable to have the unfit in college, it is also wasteful and undesirable to keep the fit out of college. For many students there is no adequate test of fitness except for the actual attempt to do college work.
CHAPTER I
INTRODUCTION

Higher education today is confronted with the problem of how to meet the needs of a new type of student who is often characterized as a high risk. The high risk student is generally described as an individual who has discernable deficiencies in the basic skills, reading, writing and arithmetic. A high risk student usually performs poorly on standardized tests and lacks effective study skills. They generally experience difficulty in gaining acceptance into institutions of higher education. For purposes of this study the high risk student will be defined as a rejected applicant. A rejected applicant is a student who has been denied admissions to college based on the traditional predictors of academic success.

It is the purpose of this study to examine records of students who are denied admission based on the traditional predictors of academic success, and to see if they can succeed in college by attending a pre-college academic skills program. This study will examine the academic performance of one hundred and seventy rejected applicants who learning of their rejection participated in a pre-college Academic Skills Program at Worcester State College during 1970-1973. The one hundred and seventy students in the study comprised two groups:
eighty students who completed the four year college program after leaving the special skills program; and ninety students who dropped out before completion of the four year program, although they had taken the special skills program.

Enrollment in the pre-college skills program was contingent upon the understanding that if the two hundred and thirty nine once rejected applicants successfully completed the program they would be recommended for admission to Worcester State College. Preliminary research indicates that thirty four percent (80) of those students enrolled successfully completed the four year program. This compares with a figure of thirty five percent for those students admitted through the normal admissions process at Worcester State College.

The major purpose of this study will be to attempt to identify predictors of success in the group, once rejected for admissions. The rejected applicants participated in a special pre-college skills program and later successfully completed the four year program. Successful completion of college will be defined as the major dependent variable. Other variables which will be treated as predictors are:

age
sex
veteran-non veteran
major area of study
number of semesters completed
College Board Scores (verbal, math, and composite)
high school rank
pre- and post-test scores on a diagnostic reading test
course credits for the first and second semester of
the freshman year
college grade point average for the first two semesters
and the sophomore, junior and senior years
final class rank in college

The results of this study will enable faculty and
administrators to develop a profile of success predictors.
These predictors which relate to success would serve as a
core area for the development of future programs for the
rejected applicant. The profile of success factors would
serve as basis for predicting success for the rejected
applicant.

Background of the Problem

Worcester State College is a publicly supported four
year liberal arts college. It is one of ten state colleges
in Massachusetts. During the last decade these colleges
have gradually made the transition from "teachers colleges"
to liberal arts institutions. At the present time the
official college catalogue of Worcester State College lists
twenty six major programs.

The most recent report on student enrollment issued
by the Director of Research at Worcester State in January
1978 placed total undergraduate enrollment in the day division
at 2871 students. Approximately eighty-five percent of the students in the day division commute. The report further states that a majority of students live within a forty-mile radius of campus. The evening division of the college reported a total enrollment for Fall 1977 of approximately 2400 students enrolled in both the undergraduate and graduate programs.

In his latest report pertaining to enrollments by majors issued, (Gould, 1978) he identifies Management Science (383) and Psychology (323) as the two largest majors in the undergraduate school. Elementary Education was listed in this report as being in third place with an enrollment of three hundred and eight (308) students. Secondary Education is not offered as a major but is offered as a minor for teacher certification. The Secondary Education Department offers five major concentrations in the graduate program in addition to its undergraduate certification program. The areas of concentration offered by Secondary Education as listed in the official graduate school catalogue are Secondary Education, Counselor Education, Adult Education, Leadership and Administration, and Community School Education.

Annual reports issued by the Director of Research at Worcester State College which have analyzed average College Board scores for freshmen indicate declining scores in both the verbal and mathematics sections. As a result of these declining scores, there has been an increase in the number
of students rejected for admission at Worcester State College. Latest figures issued by the admissions office and research office indicate that approximately 30% of all applicants are rejected. Consequently, in the summer of 1970 a special academic skills program was established for students rejected through the normal admissions process. Students who successfully completed this pre-college skills program were granted regular admission to the college.

The pre-college skills program has been offered at Worcester State College each summer since 1970. This study will examine the success/failure rate of those who attended during the period 1970-73. Success, for purposes of this study of once rejected students, will be defined as completion of the four year degree program.

As previously noted, students participating in the "special skills program" had all been rejected by the normal admission process. Each of the rejected students upon enrolling in the skills program was given a battery of diagnostic tests. The purpose of the testing was to determine areas of strengths and weaknesses so that an educational plan could be developed to strengthen their basic academic skills. The summer curriculum offered skill development in reading, writing, mathematics and study skills. Classes were held three evenings a week for three hours each evening. Students in the pre-college skills program received a total of fifty four hours of instructional time.
An evening program was necessary because most students were employed during the day.

Extensive counseling services were provided for each student throughout the entire program. Counseling was provided on a small group basis as well as one to one counseling. Counseling dealt with educational and career choice as well as personal counseling. A major goal of each counseling relationship was to improve the counselee's self-concept. Many of the students had consistently failed to achieve in the traditional academic environment. Because of this it was necessary to provide counseling which encouraged the development of a positive self-concept. Program planning had to be closely related to individual needs.

Need for the Study

There is extensive literature dealing with prediction of academic success. Some studies attempt to predict performance in a specific subject area such as English or Biology. Other studies use a more global approach but define success in most cases as completion of the freshmen year. The writer believes that this study is unique and feels that there is a need for this type of study for the following reasons:

1. The research deals with a unique student population. It is concerned with those
students who were rejected for admission to a four year college. These students failed to meet the traditional criteria of predicting academic success but, after completing a pre-college summer skills program matriculated in a four year program and thirty four percent successfully completed the program of studies for the baccalaureate degree. A predictive study done some forty years ago, (Tribilicock in 1938), states among its findings that, although it may be wasteful and otherwise undesirable to have the unfit in college, it is also wasteful and undesirable to keep the fit out of college. For many students there is no adequate test for fitness except the actual attempt to do college work.

2. This study will examine data relating to academic success based on a four year period. Lavin (1965) calls attention to previous predictive studies that defined success as completion of the freshmen year. He cited the need for further research of a longitudinal nature that would define success as the completion
of all requirements for a baccalaureate degree. Garrett (1949), in a review of the literature covering two decades of research in predictive studies, found only four studies that were longitudinal in their design.

3. The study deals with applicants to Worcester State College, a publicly supported state college in Massachusetts. Several researchers have noted that there is a real need for each institution to conduct its own institutional research due to the low reliability of predictors when used at other institutions, Bowles (1956), Cole (1963), Friedman (1966), Hills (1962), Munday (1965), Willingham (1963), Wood (1963).

**Statement of the Problem**

Based on the traditional predictors of academic success the students in this study were rejected for admission to Worcester State College. A number of these students, after completing a pre-college skills program, were admitted to the college. The writer believes that the answers to the following questions will help to identify the predictors of success for the rejected applicants who participated in a pre-college skills program.
1. What identifiable factors within the rejected group of applicants eventually enabled them to achieve such a high rate of success?

2. What identifiable factors influenced attrition within the rejected group of applicants?

3. What data could be used from this study to develop a profile that will identify the positive and negative factors that influenced the academic achievement of the rejected applicant?

Basic Assumptions

The basic assumptions underlying this proposal are as follows:

That applicants rejected for admission based on the traditional predictors of academic success and who successfully complete a pre-college academic skills program can succeed in college.

That it is possible to analyze existing student data and identify indicators of possible success.
That a summary of success indicators would enable faculty and administrators to develop a success profile that will enhance the design of future programs for rejected applicants.

Significance of the Study

The results of this study will assist the Massachusetts State College system in developing programs for rejected applicants. These results will also be of value to other colleges and universities who wish to design programs to meet the needs of the rejected applicant. A review of the literature indicates a lack of studies relating to the rejected applicant in a four year college setting. Previous studies on prediction dealt with the general student population and usually defined success as completion of the freshmen year. This study defines success as completion of a four year baccalaureate degree program. The study will examine data covering a seven year period relating to high risk students (refused admission by Worcester State College Admissions officers) who successfully completed a pre-college skills program. An attempt will be made to define indicators of success or failure that may be used to develop a success profile. The profile will assist administrators and faculty in improving the design of future programs for the rejected applicant.
Design of the Study

Sources of data. Data sources for this study will include both the high school and college records of the students in the study. High school transcripts will provide high school rank in class and college entrance examination will provide board scores. College records will relate to the pre-college academic skills program as well as academic performance as a matriculated student in the four year degree program. The academic skills program will provide data on pre and post diagnostic testing in the area of reading, as well as faculty predictions on academic achievement in college. Veteran status and age will be obtained from the official college application. College achievement data, including first and second semester quality point average (Q.P.A.) and end of year average for the sophomore, junior and senior years, will be obtained from the official college transcripts. Information pertaining to major area of study, semesters completed and final class rank will also be obtained from the official transcript.

Procedures for collecting data. The sample subjects will be surveyed through the use of a questionnaire. (See Appendix A). The purpose of the questionnaire will be to measure student attitudes as they relate to college success or
failure. The questionnaire will be sent to the success group (S) as well as the withdrawal group (W). Questions will attempt to measure personal as well as institutional factors that influenced performance in college. Specific questions will deal with support service used, major areas of study, course loads, outside work loads, and the presence or lack of a clearly defined career goal. In addition, annual reports prepared by each faculty member in the pre-college skills program will be evaluated as to their validity in predicting college success for individual students.

Specific questions to be researched. The study will investigate the following specific questions:

Do standardized measures of reading (Nelson-Denny Reading Test) predict program success for a special student sample?

Do faculty evaluations of individual students predict ultimate success in college?

In the special sample is the initial success (first two semesters) in college related to future success?

To what extent do College Board Scores (math and verbal) and high school rank predict success for the special program student?
What motivational factors are successful and unsuccessful students likely to report as being significant in their failure or success in college? This data will be collected through the use of a post hoc questionnaire.

Treatment of the data. Successful completion of college will be defined as the major dependent variable. Other variables will be treated as predictors and major questions can be answered in terms of the success or failure of the predictors. Correlation, T-Scores and Analysis of Variance will be used as the major statistical devices.

Selected variables.
- age
- sex
- veteran status
- pre and post test diagnostic reading scores
- college board verbal score
- college board mathematical score
- college board composite score
- first and second semester quality point average
- cumulative quality point average for sophomore, junior and senior years
- high school rank in class
final class rank in college
number of semesters completed
major area of study
number of credit hours taken first and second semester

Scope of Study

The study will deal with a four year Massachusetts State College and the results obtained will have direct relation to similar institutions in other states. The study will be concerned only with students who were rejected for admission to the four year program and later completed a special pre-college skills session. The research will examine data on two groups of students: (1) those students who attended the pre-college skills program and then matriculated in and completed a four year program and (2) those students who attended a pre-college skills program and matriculated in the four year program but withdrew before completion of the four year degree program.

Definition of terms:

High risk students. The high risk student for purposes of this study will be the student who was rejected by the regular admissions process but later completed the pre-college skills program and was granted admission.
Success. Success as defined in this study will be the successful completion of all the requirements for the baccalaureate degree.

Failure. Will be defined as non completion of baccalaureate degree requirements.

Success profile. A profile of academic and personal variables that will assist in predicting success in a public four year college.
Chapter titles for dissertation.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
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<tbody>
<tr>
<td>I</td>
<td>Introduction</td>
</tr>
<tr>
<td>II</td>
<td>Review of Related Literature</td>
</tr>
<tr>
<td>III</td>
<td>Design of The Study</td>
</tr>
<tr>
<td>IV</td>
<td>Findings</td>
</tr>
<tr>
<td>V</td>
<td>Discussion of Findings and Personal Observations</td>
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CHAPTER II
REVIEW OF RELATED LITERATURE

Today, in higher education there are more than two million classes taught by half a million faculty members to ten million students in 3,000 institutions. The graduates of these institutions enter hundreds of different professions and occupations. Over 1,500 separate degrees are awarded by these institutions (Carnegie Foundation, 1977). Predicting student success in this maze of higher education is a complex and challenging question. In educational literature there have been many studies on how to predict academic success. The question has been researched for over forty years and we still are unable to identify completely the factors that enable students to succeed in our colleges and universities. One of the earliest studies done in the area of higher education was done by W.F. Dearborn (1909) entitled The Relative Standing of Pupils in High School and in the University. The study found that "previous ranking of all pupils in the accredited (secondary) school furnishes a satisfactory means for forecasting the likelihood of success at the university." Since Dearborn's early study, additional studies have been completed with varying degrees of results. The increased use of standardized admissions testing has resulted in an increase in studies examining the validity
of the instrument being used. In addition, the increase in applicants during the late fifties and sixties caused many colleges to become selective, thereby increasing interest in Prediction Studies.

The usual research design is that of correlation and regression in which one or more predictors attempt to approximate one or more criteria. (Fishman and Pasanella 1960). The general approach to predictive studies was initially directed toward a study of cognitive factors that predicted success. Dearborn's study was one of the first such attempts at predicting academic success based on cognitive factors. Later, there developed an interest in the non-cognitive values that influenced success in college. One of the early studies using an additional measurement was done by Newcomb at Bennington College (1943). This was one of the most extensive and complete assessments of a single group of students over four college years conducted up to that time. It delineated for the first time an entire student culture that was distinct from most other college cultures.

Predictive studies have been completed using intellective as well as non-intellective characteristics of students as variables in an attempt to find a group of predictors that would be reliable for different institutions. (Anderson, 1964; Bemis, 1968; Bloom and Peters, 1961; Gohn, 1967;
Hackett, 1960; Holland and Astin, 1962; Holland and Nichols 1964; Hooper, 1968; Hoyt, 1968; Kearny, 1966; Roberts, 1967). The majority of these studies support the position that high school grades and high school rank in class are the best predictors of academic success for the general population, with non-intellective factors improving the predictibility in a majority of the cases. Research shows some conflicting results with regard to the predictability of high school G.P.A. for the high risk student. A study done by J.C. Scott (1971) states that high school grades are still a valid predictor for the high risk group while Astin (1971) Dispengieri, Giniger, Reichman and Leroy (1971) have combined past academic records and ability testing in order to arrive at a more valid predictor.

The extensive studies completed relating to predicting academic success have consistently found that past academic achievement to be the most valid predictor of academic success. Recent research has shown that carefully measured non-cognitive variables can increase the reliability of the predictive equation. Research relating to the high risk student has shown conflicting results when high school achievement is used as a predictor of college success. Combining past academic records and ability testing have increased the predictive validity for the high risk group.
High school rank. High school rank consistently is rated by many studies as the single best predictor of academic success in college. Studies by Michael and Jones (1963); Garrett (1949); Endler and Steinberg (1963); Leaver (1965); Gallant (1965); O'Zee (1966); Mazak (1967) have correlated high school rank with the grade point average of the first year of college.

A few research studies have questioned the use of high school rank as a valid predictor beyond the freshman year. These studies strongly suggest that student ability and academic performance may change in college. Munger (1957) found at the University of Toledo that high school rank could not distinguish graduates from non-graduates. In another study done by Willingham (1963) at Georgia Institute of Technology it was found that high school information was of no value in predicting success beyond the first year.

A study done by Humphreys (1963) reported a correlation of .22 between high school rank and fourth year grade point average. Garrett (1949) summarized twenty-nine studies relating student's high school rank to grades in college covering a period of two decades 1920 to 1940 and reported the following results: Range of correlations .18 to .72; median correlation .54. Fishman and Pasanella (1960) summarized two hundred and sixty three studies relating to high school rank and reported a median correlation of .50 with the freshmen year
High school average. Giusti (1964) presents a review of the literature for the last three decades which relates high school average to college grade point average. He cites his reasons for such an extensive study of this prediction factor:

The strong evidence accumulated over the years that demonstrate past achievement is the best predictor of future achievement.

The belief that the best single predictor we now have at our disposal is the high school average.

Listed below is a summary of his findings dealing with high school average.

**TABLE 1**

**COEFFICIENTS OF CORRELATION BETWEEN HIGH SCHOOL AVERAGE AND COLLEGE GRADE POINT AVERAGE FOUND IN SIX SUMMARIES OF THE LITERATURE**

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Date</th>
<th>Studies</th>
<th>Range</th>
<th>Median</th>
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<td>Segel</td>
<td>1934</td>
<td>23</td>
<td>.29-.77</td>
<td>.55</td>
</tr>
<tr>
<td>Wagner</td>
<td>1934</td>
<td>47</td>
<td>.29-.86</td>
<td>.65</td>
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<tr>
<td>Harris</td>
<td>1940</td>
<td>9</td>
<td>.60-.78</td>
<td>.65</td>
</tr>
<tr>
<td>Travers</td>
<td>1949</td>
<td>17</td>
<td>.45-.78</td>
<td>.66</td>
</tr>
<tr>
<td>Garrett</td>
<td>1949</td>
<td>32</td>
<td>.29-.83</td>
<td>.56</td>
</tr>
<tr>
<td>Cosand</td>
<td>1953</td>
<td>17</td>
<td>.41-.68</td>
<td>.53</td>
</tr>
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</table>
A review of the literature indicates that the Scholastic Aptitude Test of the College Entrance Examination Board is a widely used test of scholastic ability for college entrance. In the first of a series of predictive studies done by Indiana University, Chase (1966) reports the following correlations with freshmen grade point average SAT Verbal .39, SAT Math .40, Composite SAT .45. These correlations were for men only. Correlation scores for women were somewhat higher: verbal .43, math .45, and composite .50. An extensive study relating to college board scores as predictors was completed by Shimber (1946). These validity studies for college board dealt with 3441 students attending various colleges. Their Scholastic Aptitude Test verbal section correlated .43 with first term grades and for another group of 1537 the S.A.T. verbal score correlated .45 with the same criterion. S.A.T. mathematics scores for a group of 2953 correlated .39 with first term averages and those for the second group of 1537 correlated .58 with the same criterion. Garrett (1949), in a review of tests of general aptitude tests, ranked aptitude tests in fourth place as a predictor of academic success. He places high school rank, general achievement tests and intelligence tests above aptitude tests. He also found that women's scores on general aptitude correlate
more closely with the criterion than do those of men. Additional studies that correlate the Scholastic Aptitude Test with academic success in the freshman year of college have been done by Fuche (1958), Mann (1961), Michael and Jones (1962), Watley and Martin (1962). All have found S.A.T. scores to be significant predictors of academic success for the first year.

The Indiana University study previously cited also examined the predictive value of S.A.T. scores relative to their correlations with high, middle, and low thirds of the freshman grade point range. The results indicated that the S.A.T. scores evidenced highest validity in predicting for the high achievers and lowest validity in predicting for the bottom third of the group.

College Achievement as a Predictor of Success

The freshman and sophomore grade point average has been found to be the best predictor of future college achievement. Lewis (1964) reported previous semester achievement to be the most significant predictor of achievement in subsequent semesters. Generally, the closer the predictor variable approaches the time and environment of the criterion variable, the higher the correlation coefficient. Lewis found the correlation between junior and senior to be as high as .74. Willingham (1963) found the highest correlation for future semesters to be the previous semester of college work. Waller (1962)
found in a study at Trenton State College that first semester grade point average was the best single predictor of success. In a study dealing with community college transfers done by Beals (1968) at the University of Massachusetts, grade point average earned in the first two years at the community college was proven the most relevant predictor of academic achievement at the university.

A dissertation done by Harding (1974) at Illinois State University examined selected predictive variables that he stated were endogenous and exogenous to the university in predicting academic achievement. The population of the study consisted of freshmen admitted in the fall of 1969 who persisted for four years. Listed below are some of the findings of this report:

High school rank is a significant prediction of academic success.

Degree of class cutting was significant. Students with lower grades tend to cut class to a greater degree.

American college testing scores were significant in predicting academic achievement.

Amount of contact with university administration is a significant predictor of achievement. Students with lower grades tend to have more contact.

Amount of time spent watching T.V. is a significant predictor of academic achievement. Students who watch a great deal of T.V. tend to have lower grades.

Amount of contact with academic advisors is a significant predictor of academic achievement. Students with lower grades tend to have more contact with their advisors.
Degree of participation in recreation and intra-mural programs is a significant predictor of academic achievement. Students who spend more time in recreation and intra-mural sports tend to have lower grades.

Amount of contact with faculty out of class is a significant predictor of academic achievement. Students who have more out of class contact with faculty tend to do better.

The writer will attempt to clarify some of the research done in the area of predicting academic performance by making reference to an extensive review done by Garrett (1949). The review dealt with the following predictors of academic success:

1. High school scholarship and pattern of subjects taken and the relationship of these factors to college success

2. Achievement tests and college entrance tests as basis for predicting college achievement.

3. Measures of mental ability and capacity as predictors of college success

4. Special aptitude tests as basis for the prediction of achievement in college

5. Other factors and their relation to college success

rating scales
size of high school
interest
physical factors
age and college success
types of curriculum content
scholarship and the returned veteran

The conclusions reached by this study, which covered the period from 1922 to 1949, are as follows:

The five factors which have the greatest predictive value and their average coefficient of correlation with average college grades are:
<table>
<thead>
<tr>
<th>Factor</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. High school scholarship</td>
<td></td>
</tr>
<tr>
<td>a. high school average</td>
<td>.56</td>
</tr>
<tr>
<td>b. rank in graduating class</td>
<td></td>
</tr>
<tr>
<td>percentile rank, quartile rank, principal's rating, number of A's and B's and other methods of reporting high school scholarship</td>
<td></td>
</tr>
<tr>
<td>2. General achievement test scores</td>
<td></td>
</tr>
<tr>
<td>a. achievement test scores in specific subjects or fields</td>
<td>.49</td>
</tr>
<tr>
<td>3. Intelligence tests scores</td>
<td>.47</td>
</tr>
<tr>
<td>4. General college aptitude test scores</td>
<td>.43</td>
</tr>
<tr>
<td>5. Special aptitude test scores</td>
<td>.41</td>
</tr>
<tr>
<td>(e.g. College Board Scores)</td>
<td></td>
</tr>
</tbody>
</table>

Garrett in his study states the following conclusions relative to predicting academic success in college:

1. High school scholarship
   a. High school scholarship correlates more highly with first year college grades than with any lesser or greater amount of the entire college record.

   b. There is no consistent difference between men and women in their relation to their high school standing and later college work.

   c. When the college records of students from a single high school are compared with their high school record, a higher coefficient of correlation is usually found, then when students from many high schools are involved in the study. Also, studies of the records of students from the same high school attending the same college, reveal even higher coefficients of correlation. This would indicate that more uniform high school and college grading systems from which comparable records may be obtained, would improve the predictive value of such records.
d. Although some degree of correlation has been found between high school grades in specific subjects and later college scholarship, no particular subject or group of subjects has exclusive rights to this relationship. Grades in "non-academic" subjects apparently have as much predictive value as do grades in "academic" subjects.

e. The pattern of high school subjects taken has little relation to later scholastic success in college.

f. The number of total units earned has little positive relationship to college scholarship.

g. The number of units of credit in any one high school subject or field has little, if any, relationship to college success.

2. Achievement tests

a. The college Entrance Examination Board examinations were used in a majority of the cases reported.

b. Considering the time and expense involved, it is as well to use a good aptitude test to predict college success as to use a battery of achievement tests. Especially is this true for long range predictions.

c. Although achievement tests in Latin, French, and the sciences appear to be superior instruments of prediction, it is generally believed that such subjects "select" superior intellects, rather than "make" them.

d. Knowledge of history and science correlates higher with criterion than do oral and written English.

e. Achievement test scores tend to correlate lower with college averages in later studies than in earlier studies.

f. To use achievement test scores as a sole criterion for college entrance may, in many instances, deprive a student from entering college who would be successful there if allowed to enter.
3. Intelligence  
   a. Intelligence scores for women are correlated more closely with college success than are the scores for men.
   
   b. The American Council on Education psychological examination scores correlated more closely with college averages than did the scores on other intelligence tests reported.
   
   c. A good intelligence test will predict college success better for good students than for poor ones.
   
   d. Students concentrating their courses in one department or school in a college tend to show a closer correlation between intelligence and college grades than do students of the general college. This is thought to be due either to the motivation of common purpose in departments, or schools, or to the fact that college scholarship of the former group is measured in the same subjects for all, to a greater extent than for the general college group.
   
   e. Intelligence scores are correlated closely with achievement test scores.
   
   f. Selective influence tends to send to college those students who rank in the upper fourth in scholarship in high school.
   
   g. In a few studies, intelligence of students with low neurosis correlated somewhat more closely with college grades than did the intelligence of those with high neurosis. Those with high self-sufficiency and dominance also tended to have closer correlation between intelligence and college average than those with low self-sufficiency and dominance. But instruments of sufficient validity and reliability in the field of personality testing have not been developed, or sufficient research made, to establish this tendency to any degree of certainty.
h. Closer correlations are obtained by equating the I.Q.'s obtained from several good intelligence tests and computing the coefficient of correlation with college honor point averages.

i. From the few studies reported, intelligence tests given as early as the fourth grade predict college success almost as well as those given in the last year of high school.

j. It is estimated that the average coefficient of correlation between this factor and the criterion is about .45 or 11 percent better than guess work.

4. Aptitude tests
   a. The Wesley College Test of Social Terms yielded the highest correlation with college success.

   b. The Minnesota University College Aptitude Test was the most popular among the writers, but variety of results obtained by it leaves question as to its reliability.

   c. The Nelson-Denny Reading Test gives a good indication of probable college success, no doubt due to the reasonable assumption that there is a close relationship between one's ability to read and his probable success in college.

   d. The Cross-English Test as an aptitude test showed up well but vocabulary is a better indication of college success than knowledge of grammatical forms and rules.

   e. The Iowa High School Content Examination as a whole are a good criterion for predicting college success, but scores on individual subjects or fields are not reliable enough to be a significant factor in prediction.

5. Others
   a. No test of personality or character has yet been devised which will predict to any appreciable extent, the scholastic success of a student in college.
b. There is little or no relationship between the size of the high school and probable college success, although some studies show a slight tendency for students from smaller schools to receive somewhat lower grades.

c. Down to a minimum of fifteen years of age, there is a slight tendency for those who enter college younger than the average to receive slightly better college grades than the average.

d. Studies seem to indicate that there is very little if any relationship between the following and college success:
1. salary of teachers in high school
2. occupation of parents
3. student's physical factors

e. As judged by multiple correlation coefficients of two factors predictive of college success, usually results in a somewhat higher correlation with the criterion than did the factors singly.
1. The most prognostic combinations include:
   a. high school marks and intelligence test scores
   b. high school marks and aptitude test scores
   c. intelligence test scores and achievement test scores

f. The addition of a third variable adds very little to the predictive value of the combination, and adding a fourth variable has practically no value.

Implications and recommendations.
Many colleges are basing their entrance requirements on factors which do not have adequate value in predicting success in college, and therefore deny entrance to many students who should be admitted.

The absence of any significant correlation between the amount and pattern of high school subjects taken and college scholarship persists.
Some have suggested that we are now in the profile stage with educational measurement where we know that a student stands high on an aptitude test, relatively low in an arithmetic test and so on, but do not know quite how to interpret these facts in terms of probable college success. If, we could find some means of determining the order of importance of the various characteristics in the profile, we might have a better basis for predicting success in any given college.

Non-intellective predictors. Studies relating to the prediction of academic success have been primarily related to intellective criteria. Sprague (1959) reported that a survey of eleven western states revealed that only four colleges were conducting some sort of study on behavioral change. Twenty four percent of six hundred institutional studies uncovered dealt with students, but only seventeen investigated (three percent) included assessment of student characteristics other than ability or academic achievement. During the 1960's there has been an increased interest in non-intellective criteria. Fishman and Pasanella (1960) summarized a review of various studies relating to non-intellective predictors:

Correlations of personality measures such as Rorschach, Minnesota Multiphasic Personality Inventory (MMPI), Manifest Anxiety Scale, and others with global intellective criteria ranged from .01 to .62 with a median correlation of .22 for twenty six studies.

Study habits tests and inventories correlated between .26 and .66 with college freshmen grades. The median correlation for twenty five studies was .47.
Interest inventories such as the Kuder Preference Record and the Strong Vocational Interest Blank yielded lower correlations .05 to .26 for seven studies.

Correlations with college grades for biographical information (Socio-economic status, size of family, religion, size of community, campus activities and living arrangements) ranged from .01 to .63 with a median of .13 for twenty-three studies.

Two significant studies in the area of non-intellective predictions were completed by Sanford (1956) and Stern, Morris, and Bloom (1956). Sanford gave a preview of the Mellon Foundation Studies, done at Vassar College, which perceived the college years as a period of personality change. The latter study, done at the University of Chicago, sought to relate individual characteristics to institutional or classroom environments and processes in order to arrive at a more precise definition of individual performance.

A more recent study done by Creighton (1971) found that for economically disadvantaged students high school grade point average and College Board scores were the strongest cognitive predictors. The strongest non-cognitive predictor was self-perception of academic ability.

The perceptions of peers, parents, and teachers tended to be of little value in the prediction of academic achievement. Additional studies relating to non-intellective predictors have been done by Hoyt and Norman (1964), Frederiksen and

Studies of a non-cognitive nature have shown that during the college years a change in personality is likely to occur. Research has shown that self-perception of academic ability to be a strong non-cognitive prediction of academic success. Additional studies have shown that perceptions of peers, parents and teachers have little value in predicting academic success. Further research in the area of non-cognitive variables appears to be a promising area for future studies.

The Rejected Applicant

The review of the literature relating to predicting academic success in college has to this point been concerned with the student in the general population. The review of literature henceforth deals with "rejected applicants." The literature in this area is sparse compared to that written in the traditional "Predictive Studies." The few studies in this area have in many cases dealt with special population groups such as the culturally or socio-economically disadvantaged.

Jones (1972), in an unpublished dissertation, studies applicants denied admission who later enrolled in a college other than the institution rejecting them. He found that a
majority of them indicated they "were doing well." He recommended that the common concept of the college-bound be broadened to include those with lower grade point averages than had been the tradition.

In a study of rejected applicants done by Conroy (1972) he found no significant difference between the performance of the rejected sample and that of the accepted sample. A significant part of his study dealt with the selection of rejected applicants for admission. Part of the sample was selected at random and deans of the college selected the remainder. It was found that the dean's selection was no better than the random selection. In this study academic success was equated with performance at the end of the first semester of the freshman year.

In a descriptive study of 1,464 rejected applicants at the University of Michigan, Wentworth (1970) found that the non-admit student did not differ from his counterpart, the admit student, when compared by sex, size of high school, selection of major, parent's education, or alumni status. There did appear to be a significant difference when comparing high school rank in class, aptitude test scores, and principal's recommendation. Ninety one percent of the non-admit students did enroll in other four year or two year colleges or technical school programs. Hodges (1971) studied the prediction of academic achievement of "special admit" students at Pennsylvania State University. In his study he established four hypotheses: (1) regular methods of admission
would not be valid when applied to "special admit" students; (2) motivation would be a significant prediction of academic performance for disadvantaged "special admit" students; (3) adding a measure of motivation to the present prediction equation being used at Pennsylvania State would increase its predictive validity; (4) predictive validity of each prediction equation would vary significantly between male and female "special admit" students.

The findings of this study showed that the predictive equation in use at Pennsylvania State University was ineffective for predicting success for black males. Only one motivational variable came close to having predictive power. That was Word Rating List. Motivational studies did little to improve the predictive indices in use at Pennsylvania State. The final conclusion stated that there was a meaningful difference between male and female "special admit" students. High school average was the best predictor of academic success for males with education of the father being the best predictor of academic success for the girls.

Lowry (1975) studied Educational Opportunity Students at Arizona State College and found that the traditional indicators of success in college have little application to Educational Opportunity Students.

In a study done at San Mateo College in California, Egerton (1968) found that, despite low income and test scores, high risk students often matched their classmate's performance.
In a report by Beach (1968) prepared for the United States Office of Education (D.HEW) entitled *Identifying the Potentially Successful Among Marginal College Entrants*, he reported that Scholastic Aptitude Test scores and rank in class were of no value in predicting first year cumulative grade point averages for the marginal student. Additional studies concluding that high school rank and Scholastic Aptitude Test scores are not reliable predictors for the high risk student were done by Hammond and Rosich (1971) and Hodges (1971). Pedrini and Pedrini (1973) summarized the data relating to predicting success for the marginal applicant by stating that the prediction of success for the special program, disadvantaged and/or minority participants by traditional measures is at best a speculative procedure.

A study done some thirty years ago by Tribillock entitled *"Many of the Lowest Third of our Graduates are College Material"* has direct reference to today's group of high risk students. Tribillock examined the success of 651 high school graduates in many colleges and universities. As a result of his study he reached five significant conclusions:

1. Raising the requirements necessary to obtain a recommendation to college is not warranted in light of past and current performance of our graduates.

2. Colleges are right in anticipating that the most unsatisfactory results will come from students of low rank in high school.
3. Colleges which impose an admission standard of scholarship considerably above a minimum passing grade are probably excluding students who are capable of doing college work.

4. Colleges which take students without regard to high school rank are performing a real educational service in many cases, in as much as they open the door of opportunity to many who would otherwise would find themselves cut off from a college career. These students can either remain and graduate from such an institution or, on establishing their ability to do college work, can transfer to the first instance.

5. While it is wasteful and otherwise undesirable to have the unfit in college, it is also wasteful and undesirable to keep the fit out of college. For many students there is no adequate test of fitness except the actual attempt to carry college work.

The research concerned with the prediction of college success has evaluated many single and multiple predictor variables. The literature contains many reports relating the predictive validity of high school grades and achievement test scores. Measures of reading ability, and, more recently, biographical data are also factors commonly studied for predictive purposes. While many factors are important, it appears that for a majority of college applicants, high school average (or class rank) is the best single predictor of academic success. Aptitude test scores add significantly to the prediction and scores on specific subject matter areas add only a small amount of predictive power.
Predicting college achievement for special admissions students is even more difficult than predicting for the general student population. The literature offers no final solution to the question of admitting high risk students. Special admit students have proven that they can succeed in college and most studies find that the traditional predictors of success are highly speculative when applied to the special admit student.
CHAPTER III
DESIGN OF THE STUDY

The research done in this study was by necessity ex post facto. This type of research is defined by Kerlinger (1964) as that in which the independent variable or variables (predictors) have already occurred and in which the researcher starts with the observation of a dependent variable or variables (criteria). He then studies the independent variables in retrospect for their possible relations to, and effects on, the dependent variable or variables.

Population. The population used in this study consists of students who during the period of 1970-1973, were rejected for admission to Worcester State College based on the traditional predictors of academic success. The rejected applicants later participated in a special pre-college academic skills program. Upon successful completion of this program they were granted full admission to the four year degree program.

One hundred and seventy of these students for whom data was available were selected for this study. For purposes of this study two sub-groups were identified: (1) Success Group (S), those who completed the program of study and were awarded the baccalaureate degree; (2) Withdrawal Group (W), those students who withdrew from the
degree program before the completion of all degree requirements. It should also be noted that the group of rejected applicants represented a variety of socio-economic and cultural backgrounds which corresponded to the backgrounds of the general applicant to Worcester State College.

Treatment of the data. Successful completion of college will be defined as the major dependent variable. Other variables will be treated as predictors and major questions can be answered in terms of the success or failure of the predictors. Statistical techniques included T-Score, Pearson Correlation Coefficients and Analysis of Variance.

Analysis of variance. The major statistical technique will be the S.P.S.S. model of Analysis of Variance sub-program ANOVA, which allows the user to specify a wide variety of analysis of variance and covariance designs through the use of special options. Available options allow the user to assess effects of nonmetric variables either simultaneously or in hierarchial fashion. Options are also available to eliminate higher order interaction effects from an analysis. Nie, Hull, Jenkins, Steinbrenner and Bent (1975). As reported by Wert, Neidt, and Ahmann (1954), the analysis of variance has been designed to
provide an efficient test of the significance of the difference between two or more groups simultaneously. The .05 level of confidence will be used to determine if the F ratio of the mean differences will be significant. The subprogram ANOVA of the statistical package for the social sciences performs a one to five way analysis of variance (up to five covariates) for factorial designs. As a result of this limitation it was necessary to take the nineteen independent variables and divide them into "Variable Blocks of Five." The final block of variables consisted of four independent variables. The composition of the variable blocks and their assigned values is as follows:

<table>
<thead>
<tr>
<th>Variable Block I</th>
<th>Assigned Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1 = 19 or under</td>
</tr>
<tr>
<td></td>
<td>2 = over 19</td>
</tr>
<tr>
<td>Pre/post test</td>
<td>1 = top 3rd</td>
</tr>
<tr>
<td>Diagnostic Reading</td>
<td>2 = middle 3rd</td>
</tr>
<tr>
<td>(two variables)</td>
<td>3 = bottom 3rd</td>
</tr>
<tr>
<td>Composite College</td>
<td>1 = 601 - 999</td>
</tr>
<tr>
<td>Board Score</td>
<td>2 = 200 - 600</td>
</tr>
<tr>
<td>Verbal College</td>
<td>1 = 200 - 400</td>
</tr>
<tr>
<td>Board Score</td>
<td>2 = 401 - 600</td>
</tr>
<tr>
<td></td>
<td>3 = 601 - 800</td>
</tr>
</tbody>
</table>
### Variable Block II

<table>
<thead>
<tr>
<th>Assigned Value</th>
<th></th>
</tr>
</thead>
</table>
| **College Board Mathematics Score** | 1 = 200 - 400  
  2 = 401 - 600  
  3 = 601 - 800 |
| **Quality Point Average First Semester** | 1 = below 1.00 Q.P.A.  
  2 = 1.00 - 1.99 Q.P.A.  
  3 = 2.00 - 4.00 Q.P.A. |
| **Quality Point Average Second Semester** | 1 = below 1.50 Q.P.A.  
  2 = 1.51 - 1.99 Q.P.A.  
  3 = above 2.00 Q.P.A. |
| **Course Credits Taken First Semester** | 1 = less than 12 credit hours  
  2 = more than 12 credit hours |
| **Course Credits Taken Second Semester** | 1 = less than 12 credit hours  
  2 = more than 12 credit hours |
<table>
<thead>
<tr>
<th>Variable Block III</th>
<th>Assigned Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1 = male</td>
</tr>
<tr>
<td></td>
<td>2 = female</td>
</tr>
<tr>
<td>Veteran Status</td>
<td>1 = non-veteran</td>
</tr>
<tr>
<td></td>
<td>2 = veteran</td>
</tr>
<tr>
<td>High School Rank in Class</td>
<td></td>
</tr>
<tr>
<td>1 = top quarter</td>
<td>2 = second quarter</td>
</tr>
<tr>
<td>3 = third quarter</td>
<td>4 = bottom quarter</td>
</tr>
<tr>
<td>Cumulative Quality Point Average Sophomore Year</td>
<td></td>
</tr>
<tr>
<td>1 = 1.74 or below Q.P.A.</td>
<td></td>
</tr>
<tr>
<td>2 = 1.75 - 1.99 Q.P.A.</td>
<td></td>
</tr>
<tr>
<td>3 = 2.00 or above Q.P.A.</td>
<td></td>
</tr>
<tr>
<td>Cumulative Quality Point Average Junior Year</td>
<td></td>
</tr>
<tr>
<td>1 = below 2.00 Q.P.A.</td>
<td></td>
</tr>
<tr>
<td>2 = 2.00 - 2.99 Q.P.A.</td>
<td></td>
</tr>
<tr>
<td>3 = 3.00 or above Q.P.A.</td>
<td></td>
</tr>
</tbody>
</table>
### Variable Block IV

<table>
<thead>
<tr>
<th>Description</th>
<th>Assigned Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative Quality Point Average</td>
<td></td>
</tr>
<tr>
<td>Senior Year</td>
<td>1 = 2.00 - 2.50 Q.P.A.</td>
</tr>
<tr>
<td></td>
<td>2 = 2.60 - 2.90 Q.P.A.</td>
</tr>
<tr>
<td></td>
<td>3 = 3.00 - 3.90 Q.P.A.</td>
</tr>
</tbody>
</table>

(Note: Quality Point Average "Senior Year" reflects Q.P.A. for withdrawal group (W))

| Semesters Completed                  | 1 = 1 - 4 semesters                                 |
|                                      | 2 = 5 or more semesters                            |

| Major Area of Study                  | 1 = Business Management, Psychology, Communication Disorders, History |
|                                      | 2 = Math, Spanish, Geography, Natural Science, Biology |
|                                      | 3 = Sociology, Economics, French, Media, Undeclared |

| Final Class Rank in College          | 1 = Top quarter                                   |
|                                      | 2 = Second quarter                                |
|                                      | 3 = Third quarter                                 |
|                                      | 4 = Bottom quarter                                |
Null Hypotheses

The Null Hypotheses applicable to this study are stated below:

1. There is no difference in age between the Success Group (S) and the Withdrawal Group (W).

2. There is no difference in veterans status between the Success Group (S) and the Withdrawal Group (W).

3. There is no difference in the Composite College Entrance Examination Board Scores (verbal and math) between the Success Group (S) and the Withdrawal Group (W).

4. There is no difference in the verbal scores of the C.E.E.B. between the Success Group (S) and the Withdrawal Group (W).

5. There is no difference in the mathematical scores on the C.E.E.B. between the Success Group (S) and the Withdrawal Group (W).

6. There is no difference in the first semester Quality Point Average between the Success Group (S) and the Withdrawal Group (W).

7. There is no difference in the second semester Quality Point Average between the Success Group (S) and the Withdrawal Group (W).

8. There is no difference in the sophomore Quality Point Average between the Success Group (S) and the Withdrawal Group (W).
9. There is no difference in the junior Quality Point Average between the Success Group (S) and the Withdrawal Group (W).

10. There is no difference in the senior Quality Point Average between the Success Group (S) and the Withdrawal Group (W).

11. There is no difference in high school class rank between the Success Group (S) and the Withdrawal Group (W).

12. There is no difference in the number of credit hours taken during the first semester between the Success Group (S) and the Withdrawal Group (W).

13. There is no difference in the number of credit hours taken during the second semester between the Success Group (S) and the Withdrawal Group (W).

14. There is no difference in the Pre-Diagnostic Reading Test between the Success Group (S) and the Withdrawal Group (W).

15. There is no difference in the Post-Diagnostic Reading Test scores between the Success Group (S) and the Withdrawal Group (W).

Data collection and instrumentation. The data and instruments used in this study were derived from four basic sources. They are data submitted as part of the admissions process, records obtained from the pre-college skills program, official college records, and data
obtained from the survey questionnaire.

Information obtained from admissions files consisted of the high school rank in class, College Entrance Examination Board Scores, Veteran status, and age and sex of applicant. Pre and Post Diagnostic Reading Test Scores (Nelson-Denny), as well as faculty evaluation of potential college success, were obtained from the pre-college skills program. The largest source of data for this study was official college records. These records provided the following information: Quality Point Average for the first and second semester as well as the sophomore, junior and senior years; credit hours taken first and second semester, number of semesters completed, major area of study, and final college rank. The survey questionnaire provided information of a non-cognitive nature that related to college success or withdrawal.

The survey questionnaire (see Appendix A). The questionnaire was designed to explore some of the non-cognitive factors that contributed to college success or withdrawal. Likert type questions were used in some instances such as student evaluation of the Pre-College Skills Program, and factors that contributed to successful completion of college. These questions called for a response based on (1) strongly disagree with the statement, (2) disagree with the statement, (3) neither agree nor disagree with the statement, (4) agree with the statement, (5) strongly agree with the statement. Question four of the survey was designed to
measure reasons for withdrawal from college. Students were requested to respond to a question listing nine factors influencing college withdrawal and were asked to indicate which reasons influenced their decision to withdraw based on a scale of (1) a major reason for my decision, (2) a minor reason for my decision, or (3) unrelated to my decision.

Other questions in the survey questionnaire were designed to measure student impressions of Worcester State College, peer relationships, overall evaluation of Worcester State, number of hours in outside employment.

In addition, questions were asked relating to parents' level of education, socio-economic level and racial background. The results obtained from the survey questionnaire will be presented in Chapter IV.
Analysis of variance. The Statistical Package for the Social Sciences (SPSS) was used to compute the analysis of variance for all variables. The variables were compared in blocks of five. Three Blocks of five variables produced a main effect that was significant at better than the .05 level. The results of these variable blocks are reported below.

The first block of variables consisted of the following five: Age, Pre Test - Reading Scores, Post - Test Reading Scores, College Board Composite (verbal and mathematics), College Board Verbal Score. The main effect of this group of variables is significant at better than the .05 level. Two variables within the group were significant at better than the .05 level. These were Age and Post - Test Reading Scores. Approximately 62 percent of the variation in the dependent variable was explained by this group of five variables with $r^2 = .615$. 
TABLE 2

ANALYSIS OF VARIANCE

BLOCK I

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>6.605</td>
<td>7</td>
<td>.944</td>
<td>6.497</td>
<td>.001*</td>
</tr>
<tr>
<td>Age</td>
<td>.922</td>
<td>1</td>
<td>.922</td>
<td>6.349</td>
<td>.019*</td>
</tr>
<tr>
<td>Pr 1</td>
<td>.218</td>
<td>2</td>
<td>.109</td>
<td>.751</td>
<td>.482</td>
</tr>
<tr>
<td>Pr 2</td>
<td>2.251</td>
<td>2</td>
<td>1.126</td>
<td>7.751</td>
<td>.002*</td>
</tr>
<tr>
<td>C.EE.B.</td>
<td>.442</td>
<td>1</td>
<td>.442</td>
<td>3.044</td>
<td>.093</td>
</tr>
<tr>
<td>Verb</td>
<td>.154</td>
<td>1</td>
<td>.154</td>
<td>1.063</td>
<td>.312</td>
</tr>
</tbody>
</table>

* F ratio is significant at better than .05 level
The second block of variables with a significant main effect consisted of the following variables: College Board Mathematics Score (Math), Quality Point Average for the first semester (QPA 1), Quality Point Average for the second semester (QPA 2), Credit hours taken first semester (Load 1) and credit hours taken second semester (Load 2). The main effect of this group of variables is significant at better than .05 level. One variable within the group was significant at better than the .05 level. This variable referred to quality point average at the end of the second semester. Approximately 40 per cent of the variation in the dependent variable was explained by this group of five variables with $r^2 = .402$. 
### TABLE 3

**ANALYSIS OF VARIANCE**

**BLOCK II**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>12.371</td>
<td>8</td>
<td>1.546</td>
<td>9.321</td>
<td>.001*</td>
</tr>
<tr>
<td>Math</td>
<td>.339</td>
<td>2</td>
<td>.169</td>
<td>1.022</td>
<td>.364</td>
</tr>
<tr>
<td>Q.P.A. I</td>
<td>.446</td>
<td>2</td>
<td>.223</td>
<td>1.343</td>
<td>.266</td>
</tr>
<tr>
<td>Q.P.A. II</td>
<td>4.440</td>
<td>2</td>
<td>2.220</td>
<td>13.382</td>
<td>.001*</td>
</tr>
<tr>
<td>Load I</td>
<td>.103</td>
<td>1</td>
<td>.103</td>
<td>.622</td>
<td>.432</td>
</tr>
<tr>
<td>Load II</td>
<td>.472</td>
<td>1</td>
<td>.472</td>
<td>2.845</td>
<td>.095</td>
</tr>
</tbody>
</table>

*F ratio is significant at the better than .05 level*
The final group of variables consisted of Verbal College Board Score (Verb), Quality Point Average second semester (QPA II), High School Rank (HS Rank) and Major Area of Study (Major). The main effect of this group of variables is significant at better than the .05 level. One variable within this group was significant at better than the .05 level. This was Quality Point Average at the end of the second semester (QPA II). Approximately 59 per cent of the variation was explained by this group of five variables with $r^2 = .589$. 
### TABLE 4

**ANALYSIS OF VARIANCE**

**BLOCK III**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>16.163</td>
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<td>1.616</td>
<td>15.331</td>
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</tr>
<tr>
<td>Verb</td>
<td>.090</td>
<td>1</td>
<td>.090</td>
<td>.852</td>
<td>.359</td>
</tr>
<tr>
<td>Q.P.A. I</td>
<td>.420</td>
<td>2</td>
<td>.210</td>
<td>1.990</td>
<td>.145</td>
</tr>
<tr>
<td>Q.P.A. II</td>
<td>9.695</td>
<td>2</td>
<td>4.847</td>
<td>45.979</td>
<td>.001*</td>
</tr>
<tr>
<td>H.S. Rank</td>
<td>.851</td>
<td>3</td>
<td>.284</td>
<td>2.691</td>
<td>.053</td>
</tr>
<tr>
<td>Major</td>
<td>.155</td>
<td>2</td>
<td>.078</td>
<td>.737</td>
<td>.482</td>
</tr>
</tbody>
</table>

* F ratio is significant at better than .05 level
**Null Hypothesis.** The Analysis of Variance resulted in the following results with regard to the Null Hypothesis in Chapter III.

There is no difference in age between the success group(S) and the withdrawal group(W).

The null hypothesis was rejected at - better than the .05 level (F = 6.349 with 1 d.f.)

There is no difference in the Composite College Entrance Examination Board Scores (verbal and math) between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level (F = 3.044 with 1 d.f.)

There is no difference in the Verbal Scores of the College Board Examinations between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level (F = 1.063 with 1 d.f.)

There is no difference in the mathematical scores on the College Board Examinations between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level (F = 1.022 with 2 d.f.)

There is no difference in the first semester Quality Point Average between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level (F = 1.343 with 2 d.f.)
There is no difference in the second semester Quality Point Average between the success group(S) and the withdrawal group(W).

The null hypothesis was rejected at better than the .05 level ($F = 13.382$ with 2 d.f.)

There is no difference in high school class rank between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level ($F = 2.578$ with 3 d.f.)

There is no difference in the number of credit hours taken during the first semester between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level ($F = .622$ with 1 d.f.)

There is no difference in the number of credit hours taken during the second semester between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level ($F = 2.845$ with 1 d.f.)

There is no difference in the Pre-Diagnostic Reading Test between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level ($F = .751$ with 2 d.f.)

There is no difference in the Post-Diagnostic Reading Test scores between the success group(S) and the withdrawal group(W).

The null hypothesis was rejected at better than the .05 level ($F = 7.751$ with 2 d.f.)

There is no difference in veteran status between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level ($F = .726$ with 1 d.f.)
There is no difference in the Sophomore Quality Point Average between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level (F = 1.049 with 1 d.f.)

There is no difference in the Junior Quality Point Average between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level (F = 3.800 with 2 d.f.)

There is no difference in the Senior Quality Point Average between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level (F = 4.837 with 8 d.f.)

There is no difference in sex between the success group(S) and the withdrawal group(W).

The null hypothesis was rejected at better than the .05 level (F = 2.602 with 1 d.f.)

There is no difference in the number of semesters completed between the success group(S) and the withdrawal group(W).

The null hypothesis was rejected at better than the .05 level (F = 163.774 with 1 d.f.)

There is no difference in the major area of study between the success group(S) and the withdrawal group(W).

The null hypothesis was accepted at the .05 level (F = 5.771 with 2 d.f.)
There is no difference in the final class rank between the success group (S) and the withdrawal group (W).

The null hypothesis was accepted at the .05 level ($F = 3.777$ with 3 d.f.)

**Pearson Correlation Coefficients.** The independent variables were also statistically analyzed using the Pearson correlation method. The significant correlations are stated below:

There is a positive correlation between the Pre-Test Reading Scores (PRI) and the dependent variable significant at better than the .05 level ($r = .2805$, $s = .006$).

There is a positive correlation between the Quality Point Average first semester (QPA1) and the dependent variable significant at better than the .05 level ($r = .3738$, $s = .001$).

There is a positive correlation between the number of credit hours taken first semester (load 1) and the dependent variable significant at better than the .05 level ($r = .2079$, $s = .018$).

There is a positive correlation between number of credit hours taken second semester (load 2) and the dependent variable significant at better than the .05 level ($r = .4843$, $s = .007$).

There is a positive correlation between sex and the dependent variable significant at better than the .05 level ($r = .2851$, $s = .001$).

There is a positive correlation between Quality Point Average for the Sophomore year (QPASO) and the dependent variable significant at better than the .05 level ($r = .3356$, $s = .001$).

There is a positive correlation between Quality Point Average Senior year (QPASR) and the dependent variable significant at better than the .05 level ($r = .7208$, $s = .001$).
There is a negative correlation between the Major Area of Study (MAJOR) and the dependent variable significant at better than the .05 level \((r = -0.4274, s = .001)\).

There is a negative correlation between Final College Rank (FCRANK) and the dependent variable significant at better than the .05 level \((r = -0.3957, s = .001)\).

There is a positive correlation between Quality Point Average second semester (QPA2) and the dependent variable significant at better than the .05 level \((r = 0.1884, s = .018)\).

There is a negative correlation between high school rank (HSRANK) and the dependent variable significant at better than the .05 level \((r = 0.1614, s = .032)\).

There is a positive correlation between Quality Point Average Junior year (QPAJR) and the dependent variable significant at better than the .05 level \((r = 0.3410, s = .001)\).

There is a positive correlation between semesters completed (SEMCOMP) and the dependent variable significant at better than the .05 level \((r = 0.7406, s = .001)\).

**T - Score Results.** When the independent variables were analyzed statistically based on the T-Score the following differences were found to be significant at better than the .05 level.

The difference between the means of the success group(s) and the withdrawal group(w) on Pre Diagnostic Reading Test (PRI) is significant at better than the .05 level \((T = 2.55, 2\text{-tail prob.} = .013\text{ with d.f.} = 76)\).

The difference between the means of the success group(s) and the withdrawal group(w) on the number of credit hours taken second semester (load 2) is significant at better than the .05 level \((T = 2.52, 2\text{-tail prob.} = .014\text{ with d.f.} = 85)\).
The difference between the means of the success group (S) and the withdrawal group (W) on Quality Point Average Sophomore year (QPASO) is significant at better than the .05 level (T = 5.53 2-tail Prob. = .000 with d.f. = 100).

The difference between the means of the success group (S) and the withdrawal group (W) on Quality Point Average Senior year (QPASR) was significant at better than the .05 level (T = 16.44 2-tail Prob. = .000 with d.f. = 16).

The difference between the means of the success group (S) and the withdrawal group (W) on Major area of study was significant at better than the .05 level (T = .267 2-tail Prob. = .009 with d.f. = 124).

The difference between the means of the success group (S) and the withdrawal group (W) on Quality Point Average First Semester (QPAS1) was significant at better than the .05 level (T = 4.77 2-tail Prob. = .000 with d.f. 139).

The difference between the means of the success group (S) and the withdrawal group (W) on the number of credit hours taken first semester (LOAD1) was significant at better than the .05 level (T = 5.74 2-tail Prob. = .000 with d.f. = 74).

The difference between the means of the success group (S) and the withdrawal group (W) on the number of semesters completed was significant at better than the .05 level (T = 12.37 2-tail Prob. = .000 with 72 d.f.).

The difference between the means of the success group (S) and the withdrawal group (W) on the final college rank was significant at better than the .05 level (T = 4.77 2-tail Prob. = .000 with 119 d.f.)

The difference between the means of all other independent variables were not significant at the .05 level.
The following tables present the means and standard deviations for all of the nineteen variables used in this study. Included with the mean is the standard deviation for each of the computed means. Table five presents the yearly Quality Point Average for the group of rejected applicants. The final table presented in this section presents the rate of withdrawal by year for the withdrawal group (W).
### TABLE 5

**MEAN QUALITY POINT AVERAGES OF REJECTED APPLICANTS**

<table>
<thead>
<tr>
<th></th>
<th>Mean QPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshmen</td>
<td>1.88</td>
</tr>
<tr>
<td>Sophomore</td>
<td>2.03</td>
</tr>
<tr>
<td>Junior</td>
<td>2.53</td>
</tr>
<tr>
<td>Senior</td>
<td>2.26</td>
</tr>
</tbody>
</table>

### TABLE 6

**RATE OF WITHDRAWAL**

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td>34 (19 first semester)</td>
</tr>
<tr>
<td>Second Year</td>
<td>32</td>
</tr>
<tr>
<td>Third Year</td>
<td>19</td>
</tr>
<tr>
<td>Fourth Year</td>
<td>3</td>
</tr>
</tbody>
</table>

88 (Total withdrawals)
<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>19.69</td>
<td>3.315</td>
</tr>
<tr>
<td>PR1</td>
<td>37.52</td>
<td>26.34</td>
</tr>
<tr>
<td>PR2</td>
<td>44.67</td>
<td>26.05</td>
</tr>
<tr>
<td>CEEB</td>
<td>763.43</td>
<td>111.06</td>
</tr>
<tr>
<td>VERB</td>
<td>368.56</td>
<td>66.30</td>
</tr>
<tr>
<td>MATH</td>
<td>396.80</td>
<td>76.42</td>
</tr>
<tr>
<td>QPA1</td>
<td>1.88</td>
<td>.6568</td>
</tr>
<tr>
<td>QPA2</td>
<td>2.03</td>
<td>1.094</td>
</tr>
<tr>
<td>LOAD1</td>
<td>13.54</td>
<td>4.967</td>
</tr>
<tr>
<td>LOAD2</td>
<td>13.42</td>
<td>3.801</td>
</tr>
<tr>
<td>SEX</td>
<td>1.335</td>
<td>.4736</td>
</tr>
<tr>
<td>VET</td>
<td>1.100</td>
<td>.3009</td>
</tr>
<tr>
<td>H.S.RANK</td>
<td>3.1045</td>
<td>.9117</td>
</tr>
<tr>
<td>OPASO</td>
<td>2.26</td>
<td>.5779</td>
</tr>
<tr>
<td>QPAJR</td>
<td>2.53</td>
<td>.5010</td>
</tr>
<tr>
<td>QPASP</td>
<td>2.26</td>
<td>.8036</td>
</tr>
<tr>
<td>SEMCOMP</td>
<td>5.922</td>
<td>3.275</td>
</tr>
<tr>
<td>MAJOR</td>
<td>5.704</td>
<td>4.823</td>
</tr>
<tr>
<td>FCRANK</td>
<td>3.14</td>
<td>1.100</td>
</tr>
</tbody>
</table>
Survey questionnaire results. The survey population consisted of those students who attended the pre-college skills program during 1970-73. These students attended Worcester State College during the period 1970 to 1977. The survey population was divided into two groups: (1) those who completed a four year degree program and (2) those who withdrew from the college before completing the program. Three mailings were made to each group during the period of April and May of 1978. In addition approximately one hundred twenty phone contacts were made in an attempt to increase the response rate. Difficulty was encountered in reaching some of the students due to the extended period of time (up to seven years). College records were often incorrect with regard to addresses and other identifying information. The final results yielded a return of thirty-five percent for the success group and sixteen percent for the withdrawal group. A summary of the responses to the questionnaire is described below. A copy of the questionnaire and a detailed summary of responses is contained in Appendix A.
Each group was asked to evaluate their experiences in the pre-college Summer Skills Program. A series of sixteen questions were used to evaluate this area. (See Appendix A). Some of the responses in this area are described below:

**Question:** I would recommend the Summer Skills Program to a friend

**Success Group**
- 39 percent agreed with this statement
- 28 percent disagreed with the statement
- 32 percent offered no opinion

**Withdrawal Group**
- 71 percent agreed with this statement
- 21 percent disagreed with this statement
- 7 percent offered no opinion

**Question:** I received adequate personal counseling

**Success Group**
- 67 percent agreed with this statement
- 17 percent disagreed with this statement
- 14 percent offered no opinion

**Withdrawal Group**
- 43 percent agreed with this statement
- 21 percent disagreed with this statement
- 36 percent offered no opinion

**Question:** The subject matter, methods and skills learned were useful

**Success Group**
- 61 percent agreed with this statement
- 17 percent disagreed with this statement
- 18 percent offered no opinion

**Withdrawal Group**
- 71 percent agreed with this statement
- 14 percent disagreed
- 14 percent offered no opinion
Question: The Summer Skills Program helped me to succeed at Worcester State College.

Success Group
61 percent agreed with this statement
17 percent disagreed with this statement
21 percent offered no opinion

Withdrawal Group
14 percent agreed with this statement
43 percent disagreed with this statement
21 percent offered no opinion

Students who failed to complete the degree program (W group) were asked to respond to a series of statements indicating their importance in arriving at their decision to withdraw. Responses were valued as "a major reason for my decision," "a minor reason for my decision," "unrelated to my decision."

Major reasons for withdrawing from college.

I had to change my career plans 36 percent
I was dissatisfied with the college environment 29 percent
I wanted time to consider my interests and career goals 43 percent
Attractive job opportunity 29 percent

Minor reasons for withdrawing from college.

I was dissatisfied with the college environment 36 percent
I wanted time to consider my interests and career goals 21 percent
I was tired of being a student 43 percent
My academic record was unsatisfactory 29 percent
Attractive job opportunity 14 percent
Unrelated to my decision to withdraw.

I had to change my career plans 57 percent
I was dissatisfied with the college environment 36 percent
I could not afford the cost of further education 85 percent
Marriage
I was tired of being a student 79 percent
My academic record was unsatisfactory 57 percent
I entered military service 79 percent
Attractive job opportunity 93 percent

In addition sixty four percent reported that they secured immediate employment after leaving Worcester State. Fifty percent indicated that since leaving Worcester State they had enrolled in another college.

Those students who successfully completed the four year program were asked a series of questions in an attempt to identify some of the factors that they felt contributed to their success.

Question. The Summer Academic Skills Program was helpful in enabling me to complete college

43 percent agreed with this statement
32 percent disagreed with this statement
21 percent offered no opinion

Question. A concerned faculty member was instrumental in assisting me to complete college

36 percent agreed with this statement
35 percent disagreed with this statement
25 percent offered no opinion
**Question:** Advising services received from faculty in my major area of study were most beneficial

- 60 percent agreed with this statement
- 06 percent disagreed with this statement
- 21 percent offered no opinion

**Question:** Help received from the college counseling center was instrumental in helping me to graduate

- 28 percent agreed with this statement
- 36 percent disagreed with this statement
- 32 percent offered no opinion

**Question:** If you had a definite career goal while in college, do you feel this was beneficial in achieving your degree

- 58 percent agreed with this statement
- 18 percent disagreed with this statement
- 25 percent offered no opinion

**Question:** Support and encouragement I received from my peers and family were influential in completing college

- 78 percent agreed with this statement
- 10 percent disagreed with this statement
- 14 percent offered no opinion

Questions nine through sixteen were answered by both groups of students. These questions were designed to evaluate their impressions of Worcester State College, peer relationships, outside employment, highest level of parents' education, annual income of parents and social background. The summary below will present the responses to these areas by the success group(s) and the withdrawal group (W).
Success Group. (Impressions of Worcester State College)

Question. Students are under a great deal of pressure to receive high grades

<table>
<thead>
<tr>
<th></th>
<th>Success Group</th>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>yes</strong></td>
<td>29 percent</td>
<td>7 percent</td>
</tr>
<tr>
<td><strong>no</strong></td>
<td>71 percent</td>
<td>85 percent</td>
</tr>
</tbody>
</table>

Question. The student body is apathetic and has little school spirit

<table>
<thead>
<tr>
<th></th>
<th>Success Group</th>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>yes</strong></td>
<td>46 percent</td>
<td>43 percent</td>
</tr>
<tr>
<td><strong>no</strong></td>
<td>54 percent</td>
<td>50 percent</td>
</tr>
</tbody>
</table>

Question. Most of the students are of a very high calibre academically

<table>
<thead>
<tr>
<th></th>
<th>Success Group</th>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>yes</strong></td>
<td>11 percent</td>
<td>7 percent</td>
</tr>
<tr>
<td><strong>no</strong></td>
<td>89 percent</td>
<td>50 percent</td>
</tr>
</tbody>
</table>

Question. There isn't much to do except go to class and study

<table>
<thead>
<tr>
<th></th>
<th>Success Group</th>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>yes</strong></td>
<td>46 percent</td>
<td>7 percent</td>
</tr>
<tr>
<td><strong>no</strong></td>
<td>54 percent</td>
<td>85 percent</td>
</tr>
</tbody>
</table>
Question. I felt lost when I first came on campus.

<table>
<thead>
<tr>
<th></th>
<th>Success Group</th>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes 43 percent</td>
<td>yes 50 percent</td>
<td>yes 43 percent</td>
</tr>
<tr>
<td>no 57 percent</td>
<td>no 43 percent</td>
<td>no 57 percent</td>
</tr>
</tbody>
</table>

Question. Being at Worcester State builds poise and maturity.

<table>
<thead>
<tr>
<th></th>
<th>Success Group</th>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes 43 percent</td>
<td>yes 21 percent</td>
<td>yes 43 percent</td>
</tr>
<tr>
<td>no 54 percent</td>
<td>no 64 percent</td>
<td>no 43 percent</td>
</tr>
</tbody>
</table>

Question. The classes are usually run in a very informal manner.

<table>
<thead>
<tr>
<th></th>
<th>Success Group</th>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes 57 percent</td>
<td>yes 43 percent</td>
<td>yes 43 percent</td>
</tr>
<tr>
<td>no 43 percent</td>
<td>no 43 percent</td>
<td>no 43 percent</td>
</tr>
</tbody>
</table>

Question. Most students are like numbers in a book.

<table>
<thead>
<tr>
<th></th>
<th>Success Group</th>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes 43 percent</td>
<td>yes 36 percent</td>
<td>yes 57 percent</td>
</tr>
<tr>
<td>no 57 percent</td>
<td>no 57 percent</td>
<td>no 57 percent</td>
</tr>
</tbody>
</table>

In responding to the question relating to peer relationships, 89 percent of the success group indicated they know ten or more people by their first names or by nickname. The corresponding figure for the withdrawal
group was 64 percent. In response to the question
"How many of these students did you consider close
friends?", forty-six percent of the success group
indicated 6 or less whereas 86 percent of the
withdrawal group indicated 6 or less. In response
to "How many students had ten or more close friends?",
32 percent of the success group and 7 percent of
the withdrawal group indicated close relationships
with ten or more students.

**Question:** What is your overall evaluation of
Worcester State College?

<table>
<thead>
<tr>
<th>Success Group</th>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied</td>
<td>Very satisfied</td>
</tr>
<tr>
<td>32 percent</td>
<td>0 percent</td>
</tr>
<tr>
<td>On the fence</td>
<td>On the fence</td>
</tr>
<tr>
<td>11 percent</td>
<td>21 percent</td>
</tr>
<tr>
<td>Very dissatisfied</td>
<td>Very dissatisfied</td>
</tr>
<tr>
<td>0 percent</td>
<td>7 percent</td>
</tr>
<tr>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
<tr>
<td>46 percent</td>
<td>43 percent</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>Dissatisfied</td>
</tr>
<tr>
<td>7 percent</td>
<td>29 percent</td>
</tr>
</tbody>
</table>

The success group indicated that 36 percent worked
more than twenty hours a week in outside employment.
The corresponding figure for the withdrawal group was
29 percent. The success group reported that 68 percent
worked ten or more hours a week. Fifty-eight percent
of the withdrawal group worked more than ten hours per
week.
**Question.** All in all, in terms of your own needs and desires, how much of the following did you receive during your time at Worcester State College?

<table>
<thead>
<tr>
<th>Success Group</th>
<th>Too much or too little</th>
<th>Just about the right amt.</th>
<th>Not enough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freedom in course selection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social life</td>
<td>3</td>
<td>79</td>
<td>14</td>
</tr>
<tr>
<td>Personal contacts with classmates</td>
<td>11</td>
<td>64</td>
<td>21</td>
</tr>
<tr>
<td>Work required of you in courses</td>
<td>0</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Outlets for creative activities</td>
<td>29</td>
<td>64</td>
<td>3</td>
</tr>
<tr>
<td>Sleep</td>
<td>7</td>
<td>39</td>
<td>50</td>
</tr>
<tr>
<td>Exercise</td>
<td>7</td>
<td>57</td>
<td>25</td>
</tr>
<tr>
<td>Personal contacts with faculty</td>
<td>3</td>
<td>75</td>
<td>18</td>
</tr>
<tr>
<td>Advice and guidance from faculty and staff</td>
<td>7</td>
<td>39</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>50</td>
<td>39</td>
</tr>
</tbody>
</table>

| Withdrawal Group                     |                         |                           |            |
| Freedom in course selection          | 0                      | 50                        | 43         |
| Social life                          | 7                      | 71                        | 43         |
| Personal contacts with classmates    | 0                      | 71                        | 21         |
| Work required of you in courses      | 21                     | 64                        | 0          |
| Outlets for creative activities     | 0                      | 64                        | 21         |
| Sleep                                | 7                      | 79                        | 7          |
| Exercise                             | 7                      | 72                        | 14         |
| Personal contacts with faculty       | 0                      | 64                        | 29         |
| Advice and guidance from faculty and staff | 0             | 64                        | 29         |
Question. What is the highest level of formal education obtained by your parents?

<table>
<thead>
<tr>
<th>Success Group</th>
<th>Father (Percentages)</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grammar school</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>Some high school</td>
<td>60</td>
<td>57</td>
</tr>
<tr>
<td>Some college</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>College degree</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Post graduate degree</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Withdrawal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grammar School</td>
</tr>
<tr>
<td>Some high school</td>
</tr>
<tr>
<td>Some college</td>
</tr>
<tr>
<td>College degree</td>
</tr>
<tr>
<td>Post graduate degree</td>
</tr>
</tbody>
</table>

Note: Percentages given do not equal one-hundred percent at all times due to the fact that not all respondents replied to each question.

Summary of questionnaire results. The results of the survey questionnaire must be treated cautiously due to the small response rate. However, the results received do indicate a variety of feelings both of the college as well as the pre-college Summer Skills Program. An interesting observation with regard to the Skills Program was that 29 percent of the success(s)group would recommend the program to a friend. However, 61 percent of this group felt the program was a definite help in succeeding in college. With the withdrawal group 71 percent would recommend the program to a friend; however, only 14 percent felt the program helped them to succeed at Worcester State College.
In examining the reasons for withdrawing from college the group listed the following three factors as being the most significant in arriving at a decision to leave.

1. Change in career plans 36 percent
2. Dissatisfied with the college environment 29 percent
3. Wanted time to consider my interests and career goals 43 percent

Factors unrelated to their decision to withdraw:

1. Cost of further education 85 percent
2. Marriage 79 percent
3. Academic record 79 percent
4. Military service 93 percent
5. Attractive job opportunity 57 percent

The success group was asked to respond to the factors that helped them to succeed at Worcester State College. The three most significant factors that influenced success as reported were:

1. A definite career goal 58 percent
2. Encouragement received from peers and family 78 percent
3. Advising services received from faculty in major area of study 60 percent
Both groups were asked to answer questions relating to their impressions of Worcester State College. Successful students felt a larger amount of pressure to get high grades (29 percent) than those in the withdrawal group (7 percent). A larger percentage of the success group (46 percent) felt college was basically going to class and studying. Only 7 percent of the withdrawal group felt this way about college life. Successful students reported more close peer relationships (32 percent) than those in the withdrawal group (7 percent).

A larger percentage of the success group worked in outside employment (10-15 hrs., 32 percent, above 20 hrs., 36 percent) than did those in the withdrawal group (10-15 hrs., 29 percent, above 20 hrs., 29 percent). When asked to give their overall evaluation of Worcester State College 82 percent of the success group reported that they were very satisfied (36 percent) or satisfied (46 percent). The corresponding figures for the withdrawal group were very satisfied (0 percent) satisfied (43 percent).
Conclusion. The research completed in this study will now be related to the original questions stated in Chapter One under Statement of the Problem. Answers to these questions will be based on the data presented in this chapter.

Question. What identifiable factors within the rejected group of applicants enabled them to eventually achieve such a high rate of success?

In analyzing this question three statistical techniques were employed. They were T-Scores, Pearson Correlation Coefficients, and Analysis of Variance (results previously reported in this chapter). The Analysis of Variance is regarded as the most sophisticated statistical technique of the three methods employed. The results of the Analysis of Variance indicated three factors as significantly influencing academic success. These three factors were age of student, scores achieved on post-diagnostic reading test and quality point average at the end of the second semester.
Question: What identifiable factors influenced attrition within the rejected group of applicants?

In response to a survey questionnaire those students who failed to graduate were asked to indicate their major and minor reasons for leaving college. The findings in this area are as follows:

**Major reasons for withdrawal.**

- Had to change career plans: 36 percent
- Tired of being a student: 29 percent
- Wanted time to consider interest and career goals: 43 percent
- Attractive job opportunity: 29 percent

**Minor reasons for withdrawal.**

- Dissatisfied with college environment: 36 percent
- Wanted time to consider interests and career goals: 21 percent
- Tired of being a student: 43 percent
- Academic record was unsatisfactory: 29 percent
In addition to indicating the major and minor reasons for withdrawal, students were asked to respond to criteria that were unrelated to their decision. Significant responses in this area are listed below:

**Unrelated to my decision to withdraw**

- I entered military service 93 percent
- My academic record was unsatisfactory 71 percent
- Marriage 79 percent

**Question. Is it possible through data obtained from this study to develop a profile that will identify the positive and negative factors that influenced the academic achievement of the rejected applicant?**

**Cognitive and non-cognitive factors influencing success.**

In an attempt to analyze the data and respond to the question two major areas will be discussed. They are cognitive factors and non-cognitive factors related to success.

Cognitive factors that influence success were identified through the use of Analysis of Variance. These factors for the success group were identified as being post-test diagnostic reading scores and quality point average at the end of the second semester. Non-cognitive factors reported were:
A concerned faculty member was instrumental in assisting me to complete college.

Advising services received from faculty in my major area of study were most beneficial.

Help received from the college counseling center was instrumental in helping me to graduate.

A definite career goal was beneficial in helping me to complete college.

Support and encouragement I received from my peers and family were influential in completing college.

An examination of the data for the withdrawal group would indicate that reading ability and second semester quality point average would be significant cognitive factors that influenced their withdrawal from college.

Non-cognitive factors influencing attrition were discussed in the previous question. It is apparent that dissatisfaction with the college environment and lack of a definite career goal were significant factors influencing withdrawal from college.
Specific questions researched.

Do standardized measures of reading (Nelson-Denny Reading Test) predict program success for a special student sample?

Results obtained from the statistical analysis would support the use of the Nelson-Denny Reading Test as a predictor of academic success for the rejected applicants.

Do faculty evaluations of individual students predict ultimate success in college?

Faculty members were able to accurately predict academic success for the group of rejected applicants in 34 percent of the cases presented.

In the special sample is the initial success (first and second semester) in college related to future success?

Results of the statistical evaluation indicate that a negative correlation exists between first semester quality point average and success. Data for the second semester quality point average however, indicated a positive correlation with success.
To what extent do College Board Scores (math and verbal) and high school rank predict success for the special program student?

In the statistical analysis it was computed that composite College Board Scores as well as individual scores in the verbal and mathematical area did not correlate with success. This was true for all three statistical techniques employed. (T-Score, Pearson Correlation, Analysis of Variance). This further substantiates the fact that traditional predictive criteria of scholastic aptitude was not valid for the rejected applicant. The group of rejected applicants had a mean College Board verbal score of 368 and a mean mathematical score of 396 with a composite mean of 763.
CHAPTER V
DISCUSSION OF FINDINGS AND PERSONAL OBSERVATIONS

The population group studied consisted of students who had been denied admission to a four year degree program. The decision to reject these applicants was based on the traditional predictors of academic success, high school rank, and scholastic aptitude tests. The rejected students participated in an intensive pre-college academic skills program which emphasized basic academic skill development as well as providing a supportive atmosphere for the student. Results of the study show that 34 percent of those students who enrolled in the college from this program eventually graduated. This figure compares with 35 percent of the regular admit students who successfully completed the four year program.

Research conducted attempted to determine those factors that influenced success or attrition for the rejected group of applicants.

The Statistical Package for the Social Sciences (SPSS) was used to compute the statistical data in this paper. Three basic statistical approaches were implemented to analyze nineteen variables that may have influenced success or withdrawal from college. The three statistical
approaches used were T-Scores, Pearson Correlation of Coefficient, and Analysis of Variance. The results of the Analysis of Variance revealed that age, post diagnostic reading scores and quality point average at the end of the second semester were statistically significant in predicting those students who would successfully complete the four year college program.

Garrett (1949) in a review of two decades of literature pertaining to predicting academic success found that "The Nelson Denny Reading Test gives a good indication of probable college success, no doubt due to the reasonable assumption that there is a close relationship between one's ability to read and his probable success in college." Several studies have shown that college achievement is a valid predictor of college success. Lewis (1964), Willingham (1963), Waller (1962), Beals (1968). Studies done with regard to age generally have reported that younger undergraduate students do better academically than older students Garrett (1949), Lucy (1962). However, earlier studies done by Harris (1932) and Flory (1940) concluded "older more mature students, even when somewhat less intelligent, are likely to exceed immature students in achievement." Studies done relating to the older students who were veterans of the armed forces indicate that they do better than average work
Atkinson and Webb (1946), Day (1947), Thompson and Fletcher (1947). The median age for the group of rejected applicants was 19.6 years.

The results of the Analysis of Variance which establishes age, college achievement and post-test reading scores as predictors of academic success for the group being studied will enable future pre-college skills programs to consider the factors in their individual assessments. A pre/post test in Diagnostic Reading (Nelson-Denny) is administered as part of each pre-college skills program. The results achieved from the Analysis of Variance will enable the program staff to place greater validity on this score in relation to predicting academic success.

The results of the Analysis of Variance in this study establish that the traditional predictors of academic success in college (high school rank, scholastic aptitude) are not valid when applied to the rejected group of applicants. These results correlate with studies done by Lowry (1975), Beach (1968), Hammond and Rosich (1971), Hodges (1971), Pedrini and Pedrini (1973). In this study it was found that although high school rank had a positive correlation with success it did not emerge as a valid predictor when "mixed" with other variables in the Analysis of Variance. In fact it must be realized that based on
the traditional predictors of academic success used by the admissions department at Worcester State College, all of these students were labeled as not capable of doing college level work. Yet, over one-third successfully completed the four year degree program.

Correlation studies completed establish a positive correlation between the following variables and the dependent variables:

Pre-test reading scores
Quality point average first semester
Quality point average second semester
Number of credit hours taken first semester
Number of credit hours taken second semester
Quality point average for the sophomore year
Quality point average for the senior year
Quality point average junior year
Number of semesters completed

The results of this data again stress the importance of reading level. In addition the relationship of number of credit hours taken indicates that the special study group be given a reduced academic load during the first two semesters. The average academic load for all students is 15.5 credit hours. The mean academic load for the special group being studied was 13 credit hours for the first and second semesters of the freshmen year.
A significant factor emerging from this study is the importance of quality point average second semester. Past studies have shown that college achievement is a valid predictor of success. However, the significance of this result for the rejected applicant seems to indicate that a valid reason exists to modify existing minimum quality point averages in order to help the rejected applicant to succeed. These results indicate that the rejected applicant's academic progress is slow starting but improves each semester. A recommendation that the minimum quality point average of 1.00 for the first semester and 1.50 for the second semester not be mandated for this group of students would most likely increase the rate of success. The required 1.75 quality point average at the end of the sophomore year could be maintained, thereby maintaining overall academic standards for the degree.

The variable quality point average for the four years of the degree program correlates with success. The final college rank of the success group placed them in the 3rd quartile. As a total group the mean high school rank for the rejected applicants was also the 3rd quartile. The quality point average of the study group went from a 1.88 quality point average first semester to a high of 2.53 during the junior year. There is a definite upward
trend for the first three years of college. The mean quality point average for the senior year was 2.26.

Factors that might influence the upward trend of the quality point average are varied and include both cognitive and non-cognitive factors. Certainly the adjustment to the college environment influenced the ultimate quality point average. Also, by the end of the sophomore year 77 percent of the withdrawal group had withdrawn from the college. This would reduce the number of less motivated students in the total group. Approximately 50 percent of the withdrawal group responding to the survey questionnaire reported that they later enrolled in another college. Some 13 percent withdrew with passing academic averages.

The reduced load, especially during the first and second semesters, correlated with success. The total number of credits needed for graduation at Worcester State College is one hundred twenty-eight. When we compare credit hours taken with the number of semesters taken to complete the degree program we find that the vast majority of the study group completed their program in eight semesters (four years). This would indicate that extra courses were taken at some time or that students attended the summer undergraduate program in order to complete their course of study.
In the statistical analysis it was computed that composite College Board Scores as well as individual scores in the verbal and mathematical area did not correlate with success. This was true for all three statistical techniques employed. (T-Score, Pearson Correlation, Analysis of Variance) This further substantiates the point previously made that the traditional predictive criteria of scholastic aptitude was not valid for the rejected applicant. The group of rejected applicants had a mean College Board verbal score of 368 and a mean mathematical score of 396 with a composite mean 763.

T-Score statistical analysis identified significant difference in the means of nine of the independent variables at better then the .05 level. They were:

Pre diagnostic reading test
Quality point average first semester
Number of credit hours taken first semester
Sex of student
Quality point average for the sophomore year
Quality point average for the senior year
Major area of study
Final class rank
Number of semesters completed
Reading level and its resulting influence on academic performance are highlighted as factors in success. Added to these factors is the number of courses taken in a given semester. As previously cited in the other statistical techniques employed, these criteria have a direct influence on success in college for the rejected applicant.

It is difficult to arrive at conclusive data with regard to major area of study. For purposes of this study, majors taken by the study group were assigned codes of one through fifteen. Data indicates that those in majors identified with the higher numbers tended to be more successful. The median figure for the major was 5.7, which means that those majors identified by coded numbers one through five were less successful than those in the majors coded at the higher end of the scale. It appears that only extreme low and high areas would be the only majors offering some degree of accuracy. The major areas of study for the study group and the corresponding number is listed below:

1. Elementary Education
2. Psychology
3. Mathematics
4. Spanish
5. History
6. Geography
The results of the survey questionnaire were divided into the success group and the withdrawal group. The questionnaire was designed to elicit opinions and feelings relative to the pre-college skills program, the college environment, reasons for success or withdrawal and family educational and socio-economic level.

**Evaluation of pre-college skills program.** A majority of the students in the success group (61 percent) felt that the pre-college skills program helped them to succeed at Worcester State College. In addition 14 percent of the withdrawal group felt that the summer program helped them at Worcester State College. An interesting response, however, was in the success group where 61 percent felt the pre-college skills program helped them to succeed but only 29 percent would recommend the program to a friend.
However, within the withdrawal group 71 percent would recommend the program to a friend. It is difficult to obtain a final decision from this. It is possible that the withdrawal group felt that since obviously they did not succeed in graduating they could not agree with a question that asked if the skills program "helped them to succeed." They would, however, still recommend the program to a friend.

Counseling received during the pre-college skills program was perceived by 67 percent of the success group as being adequate whereas only 43 percent of the withdrawal group felt that the counseling received was adequate. There appears to be a strong need for adequate counseling both in the skills program as well as during the college years. A clearly defined career goal was considered by 53 percent of the success group to be a major factor in their success. Students within the withdrawal group indicated that a major reason for leaving college was a "change of career plans" or "wanted time to consider my interests and career goals" (79 percent). These results stress the need for a strong program of career and personal counseling for the group of rejected applicants.

Reasons for withdrawing from the college. As previously mentioned a major reason cited for leaving college was the lack of a definite career goal. In addition 36 percent listed as a major reason for withdrawal "dissatisfaction
with the college environment." Therefore, it appears that a larger percentage of the withdrawal group left because they "felt lost: with no clear purpose as to why they should stay in college." A significant factor in succeeding as reported by the success group was the advice and counseling received from faculty members in their major area of study. Students who are unsure of their career goals even though they may have a declared major may not have developed close rapport with faculty members within their declared major area of study. They are thus deprived of significant assistance in their college program.

Approximately 44 percent listed an "attractive job opportunity as being a major or minor reason for withdrawing from college." However, 50 percent stated that they eventually enrolled in another college. It is possible that many of these students who secured full time employment continued their education on a part-time basis. Some 85 percent of the respondents indicated that the cost of further education was unrelated to their decision to leave. This most likely refers to the costs incurred at a state institution. Most of these students were commuting students and their total costs for college would be approximately seven hundred dollars a year. Although the cost of education in itself was not a burden, their continued presence in college on a full-time basis effectively
excluded them from the job market and full-time employment. With no positive reason for obtaining a college education, the job market seemed to many a more attractive opportunity.

**Factors influencing success.** The success group (S) was asked to respond to a series of questions evaluating factors that they felt influenced their success at Worcester State College. A large majority (61 percent) cited the pre-college skills program as a major factor. In addition 36 percent of the respondents reported that "a concerned faculty member was instrumental in assisting me to complete college." Some 60 percent of the respondents indicated that advising services received from faculty members in their major area of study was significant in helping them to complete college.

These facts stress the importance of a supportive and caring atmosphere in providing a positive environment for success. It should be noted that one does not have to be a trained counselor in order to create and provide this positive atmosphere. Many faculty members can readily assist students by demonstrating sincere and honest interest in their welfare. The writer believes the results of the data reported thus far indicate a strong need for the establishment of close rapport between high risk students and professional members of the college community.
By far the single most important non-cognitive factor influencing success as reported by those responding to the survey was support received from peers and family. It is interesting to note that neither of these two factors is under the direct control of the college. A possible reason for the strong family influence is the fact that a large majority of these students were commuting students and many continued to live at home and were influenced directly by family relationships. Studies completed in the area of predicting college success have shown that the establishment of close peer relationships have an influence on success in college.

Research data reveals that the success group felt that they had developed closer peer relationships than those in the withdrawal group. The success group reported that 89 percent knew ten or more students by their first names. The corresponding figure for the withdrawal group was 64 percent.

When asked to evaluate how many of these students would be considered close friends, 32 percent of the success group responded that they had ten or more close friends. Only 7 percent of the withdrawals indicated close relationships with ten or more peers. These results realistically point out that success in college is not solely based on
cognitive predictors but that the non-cognitive area is equally as important. Social integration and level of self-concept are as important for success in college.

**Impressions of Worcester State College.** Both groups of students felt that the student body at Worcester State College was apathetic and had little school spirit. (46 percent S-Group, 43 percent W-Group). Both groups also reported that they did not feel that as a group their fellow students were of a very high academic calibre. (89 percent S-Group, 50 percent W-Group). The writer has been a faculty member at the college for thirteen years and would tend to agree that academic quality has lessened to some degree over the last several years. How much of this is due to the student body and how much of it is caused by lower expectations by faculty members is difficult to assess. Suffice to say that there is room for improvement in this area both on the part of students and faculty.

In response to a question relating to college social life, 46 percent of the success group felt that there was not much to do except go to class and study, while only 7 percent of the withdrawal group felt this way. An interesting question is: in what other activities did the withdrawal group engage? They reported a small percentage of close friends on campus; yet, in response to this question they obviously found other things to do besides academic work. A possible assumption here
is that this group may have been engaged in various activities off campus. The basic fact in this data is that classroom work and studying did not occupy a major portion of the time of students in the withdrawal group. Basically, as might be expected, the success group reported a more favorable impression of Worcester State College.

**Overall Evaluation of Worcester State College.** The success group was either very satisfied or satisfied with its college experience (36 percent very satisfied, 46 percent satisfied). Less than half of the withdrawal group were satisfied with Worcester State College, (0 percent very satisfied, 43 percent satisfied). It is surprising that 43 percent of the withdrawal group would express satisfaction with the institution. There is a strong need for more research in the area of how a student perceives an institution of higher education. Equally strong is the need for each institution to clearly define its goals. This is necessary in order for students to know exactly what each college represents. Much of the confusion as to the value of college stems from the lack of a clear definition of purpose on the part of the institution. This fact, added to the lack of a definite career goal on the part of many students, make it extremely difficult for them to be motivated in an institution that is unable to clearly state the reasons for its existence.
With regard to personal contact with faculty members and advice and guidance received, 82 percent of the success group felt that they had not received enough. Only 58 percent of the withdrawal group felt this way. In spite of this, the success group considered that assistance received from faculty members in their major area of study was a major factor in their success. It is possible that the withdrawal group's lack of a definite career goal may have influenced their feelings for a need for closer faculty support. In other words students who knew where they were going sought out faculty members who could help them. The student who was unsure of his/her goals continued to be lost in the college community. This again stresses the need for a coordinated program of career counseling especially during the first and second semesters.

The withdrawal group also expressed dissatisfaction with campus social life (43 percent) and felt the need for more social life on campus. Only 21 percent of the success group expressed a need for more social life. A question here is what each student perceives college life to be. Studies have shown that social integration is a significant part of student growth during his/her college years. Studies have also shown that too much social life may be detrimental to a college career. A basic fact of life at Worcester State College is that it is a commuting college. This, in itself,
tends to limit the social life on campus. However, it is the opinion of the writer that more positive steps could be taken by the institution to improve the social life of the commuting students. This applies to all students, not just to the special population group being studied.

In summary, the survey questionnaire provided data which supports current research being done in the area of non-cognitive variables and their influence on academic success. A difficulty encountered in this area is how do we measure and evaluate these variables. The state of the art of personality measurement needs to be refined further in order to improve predictive studies in this area. Each college provides a different environment and what may be a suitable environment for one student may not be for another. The first step an institution must take in this area is to recognize the importance of the non-cognitive areas as a factor in academic success. Once an institution is aware of this fact, it will have taken a major step in developing a meaningful college experience for all of its students. Garrett (1949) reports that the average coefficient of correlation for cognitive variables in predicting academic success is .45. This means that over half of the criteria that influences college success remains a mystery to most institutions of higher learning. The need for further research in this area is readily apparent.
The specific questions that this study presented in Chapter I were discussed in Chapter IV.

The results indicate a need to study further the use of standardized diagnostic testing especially for marginal students. The use of the Nelson-Denny Reading Test would provide a more accurate diagnosis of reading ability than the College Board Verbal section. Students who show a serious deficiency in their academic skills can succeed in college if given an opportunity to improve their skills. The use of a pre-college skills program has demonstrated that students rejected by traditional predictors of academic success can succeed in college if provided with the proper programs and support services.

The research was concerned with identifying predictors of academic success for the group of rejected applicants. Nineteen variables were examined to determine their predictive value. It was found that three independent variables were valid predictors of success. These were age, quality point average second semester and post-diagnostic reading tests. Success was defined in this study as the completion of a four year degree program. Therefore, the study was longitudinal in its approach to the problem. A significant factor in this study is that 34 percent of those students who were judged not acceptable successfully completed a four year degree program.
Recommendations. The following recommendations are based on the results of this study. They are concerned with policies and procedures affecting the pre-college skills program, and more broadly admissions policies and academic rules and regulations affecting all students at Worcester State College.

Recommendation 1. Future students participating in the pre-college skills program should not be required to have a minimum quality point average 1.00 first semester or 1.50 second semester. Mandatory minimum quality point policies should be applied at the end of the sophomore year.

Recommendation 2. Career counseling seminars should be implemented for students completing the pre-college skills program. These career seminars should be given during the first and second semesters.

Recommendation 3. Students completing the pre-college skills program should be assigned to the Developmental Skills Center for further assistance in improving academic skills.

Recommendation 4. Students who have not declared a major area of study should be assigned a concerned and skilled faculty member to serve as an advisor until a major is declared.

Recommendation 5. In order to provide greater social integration for the high risk applicant, increased use should be made of the student descriptive questionnaire in order to determine student interests and needs. The results obtained could then be related to the various clubs, programs, and student activities presently on campus.

Recommendation 6. An ad hoc committee should be appointed to devise a program to measure student attitudes and perceptions of the college environment at Worcester State College.
Conclusion. Any attempt to predict academic success is highly complex and difficult. Predictive studies relating to the traditional student have been done over a period of many years. As of this moment a final answer has not been obtained. Studies relating to the rejected applicant are limited and in many cases relate only to successful completion of the first or second semester of college. It is the opinion of this writer that many able students are often denied admission because they fail to meet the traditional predictors of academic success. Yet studies have consistently shown that approximately 50 percent of those admitted on the basis of these predictors fail to graduate. The state of the art in predicting college success leaves much to be desired. This study has shown that 34 percent of the rejected applicants can succeed in college. Each college and university needs to carefully examine its admissions policies and search out data that will provide them with a meaningful predictive formula for applicants to their institution. A summation of a basic underlying theme of this study was written by Tribilicock (1938) in an article entitled "Many of the Lowest Third of Our Graduates Are College Material."
While it is wasteful and otherwise undesirable to have the unfit in college, it is also wasteful and undesirable to keep the fit out of college. For many students there is no adequate test of fitness except the actual attempt to carry college work.
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APPENDIX A
Instructions:

You are being asked to help in the evaluation of the Summer Academic Skills Program. Your responses will be used to make decisions concerning the future of this program. Please be honest.

Student's Name

1. Date of graduation from Worcester State College

2. Please indicate your response to each of the following statements by indicating the appropriate number which most nearly expresses your opinion, according to the following criteria:

1 - if you strongly disagree with the statement
2 - if you disagree with the statement
3 - if you neither agree nor disagree with the statement
4 - if you agree with the statement
5 - if you strongly agree with the statement

1. I have become a more competent person due to the Skills Program.
   Circle One 1 2 3 4 5
   Response Percentage 0 07 50 14 07

2. Good use of class time was made in all courses in the Skills Program.
   Circle One 1 2 3 4 5
   0 07 14 50 21

3. Material in all classes in the Summer Skills Program was presented in a clear and interesting manner.
   Circle One 1 2 3 4 5
   0 07 29 29 29

4. Objectives of each course were explained adequately to me.
   Circle One 1 2 3 4 5
   0 14 07 57 14

5. Staff members working with me showed understanding and sympathy for problems related to me.
   Circle One 1 2 3 4 5
   0 07 03 50 07

6. The instructors in the Skills Program demonstrated a thorough knowledge of their subject matter.
   Circle One 1 2 3 4 5
   0 07 07 50 20
(continued)

1 - if you strongly disagree with the statement
2 - if you disagree with the statement
3 - if you neither agree nor disagree with the statement
4 - if you agree with the statement
5 - if you strongly agree with the statement

7. I enjoyed being a part of the Summer Academic Skills Program.
   Circle One 1 2 3 4 5
   Response Percentage 07 0 29 43 14

8. I would recommend the Summer Skills Program to a friend.
   Circle One 1 2 3 4 5
   07 14 07 50 21

9. I was given ample opportunity to participate in each class.
   Circle One 1 2 3 4 5
   0 0 0 50 20

10. Generally the Skills Program was well organized.
    Circle One 1 2 3 4 5
    0 0 36 43 14

11. I received adequate personal counseling.
    Circle One 1 2 3 4 5
    07 14 36 29 14

12. Teaching methods used were appropriate for the program.
    Circle One 1 2 3 4 5
    0 0 36 36 14

13. The subject matter, methods and skills learned were useful.
    Circle One 1 2 3 4 5
    0 14 14 64 07

14. I was encouraged to work independently.
    Circle One 1 2 3 4 5
    0 0 36 50 0

15. The Summer Skills Program helped me to succeed at Worcester State College.
    Circle One 1 2 3 4 5
    14 29 21 14 0

3. Please list the occupation of your parents.

Father ________________________________ Occupation ________________________________

Mother ________________________________ Occupation ________________________________
4. IF YOU DID NOT COMPLETE THE FOUR YEAR DEGREE PROGRAM AT WORCESTER STATE COLLEGE PLEASE ANSWER THE FOLLOWING QUESTIONS. IF YOU GRADUATED OMIT AND SKIP TO QUESTION 3. PAGE 4.

In deciding to leave Worcester State, indicate the importance for you of each of the following factors (mark one in each row)

<table>
<thead>
<tr>
<th></th>
<th>A major reason for my decision</th>
<th>A minor reason for my decision</th>
<th>unrelated to my decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I had to change my career plans</td>
<td>36%</td>
<td>07%</td>
</tr>
<tr>
<td>2.</td>
<td>I was dissatisfied with the environment of the college</td>
<td>29%</td>
<td>36%</td>
</tr>
<tr>
<td>3.</td>
<td>I could not afford the cost of further education</td>
<td>07%</td>
<td>07%</td>
</tr>
<tr>
<td>4.</td>
<td>I wanted time to consider my interests and career goals</td>
<td>43%</td>
<td>21%</td>
</tr>
<tr>
<td>5.</td>
<td>Marriage</td>
<td>07%</td>
<td>14%</td>
</tr>
<tr>
<td>6.</td>
<td>I was tired of being a student</td>
<td>0</td>
<td>43%</td>
</tr>
<tr>
<td>7.</td>
<td>My academic record was unsatisfactory</td>
<td>0</td>
<td>29%</td>
</tr>
<tr>
<td>8.</td>
<td>I entered military service</td>
<td>07%</td>
<td>0</td>
</tr>
<tr>
<td>9.</td>
<td>Attractive job opportunity</td>
<td>29%</td>
<td>14%</td>
</tr>
</tbody>
</table>

5. Have you attended any other undergraduate institutions since leaving Worcester State College? Check One

- No (mark-omit #6 go to question #7)  
- Yes, one other institution 50%  
- Yes, two other institutions  
- Yes, three other institutions  

---
6. What is the name of your current (or most recently attended) undergraduate institution?

Name ____________________________

Located in ____________________________ city state

7. After leaving Worcester State did you obtain immediate employment?

YES/NO 64% = YES

8. IF YOU COMPLETED THE FOUR YEAR DEGREE PROGRAM AND RECEIVED YOUR DEGREE PLEASE ANSWER EACH OF THE FOLLOWING:

Please indicate your response to each of the following statements by indicating the appropriate number which most nearly expresses your opinion. According to the following criteria.

1 - if you strongly disagree with the statement
2 - if you disagree with the statement
3 - if you neither agree nor disagree with the statement
4 - if you agree with the statement
5 - if you strongly agree with the statement

1. The Summer Academic Skills Program was helpful in enabling me to complete college
   Circle One 1 2 3 4 5

2. A concerned faculty member was instrumental in assisting me in completing college
   Circle One 1 2 3 4 5

3. Help received from the college counseling center was instrumental in helping me to graduate
   Circle One 1 2 3 4 5

4. Advising services received from faculty in my major area of study were most beneficial
   Circle One 1 2 3 4 5

5. Assistance received from special services (tutoring, Learning Resource Center) were helpful
   Circle One 1 2 3 4 5

6. If you had a definite career goal while in college, do you feel this was beneficial in achieving your degree
   Circle One 1 2 3 4 5

7. Support and encouragement I received from my peers and family were influential in completing college
   Circle One 1 2 3 4 5
9. IMPRESSION OF WORCESTER STATE COLLEGE
(Answer each question as it applies to Worcester State College)

1. The students are under a great deal of pressure to get high grades
   - YES 07%
   - NO 35%

2. The student body is apathetic and has little school spirit
   - 43%
   - 50%

3. Most of the students are of a very high calibre academically
   - 97%
   - 50%

4. There isn't much to do except to go to class and study
   - 07%
   - 93%

5. I felt "lost" when I first came on campus
   - 50%
   - 43%

6. Being at Worcester State builds poise and maturity
   - 21%
   - 64%

7. The classes are usually run in a very informal manner
   - 43%
   - 43%

8. Most students are more like "number in a book"
   - 36%
   - 57%

10. How many students did you call by their first names or by nickname? (estimate this as best you can)
    - 2 or less 07%
    - 3-6 07%
    - 7-10 21%
    - above 10 64%

    How many of these students did you consider close friends?
    - 2 or less 43%
    - 3-6 43%
    - 7-10 07%
    - above 10 07%

11. What is your overall evaluation of Worcester State College (Mark one)
    - Very satisfied 0
    - Satisfied 43%
    - On the fence 21%
    - Dissatisfied 29%
    - Very dissatisfied 07%

12. If you were employed while attending college please indicate approximately how many hours a week you worked.
    - Less than 10 hrs. 0
    - 10-15 hrs. 29%
    - 15-20 hrs. 14%
    - above 20 hrs. 29%
    - 0 = 29%
13. All in all, in terms of your own needs and desires, how much of the following did you receive during your time at Worcester State?

<table>
<thead>
<tr>
<th></th>
<th>too much or too little</th>
<th>just about the right amount</th>
<th>not enough</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Freedom in course selection</td>
<td>0</td>
<td>50%</td>
<td>43%</td>
</tr>
<tr>
<td>2. Social Life</td>
<td>07%</td>
<td>71%</td>
<td>43%</td>
</tr>
<tr>
<td>3. Personal contacts with classmates</td>
<td>0</td>
<td>71%</td>
<td>21%</td>
</tr>
<tr>
<td>4. Work required of you in courses</td>
<td>21%</td>
<td>64%</td>
<td>0</td>
</tr>
<tr>
<td>5. Outlets for creative activities</td>
<td>0</td>
<td>64%</td>
<td>21%</td>
</tr>
<tr>
<td>6. Sleep</td>
<td>07%</td>
<td>79%</td>
<td>07%</td>
</tr>
<tr>
<td>7. Exercise</td>
<td>07%</td>
<td>72%</td>
<td>14%</td>
</tr>
<tr>
<td>8. Personal contacts with faculty and staff</td>
<td>0</td>
<td>64%</td>
<td>29%</td>
</tr>
</tbody>
</table>

14. What is the highest level of formal education obtained by your parents?

<table>
<thead>
<tr>
<th></th>
<th>Father</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grammar school</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Some high school</td>
<td>57%</td>
<td>64%</td>
</tr>
<tr>
<td>Some college</td>
<td>0</td>
<td>07%</td>
</tr>
<tr>
<td>College degree</td>
<td>14%</td>
<td>07%</td>
</tr>
<tr>
<td>Post graduate degree</td>
<td>14%</td>
<td>07%</td>
</tr>
</tbody>
</table>

15. Please estimate the total income of your parents (while you were in college). (mark one)

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Father</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $4,000 per year</td>
<td>0</td>
<td>16,000-18,999 0</td>
</tr>
<tr>
<td>4,000-6,999</td>
<td>07%</td>
<td>19,000-21,999 07%</td>
</tr>
<tr>
<td>7,000-9,999</td>
<td>0</td>
<td>22,000-24,999 0</td>
</tr>
<tr>
<td>10,000-12,999</td>
<td>21%</td>
<td>25,000 or more 14%</td>
</tr>
<tr>
<td>13,000-15,999</td>
<td>21%</td>
<td></td>
</tr>
</tbody>
</table>

16. What is your racial background (mark one)

<table>
<thead>
<tr>
<th>Race</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian</td>
<td>Other(specific)</td>
</tr>
<tr>
<td>Black</td>
<td>17%</td>
</tr>
<tr>
<td>White</td>
<td>93%</td>
</tr>
</tbody>
</table>
STUDENT EVALUATION QUESTIONNAIRE
WORCESTER STATE COLLEGE
SUMMER ACADEMIC SKILLS PROGRAM

Instructions:

You are being asked to help in the evaluation of the Summer Academic Skills Program. Your responses will be used to make decisions concerning the future of this program. Please be honest.

Student’s Name

1. Date of graduation from Worcester State College, or of withdrawal from Worcester State College.

2. Please indicate your response to each of the following statements by indicating the appropriate number which most nearly expresses your opinion, according to the following criteria:

   1 - if you strongly disagree with the statement
   2 - if you disagree with the statement
   3 - if you neither agree nor disagree with the statement
   4 - if you agree with the statement
   5 - if you strongly agree with the statement

   1. Have become a more competent person due to the Skills Program.

      Circle One 1 2 3 4 5

      Response Percentage 07 17 25 17 17

   2. Good use of class time was made in all courses in the Skills Program.

      Circle One 1 2 3 4 5

      Response Percentage 07 13 03 50 07

   3. Material in all classes in the Summer Skills Program was presented in a clear and interesting manner.

      Circle One 1 2 3 4 5

      Response Percentage 03 17 21 22 14

   4. Objectives of each course were explained adequately to me.

      Circle One 1 2 3 4 5

      Response Percentage 07 10 14 35 48

   5. Staff members working with me showed understanding and sympathy for problems related to me.

      Circle One 1 2 3 4 5

      Response Percentage 03 14 17 23 32

   6. The instructors in the Skills Program demonstrated a thorough knowledge of their subject matter.

      Circle One 1 2 3 4 5

      Response Percentage 02 0 07 43 22
7. I enjoyed being a part of the Summer Academic Skills Program.
   Circle One 1 2 3 4 5
   Response Percentage 07 25 25 25 35

8. I would recommend the Summer Skills Program to a friend.
   Circle One 1 2 3 4 5
   10 12 22 14 25

9. I was given ample opportunity to participate in each class.
   Circle One 1 2 3 4 5
   03 10 14 20 21

10. Generally, the Skills Program was well organized.
    Circle One 1 2 3 4 5
    03 10 14 20 21

11. I received adequate personal counseling.
    Circle One 1 2 3 4 5
    03 10 14 31 14

12. Teaching methods used were appropriate for the program.
    Circle One 1 2 3 4 5
    03 10 18 30 13

13. The subject matter, methods and skills learned were useful.
    Circle One 1 2 3 4 5
    07 10 18 32 20

14. I was encouraged to work independently.
    Circle One 1 2 3 4 5
    13 07 07 32 43 14

15. The Summer Skills Program helped me to succeed at Worcester State College.
    Circle One 1 2 3 4 5
    10 07 21 35 73

3. Please list the occupation of your parents.

Father: ____________________________ Occupation

Mother: ____________________________ Occupation
4. IF YOU DID NOT COMPLETE THE FOUR YEAR DEGREE PROGRAM AT
WORCESTER STATE COLLEGE PLEASE ANSWER THE FOLLOWING
QUESTIONS. IF YOU GRADUATED OMIT AND SKIP TO QUESTION 6.

In deciding to leave Worcester State, indicate the importance for you of each of the following factors (mark one in each row)

<table>
<thead>
<tr>
<th>Number</th>
<th>A major reason for my decision</th>
<th>A minor reason for my decision</th>
<th>Unrelated to my decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I had to change my career plans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>I was dissatisfied with the environment of the college</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>I could not afford the cost of further education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>I wanted time to consider my interests and career goals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Marriage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>I was tired of being a student</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>My academic record was unsatisfactory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>I entered military service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Attractive job opportunity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Have you attended any other undergraduate institutions since leaving Worcester State College? (Check One)

- Yes, one other institution
- Yes, two other institutions
- Yes, three other institutions

No (mark omit #6 go to question #7)
6. What is the name of your current (or most recently attended) undergraduate institution?

Name ________________________________

Located in ____________________________

7. After leaving Worcester State did you obtain immediate employment?

YES/NO

6. IF YOU COMPLETED THE FOUR YEAR DEGREE PROGRAM AND RECEIVED YOUR DEGREE PLEASE ANSWER EACH OF THE FOLLOWING:

Please indicate your response to each of the following statements by indicating the appropriate number which most nearly expresses your opinion, according to the following criteria:

1 - if you strongly disagree with the statement
2 - if you disagree with the statement
3 - if you neither agree nor disagree with the statement
4 - if you agree with the statement
5 - if you strongly agree with the statement

1. The Summer Academic Skills Program was helpful in enabling me to complete college

Circle One 1 2 3 4 5

2. A concerned faculty member was instrumental in assisting me in completing college

Circle One 1 2 3 4 5

3. Help received from the college counseling center was instrumental in helping me to graduate

Circle One 1 2 3 4 5

4. Advising services received from faculty in my major area of study were most beneficial

Circle One 1 2 3 4 5

5. Assistance received from special services (tutoring, Learning Resource Center) were helpful

Circle One 1 2 3 4 5

6. If you had a definite career goal while in college, do you feel this was beneficial in achieving your degree

Circle One 1 2 3 4 5

7. Support and encouragement I received from my peers and family were influential in completing college

Circle One 1 2 3 4 5
9. IMPRESSION OF WORCESTER STATE COLLEGE
(Answer each question as it applies to Worcester State College)

1. The students are under a great deal of pressure to get high grades
   20%  40%  10%

2. The student body is apathetic and has little school spirit
   45%  54%

3. Most of the students are of a very high calibre academically
   11%  99%

4. There isn't much to do except to go to class and study
   46%  54%

5. I felt "lost" when I first came on campus
   45%  57%

6. Being at Worcester State builds noise and maturity
   42%  54%

7. The classes are usually run in a very informal manner
   57%  43%

8. Most students are more like "number in a book"
   42%  57%

10. How many students did you call by their first names or by nickname? (estimate this as best you can)
   2 or less 3-6 7-10 above 10
   0% 0.03% 0.07% 99%

   How many of these students did you consider close friends?
   2 or less 3-6 7-10 above 0
   14% 32% 21% 32%

11. What is your overall evaluation of Worcester State College (Mark one)
   Very satisfied 32% Satisfied 45%
   On the fence 11% dissatisfied 07%
   Very dissatisfied 0

12. If you were employed while attending college please indicate approximately how many hours a week you worked.
   Less than 10 hrs. 07% 10-15 hrs. 32%
   15-20 hrs. 11% above 20 hrs. 36%

14% reported not working
13. All in all, in terms of your own needs and desires, how much of the following did you receive during your time at Worcester State?

<table>
<thead>
<tr>
<th>Question</th>
<th>Too Much or Too Little</th>
<th>Just About the Right Amount</th>
<th>Not Enough</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Freedom in course selection</td>
<td>03%</td>
<td>70%</td>
<td>27%</td>
</tr>
<tr>
<td>2. Social Life</td>
<td>11%</td>
<td>64%</td>
<td>25%</td>
</tr>
<tr>
<td>3. Personal contacts with classmates</td>
<td>0%</td>
<td>0%</td>
<td>14%</td>
</tr>
<tr>
<td>4. Work required of you in courses</td>
<td>29%</td>
<td>64%</td>
<td>0%</td>
</tr>
<tr>
<td>5. Outlets for creative activities</td>
<td>07%</td>
<td>39%</td>
<td>54%</td>
</tr>
<tr>
<td>6. Sleep</td>
<td>07%</td>
<td>57%</td>
<td>25%</td>
</tr>
<tr>
<td>7. Exercise</td>
<td>03%</td>
<td>75%</td>
<td>12%</td>
</tr>
<tr>
<td>8. Personal contacts with faculty</td>
<td>07%</td>
<td>39%</td>
<td>54%</td>
</tr>
<tr>
<td>9. Advice and guidance from faculty and staff</td>
<td>07%</td>
<td>57%</td>
<td>36%</td>
</tr>
</tbody>
</table>

14. What is the highest level of formal education obtained by your parents?

<table>
<thead>
<tr>
<th>Level</th>
<th>Father</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grammar school</td>
<td>% 14</td>
<td>% 11</td>
</tr>
<tr>
<td>Some high school</td>
<td>% 60</td>
<td>% 57</td>
</tr>
<tr>
<td>Some college</td>
<td>% 07</td>
<td>% 18</td>
</tr>
<tr>
<td>College degree</td>
<td>% 07</td>
<td>% 03</td>
</tr>
<tr>
<td>Post graduate degree</td>
<td>% 03</td>
<td>% 03</td>
</tr>
</tbody>
</table>

15. Please estimate the total income of your parents (while you were in college) (mark one)

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Father</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $4,000 per year</td>
<td>% 02</td>
<td>16,000-18,999 % 07</td>
</tr>
<tr>
<td>$4,000-5,999</td>
<td>0%</td>
<td>19,000-21,999 % 18</td>
</tr>
<tr>
<td>$7,000-9,999</td>
<td>13%</td>
<td>22,000-24,999 % 13</td>
</tr>
<tr>
<td>$10,000-12,999</td>
<td>18%</td>
<td>25,000 or more % 07</td>
</tr>
<tr>
<td>$13,000-15,999</td>
<td>21%</td>
<td></td>
</tr>
</tbody>
</table>

16. What is your racial background (mark one)

<table>
<thead>
<tr>
<th>Race</th>
<th>Father</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Oriental</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Other (specify)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Black</td>
<td>03%</td>
<td>97%</td>
</tr>
<tr>
<td>White</td>
<td></td>
<td>97%</td>
</tr>
</tbody>
</table>