The Identification of Potential Predictors of Collegiate Success of Black Students Enrolled in a Program for Disadvantaged Minorities, as Measured by Six Separate Success Criteria

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THE IDENTIFICATION OF POTENTIAL PREDICTORS OF COLLEGIATE SUCCESS OF BLACK STUDENTS ENROLLED IN A PROGRAM FOR DISADVANTAGED MINORITIES, AS MEASURED BY SIX SEPARATE SUCCESS CRITERIA

by

Kerry Alan Bunker

A Thesis
Submitted to the Faculty of The Graduate College in partial fulfillment of the Degree of Master of Arts

Western Michigan University
Kalamazoo, Michigan
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Kerry Alan Bunker
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TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>iv</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>METHOD</td>
<td>25</td>
</tr>
<tr>
<td>Subjects</td>
<td>25</td>
</tr>
<tr>
<td>Procedure</td>
<td>25</td>
</tr>
<tr>
<td>RESULTS</td>
<td>30</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>55</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>78</td>
</tr>
<tr>
<td>APPENDIX A</td>
<td>82</td>
</tr>
<tr>
<td>APPENDIX B</td>
<td>86</td>
</tr>
<tr>
<td>APPENDIX C</td>
<td>97</td>
</tr>
<tr>
<td>APPENDIX D</td>
<td>98</td>
</tr>
<tr>
<td>TABLE</td>
<td>Predictors Which Entered Significantly at the .05 Level in Regression Number</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Predictors Which Entered Significantly at the .05 Level in Regression Number</td>
</tr>
<tr>
<td>2</td>
<td>Predictors Which Entered Significantly at the .05 Level in Regression Number</td>
</tr>
<tr>
<td>3</td>
<td>Predictors Which Entered Significantly at the .05 Level in Regression Number</td>
</tr>
<tr>
<td>4</td>
<td>Predictors Which Entered Significantly at the .05 Level in Regression Number</td>
</tr>
<tr>
<td>5</td>
<td>Predictors Which Entered Significantly at the .05 Level in Regression Number</td>
</tr>
<tr>
<td>6</td>
<td>Predictors Which Entered Significantly at the .05 Level in Regression Number</td>
</tr>
<tr>
<td>7</td>
<td>Intercorrelation of the Six Criteria</td>
</tr>
<tr>
<td>8</td>
<td>Correlation Between the &quot;Received Scholarship&quot; Variable and the Six Criteria</td>
</tr>
<tr>
<td>9</td>
<td>Percentage of Members of Upward-Bound Groups Scoring at Various Range Levels on the 30-Hour GPA Criterion</td>
</tr>
<tr>
<td>10</td>
<td>Percentage of Members of Upward-Bound Groups Scoring at Various Range Levels on the Total Hours Criterion</td>
</tr>
</tbody>
</table>
In recent years, there has been increased concern over the definition and prediction of collegiate success of marginally qualified applicants. Many universities have established special admission provisions and curriculums for high-risk students. More often than not, these programs were organized along racial or ethnic guidelines. There is a growing need to develop criteria which delineate the successful among these students, and to identify factors which facilitate their selection.

The purpose of the present study was to probe for potential predictors of collegiate success for students attending a university through one such program designed for minority students. The search involved an analysis of both intellectual and non-intellectual factors as potential predictors of success on six separate measures of achievement in college. Students in the study represented the initial class in a recently organized program, and were first enrolled in the Fall Semester of 1968.

Any study that purports to evaluate potential predictors of collegiate success must be considered in the context of the controversy over the very philosophy of higher education that has developed during the past decade. Many social, moral, political and financial factors have emerged as stimuli for a critical analysis of the obligations, expectations, and policies of our
colleges and universities. A particularly heated and emotionally charged debate has centered around the entire concept of selective admissions. The question frequently asked is, Does an institution have the right to restrict enrollment to those who are predicted successes (a predicted success being defined as a student whose performance fits the mold of the university's previous graduates)? An alternative question is asked, Does not higher education have a more basic responsibility to serve all individuals of society, that precludes selectivity and demands instead, modification and accommodation within the system? Dyer (1967), upset over the highly selective nature of admissions in the Sixties, criticized the system because "The focus of the recruiters is usually too much on institutional prestige - on the needs of the institutions they serve - and not enough on the needs of the students the institutions are supposed to serve (p. 219)." Thresher (1966) was similarly concerned that existing admission standards were shutting the college door on individuals possessing potential of differing varieties that was not revealing itself on the traditional predictors. He discussed an alternative system that would "fit" each student into a college with an atmosphere that would be conducive to the satisfaction and development of his needs and capabilities.

Facing this strong attack was the time-honored
meritocratic procedure of accepting and rejecting applicants on the basis of "academic potential," as predicted by measures of high school scholarship and achievement test scores. Persons who would typically be rejected by schools that utilize high school rank or GPA and test scores in selection have been given various labels when considered for admission. Among these labels are "disadvantaged," "educationally deficient," "culturally deprived," "culturally disadvantaged," "academically deficient," "academically disadvantaged," "high-risk," etc. These names have often been used interchangeably and without uniform definition to describe students possessing a wide range of backgrounds and capabilities. In attempting to research the success of "disadvantaged programs," Stanley (1971) found that great care must be taken to establish the school's definition and use of terms applied to marginally admitted students. Institutions have commonly classified as "high-risk," any student who falls below their minimum acceptance level (or at least below the majority of admitted students) on the traditional predictive measures. Unfortunately, an individual classified as "disadvantaged" at one institution might have been in the top quarter of those admitted to another (Stanley, 1971). Williams (1969), Bush (1965), and Kendrick and Thomas (1970) have all encountered similar difficulty in defining the disadvantaged student.
Kendrick and Thomas defined disadvantaged students as, "... members of groups that have historically been under-represented in higher education and which as groups, are clearly below national averages on economic and educational indices (p. 151)."

Abramson and Swartz (1968), and Bush (1965) questioned this "group" approach to the definition that ignored individual potential of minority group members. They also pointed out that approximately half of the students that they classified as disadvantaged were non-Negroes. For various reasons to be mentioned later, the black race has become the center of the admissions debate.

For lack of a more clear-cut universal definition, the term "disadvantaged" will henceforth be used as designated by Edgerton (1968) as, "... students whose lack of money, low standardized test scores, erratic high school records and race/class/cultural characteristics, taken together, place them at a disadvantage in competition with the preponderant mass of students in colleges they wish to enter (p. 4)."

Factors Which Have Influenced Admissions Policies

Financial crises and standards of admission

The financial status of universities has played a significant role in determining admissions policies.
In the middle Sixties, there was great concern over the shortage of staff and facilities to handle a swelling number of applicants that was caused, at least in part, by the coming of age of those born in the post-war baby boom. Thresher (1966) and Kurland (1968) pointed out the soaring admission standards which had resulted from the lack of space to accommodate students. The physical plants and staffs of most universities expanded at a rampant pace and now the situation has reversed. Baby-boom individuals have passed college age; the fear of the draft has lessened; and disillusionment with the value of the college degree has increased as employment opportunities for graduates have declined. Partly as a result of these factors, many expanded universities have been confronted with a financial crises as the real number of applicants has decreased. Many schools have experienced enrollment declines or at least declines in the rate of growth. At times, this situation has resulted in lower admission standards due to the tremendous pressure to utilize the entire physical plant and to maintain the size of the staff. The sudden interest in discrimination in higher education, and the subsequent demands to lower or abandon traditional admission requirements, may thus, to a certain extent, be a rationalizing function of the convenience with which it has helped to ease growing financial burdens in the process. If college admission
is viewed as a special case of industrial selection, one can reasonably expect the available student labor force and the desired quota of enrollees to play a significant role in determining selection criteria.

Legal and philosophical issues

The concept of equal educational opportunity in a democratic society is subject to interpretation and therefore maintains a state of flux from generation to generation. Horle and Thompson (1968) reviewed the court decisions involving the "right" to attend publicly supported institutions of higher education. Their findings indicated that early philosophy reflected upon "right" as a "privilege" subject to terms and reasonable conditions set up by law (among them academic potentiality to succeed). More recently, however, they reported that in cases such as Brown versus the Board of Education, 1954, public school education has been defined as a "right" which must be made available to all on the equal terms set forth in the equal protection clause of the Fourteenth Amendment. If the courts continue to approach a position which defines higher education as a necessity in order to adjust to our technical society, the concept of privilege is likely to vanish as a synonym for equal opportunity in college admissions.
Momentum of the black civil rights movement

The Negro civil rights movement has had a profound effect on the admissions policies of American universities. The black minority is the largest minority group, and has been the most outspoken in its demands for equality of educational opportunity. Awareness of the inequities in black/white educational systems is not a recent phenomenon, but corrective action has begun only within the last twenty-five years. Plaut (1966) cited the establishment of the National Scholarship Service and Fund for Negro Students (NSSFNS) in 1949, as the first real attempt to increase black enrollments in inter-racial colleges. Although the NSSFNS contributed greatly to this end, it had to stand alone until the last decade. Plaut's review is an excellent source for information about other programs established in recent years to aid in the continuing education of Negro students.

Kendrick (1969) reported that as late as 1964, only two percent of the students in predominantly white institutions were black, and two percent of the students in predominantly black institutions were white. Plaut (1966) contended that the trend in the Sixties was toward "reverse-discrimination." He characterized this situation as one in which some institutions actively began to recruit blacks in preference to whites, despite the deficiencies of blacks on existing selection criteria.
The black militancy and pride movement among Negro youth radically altered society's ability to ignore the racial discrimination in this country. Perhaps nothing gave more impetus to this movement than the death of Dr. Martin Luther King Jr. As Kendrick (1969) stated, "The single dramatic event that thrust this situation upon the consciousness and the conscience of everyone was the assassination of Martin Luther King Jr. in April, 1968 (p. 13)." Kendrick argued that the assassination strengthened the militant black movement by converting borderline youths and middle-aged citizens to their philosophy. It also aroused institutions that had ignored the inequities in their enrollments and accelerated those with corrective programs in the planning stage. He contended that the end result has been a greater awareness of the high priority of the relationship of every institution to the black population. Many universities established special provisions for the enrollment of disadvantaged black students beginning in the Fall of 1968. The program of concern in the present paper is an example of one of these.

Black Admission to Inter-racial Colleges

The aforementioned factors have combined to exert tremendous pressure on inter-racial institutions to alter their selection procedures in some fashion in order to
increase their black enrollments. The following four areas have received considerable attention in the form of debate and research, as educators have sought to identify the causes and cures of segregation and discrimination in higher education:

1. Validity of traditional predictors for evaluating black applicants
2. Open admissions
3. Special admission standards and programs for the disadvantaged student
4. Alternative predictive measures and success criteria for disadvantaged black applicants

Debate over the validity of traditional admission practices for selecting black students

The use of high school rank (or GPA) and achievement test scores for the purpose of diagnosing college potential has been subjected to extensive research. The findings have consistently reported that these measures are valid predictors for the general student population. Garrett (1949) reported that, "Among all factors contributing to prediction of scholastic success in college, the student's average grade in high school continues to show the highest correlation with later scholastic average (p. 93)." He found that achievement test scores were the second best predictor, and that an optimally weighted combination of the two factors predicted better than either one used separately. Other researchers consis-
tently concurred with this interpretation (Cosland, 1953; Schmitz, 1937; Webb and McCall, 1953; and Irvine, 1966), and this method of prediction became the standard of most admission policies throughout the country.

In accordance with the figures of Coleman (1966) and Kurland (1967), it can be stated that when compared to their percentage makeup of the population, blacks were still under-represented in the predominantly white institutions as late as 1966. The push to increase these enrollment percentages was bound to result in a charge of racial discrimination being leveled at the traditional predictors. The logic of the situation argued that since blacks are being excluded, something must be keeping them out. That "something", charged the black community, was existing admission criteria. Young and Hogan (1970) summed up the opposition's view of evaluation of blacks with GPA and test scores, saying that, "... it has been clearly demonstrated that now traditional terms of admissions predict little or nothing about what a minority student will do in college, or about his potential after graduation (p. 25)."

Although much of the literature on this subject has been pure philosophical rhetoric, there have been several attempts at conducting validity studies on the use of the above-mentioned predictors with black applicants. Clark and Plotkin (1963) concluded that blacks in their study
performed significantly better than was predicted from their high school GPAs and SAT scores. Green and Farquhar (1965) found essentially no relationship between freshman GPA of black males and verbal scores on the School and College Abilities Test (SCAT), and a correlation of only .25 for females. The majority of the research findings, however, did not agree with these reports of unpredictability of black students. Boney (1966) tested the use of academic predictors for evaluating potential success in high school, and found correlations of .66 for Negro males and .70 for Negro females between Cooperative Ability Tests (CAT) scores and high school GPA. He also computed a multilinear regression using the CAT, the California Test of Mental Maturity, the Sequential Tests of Educational Progress, junior high school GPA and social status ratings; and found a substantial multiple R with high school GPA. He declared blacks to be as predictable as others. Cameron (1968) tested intellectual and non-intellectual predictors of academic performance for blacks in predominantly black colleges, and reported that, "Test data have proven to be a valid predictor for 'within' ethnic group academic performance (p. 252)." Munday (1965) evaluated the applicability of ACT test scores for predicting grades for students in five predominantly black schools. Their scores generally fell below the
existing national averages. Munday concluded, "... grades for socially disadvantaged students are generally as predictable as grades for other students using standardized measures of academic ability. If such tests are culture-bound, as seems likely, this feature does not detract from their usefulness as predictors of academic success (p. 159)." Stanley and Porter (1967) conducted a study similar to Munday's, utilizing the SAT rather than the ACT. They concluded that, "... it seems likely that SAT-type test scores are about as correlationally valid for Negroes competing with Negroes and taught chiefly by Negroes as they are for non-Negroes competing chiefly with non-Negroes and taught chiefly by non-Negroes (p. 216)."

Cleary (1968) extended the SAT analysis to an integrated setting. In a study of three inter-racial colleges, she found that for the students tested, "... there was little evidence that the SAT is biased as a predictor of college grades (p. 123)." Edgerton (1968) and McKelpin (1965) both surveyed the area of admissions for disadvantaged black students. Both reports concluded that there was strong evidence supporting the validity of prediction from high school grades and test scores, but they urged the use of other predictors as well. The studies also emphasized the effect of grossly inadequate urban elementary and high school preparation on the subject's ability to score well on the traditional predictive measures.
In conclusion, it can be said that evidence generally supported the use of academic predictors for blacks in integrated as well as all-black setting.

The open admissions controversy

Although the outcry for open admissions has certainly not been limited to the black movement, it has frequently been mentioned as a possible solution to the problem of increasing black enrollments in integrated institutions of higher education. Other minority groups have also demanded the opening up of colleges to anyone possessing a high school diploma, and the desire to attend college. The extent to which the more subtle factors mentioned earlier (financial, population, social, legal, etc.) have contributed to the movement is hard to measure.

At the heart of the open admissions movement has been the trend toward consideration of college as a "necessity and right," rather than a "privilege and luxury." This change in the concept of post-high school education has occurred both in the minds of men, and in the interpretation of the law. Wilson (1970) stated that, "... the consensus is that this nation is headed toward universal postsecondary education (p. 5)." Horle and Thompson (1968), as previously cited, uncovered a legal shift toward the classification of college training as a necessity, which is, therefore, subject to equal protection of opportunity.
under the Fourteenth Amendment.

Opponents of the plan argued that academic standards of the institutions would be lowered and dropout rates would increase with open admissions. They stated that the concepts of merit and competition which are foundations of our system of free enterprise, will vanish as scores of unqualified people are admitted. It is notable that the merit system of selection has been attacked by minority groups seeking an open-door policy. As Wilson pointed out, "The merit principle, for example, led to the disappearance of the 'numerus clausus' or quota system that set admissions ceilings for various ethnic minorities (p. 9)." He refers to recent demands for a certain quota of blacks and other ethnic minorities in all colleges, as a form of reverse racial discrimination. He found it odd that such a furor was being raised over the traditional predictors, despite the fact that no one has yet demonstrated conclusive evidence that they are invalid or unjust predictors of performance of disadvantaged students.

Kurland (1968) discussed the shortage of facilities for providing completely open enrollments and suggested a lottery selection to fill all colleges from a pool of aspiring applicants.

Karabel (1972) centered his discussion of the problem around figures indicating that when applicants had
equal potential and talent, the traditional system still favored persons from the highest socio-economic class. It was his contention, that wealthy applicants or applicants with college-graduate parents have always been able to gain admission somewhere, regardless of their grades or test scores. He maintained that there has always been a large number of high-risk students in college, but they have usually come from the upper and middle classes. Thus, in Karabel's view, the system currently acts as a social stratifier and subsequently responds to the resulting stratification, thereby perpetuating the poverty and low socio-economic status of selected minorities.

As a corrective measure, he advocated universal post-high school education, with the emphasis upon "value-added" to the individual, rather than a stable success criterion. He pointed to a college education as an aid to maturation and personality development, that could benefit all individuals. In response to those who charge that open admissions will let in unqualified students, Karabel challenges the universities to maintain their high standards through improved teaching, rather than through intensified selection of students who are often ready-made successes.

Faltermayer (1970) felt that if standards were maintained, there would be many more dropouts and dismissals, with much personality damage resulting. He advocated
more vocational and trade schools.

Horle and Thompson (1968), on the other hand, concluded that standards will, in fact, be lowered by open admissions. They urged that, "Quality education must not be sacrificed in an attempt to meet society's demands for higher education (p. 285)."

Wilson (1970) cited a speech by Stratton (1968) which expressed his feelings about the importance of maintaining a merit system of admissions. He stated, "As one watches the actions of Congress, I cannot help but fear that the status of institutional equality has become more important than the concept of quality itself. We seek the highest mean level in the world, but we must never forget that the pace of progress is set not by the mean but by the best (p. 11)."

The issue of open admissions remains essentially unresolved at the present time. There are only a few such programs in operation, and sparse valid research on the success of those. Until such time as the idea becomes a more testable reality, it will remain primarily a subject for emotional debate.

**Alternative measures**

The most common action taken in response to demands for increased enrollment opportunities for Negroes has been some form of compromise between pure merit selection
and completely open admissions. Some universities have lowered their present standards to accommodate disadvantaged students, but they have required that regular curriculums be met. Others have similarly lowered their standards and in addition have placed the disadvantaged student in a special or compensatory curriculum. Still others have sought alternative predictors which are biographical or non-intellectual in nature, while eliminating the traditional academic measures. The possible combinations are vast for these alternative solutions. Nearly all programs for disadvantaged students have attempted to incorporate some form of regular counseling sessions and progress reports. Generalizations from one setting to another are very difficult due to the tremendous variety of methods utilized in selection, operation and success evaluation of the various programs.

A. Lower academic admissions standards and special curriculums for the disadvantaged student

Williams (1969) reviewed the research on current programs for disadvantaged black students. He found that in most cases, the program directors felt a need to provide the students with a certain degree of immediate, tangible success and progress. Many institutions approached this goal by admitting students under lowered admission standards and by placing them in separate sections and curriculums apart from the rest of the students.
Williams reported that many directors felt that the practice of setting up special curriculums for disadvantaged students might lead to a degree with diminished social and professional significance, but he offered no proposal to substitute as a builder of self-confidence. Simpson (1970) also strongly attacked the above practice. She contended that black militants have played upon the "oppressed people" image to force an over-reaction in admission policies. It was her argument that a double standard in admissions or grading only adds to the Negro's feelings of being different, and to the black/white polarization in or society. Simpson stated, "If these students cannot cope with full programs and regular courses, their presence on the campus does a disservice to members of that ethnic group who can successfully compete with all others (p. 211)."

Some universities have attempted to help disadvantaged students catch up with regularly admitted students by providing compensatory courses in basic skills prior to, and concurrent with college enrollment. This was deemed necessary because of the low caliber of many urban schools. Kendrick (1969) reported that nearly all attempts to compensate for poor high school and elementary education have failed. He proposed that, "... if one is interested in the permanent inclusion of black students in what are now white colleges, the work of the lower schools
B. Alternative measures of potential and success

Another frequently proposed modification in the system to accommodate disadvantaged students is the complete elimination of the academic measures with substitution of non-intellectual predictors and success criteria. Nicholson (1970) utilized several non-intellectual predictors and found significant predictability for disadvantaged students. The measures included; an admission index (a summation of counselors' ratings of motivation and personal promise), an environmental index (quantified personal histories), and two activity measures from high school. Stanley (1970) pointed out that the students in Nicholson's study were classified as disadvantaged at Brown University, but probably could have received regular admission at most schools. Anastasi (1960) used 150 students to develop a weighted scoring key for biographical data to be used as a predictor of collegiate success. She then validated it against the traditional measures on a second group. In developing the scoring key, she divided students into three success levels; positive, average, and negative, which were based on a combined index of academic and non-academic measures of achievement. Using discriminate analysis, she developed a biographical index which correlated as high
as .55 with her success measures.

Green (1969) suggested that universities consider motivational and attitudinal measures, as well as intellectual measures. Green and Farquhar (1965) utilized the Michigan State "M" scales and found a strong relationship between the student's self-concept and school achievement.

Richards and Lutz (1968) evaluated the use of the ACT activity assessments as predictors of success on academic and non-classroom activities in college. They found some moderate correlations among non-classroom achievements in high school and closely related achievements in college. They reported a low relationship between non-classroom achievements and measures of academic potential and performance.

Eckland (1970) found that for disadvantaged students, social class was a significant predictor of "persistence to graduation." He reported no relationship between lack of money, and persistence. Wilkerson (1966), however, found financial assistance to be a significant factor in the success of disadvantaged students in nearly all programs.

Stanley (1971) concluded with, "I do not know of any convincing evidence that different predictors or even differently weighted predictors of current criteria of academic success are needed for the disadvantaged (p. 644)." He did not object to the use of non-academic predictors.
as long as they were used in conjunction with, and not in lieu of, the traditional measures. He encouraged the addition of any possible predictors, intellectual or non-intellectual, because they might add to the regression coefficient. He is of the opinion that, "the more disadvantaged a college applicant seems to be socio-economically, the more objective information one needs about him (p. 642)."

This review has touched briefly upon many interrelated aspects of an issue much larger than the selection of black students for college admission. It is the author's opinion, that the controversy over the changing nature of higher education is a relevant factor to consider in the interpretation of black-admissions research.

The university of concern in the present paper embodies many of the changing concepts of higher education that were mentioned above. The school expects an enrollment decline for the Fall Semester of 1972. High school GPA standards required for admission to the general student body have dropped nearly a full point since the expansion years of the middle Sixties. The program was established for disadvantaged minority students in 1968. One source of stimulation for developing the program was the assassination of Dr. King, and the resulting uneasiness of blacks across the country. According to
university officials, the aim of the new department was to provide educational opportunities to those disadvantaged minority students who would not otherwise have been admitted. In fact, however, there were two characteristics of the initial class that were not in accordance with these goals. To begin with, the first class was essentially an "all-Negro" rather than an "integrated minority student" group. Any future reference to the "disadvantaged minority students" under investigation in the present study will refer to a class that was, for all practical purposes, a black population. Secondly, not all of the students for the first class could truly be classified as disadvantaged on the academic predictors. There were to have been lower minimum standards on the regular admission criteria for the minority applicants recruited for the program. However, some of the applicants had test scores and GPAs within ranges that would have qualified them for regular admission. These inconsistencies with the stated objectives resulted, perhaps, in part due to the pressure and haste to have the program in operation for the Fall Semester of 1968.

The university instituted separate sections and instructors for the black students in their freshman year. It was intended that from their sophomore year forward, they would diffuse into the mainstream of the regular university curriculum. In actuality, the program was able
to establish special sections for its students well beyond the freshman year. This fact was considered as a possible source of GPA contamination in determining the success criteria for the present study.

The program also had several aspects of a compensatory education. The students attended classes for credit in such areas as, "Learning How to Learn," "Learning How to Read," etc. Special counseling sessions were available and progress reports were maintained for each individual.

The university attempted to provide financial assistance of some variety to the majority of these students. Of the approximately 103 members of the initial class, 70 received program scholarships. Most of the remaining students received loans, grants, or work-study aid.

The present study sought to extract from existing records on these students, factors from their family, social, activity and environmental histories which might correlate with later achievement on the six separate success criteria. A further objective was to compare the potential predictive value of these non-academic factors with the traditional admission indices. The historical data desired was somewhat limited and scattered in various records throughout the university system.

It is anticipated that the results yielded by this study will add to the lucidity of the relationships of
the various potential predictors to several indices of academic success of disadvantaged black students.
METHOD

Subjects

The Ss for this study were members of the first class of the program for disadvantaged minority students. Sixteen of the students in the program were eliminated from the study. The omitted group included transfer students, as well as those for whom no ACT profile card was located. The final sample of 86 Ss consisted of 40 males and 46 females, more than 95% of whom were recruited from high schools within a 300-mile radius of the university. All of the Ss were Negroes. Nineteen of the Ss had been involved in government Upward-Bound (U-B) programs prior to admission. U-B programs at various universities recruit disadvantaged high school students and allow them to attend special sessions between their junior and senior years in high school, and after graduation. The students are sponsored by the government, and are allowed to take one or two courses for college credit each summer. The aim of the U-B program is to give college-bound disadvantaged students a head start in adjusting to college life.

Procedure

At the time of enrollment of the Ss, the university required no personality, attitudinal or academic achieve-
ment testing of these students beyond the ACT. Application blanks could not be located for better than 50% of the Ss, and the form, when found, contained little biographical information. Thus, the ACT Student Profile Card became the primary source of historical data. Any available information that was complete for 90% or more of the subjects was collected and coded. A total of 26 potential predictors of subsequent college achievement were selected for analysis. Appendix A contains the following information with regard to the 26 variables:

1. The number used to designate each variable in the analysis
2. The descriptive title of each variable
3. The format used in recording the responses of each variable

The six success criteria were developed in an attempt to provide alternative measures of academic achievement. Most universities use the first-year GPA as the criterion for evaluating collegiate success. For the present case, a comparable GPA was needed that would protect against possible grade contamination due to enrollment in special sections and compensatory education classes that were created for these students. To meet this need, a GPA was computed on the first approximately 30 semester hours of completed work outside of the special program classes. A special section was determined according to one of the two following criteria:
A. The class was identified as being structured intensionally as such by the university.

B. Though not deliberately structured by the university, the class drew one third or more of its enrollment from the disadvantaged class of 1968 (if one third of a section was made up of students from the disadvantaged class of 1968, there was a strong probability that the entire section was made up of program students, since with each successive year a new and larger class was admitted and these students were not identified in the classes in the present study).

Also excluded from this measure were "activity-type" physical education classes. To develop this criterion, the grades and honor points for completed, non-excluded classes were tabulated, starting at the beginning of each S's transcript, and continuing until at least 27 credit hours were accumulated. If the 27th credit was reached in the middle of a semester report on the transcript, the remaining admissible classes in that semester were included in the computation to guard against possible biasing, due to the alphabetical recording of classes on the transcript within each semester. This technique resulted in more than 30 hours being included for some Ss, and an average of 30 was thus obtained. The GPA computed on these classes was recorded as success criterion A, with the title "30-Hour GPA Outside of Special Sections."

A similar criterion (B) was computed by removing from the overall GPA, all special sections and compensatory
classes. It was labeled as the "Overall GPA Outside of Special Sections."

A third criterion (C) was the "Overall GPA Recorded on the S's Transcript" for all course work attempted.

Three non-GPA measures of academic achievement were also compiled. All of these criteria attempted to evaluate aspects of the S's progress toward a degree. The first of these, criterion D, was labeled "Total Hours," and represented the number of hours of semester credit earned by the S between the Fall Semester of 1968 and the Spring Semester of 1972.

The second of the non-GPA measures, criterion E, was entitled "Persistence in Classes," and was computed by dividing the number of classes from which a given S withdrew or received an incomplete, by the total number of classes attempted, and multiplying the quotient by 100. This computation yielded a percentage figure representative of the extent to which a S removed himself from classes in which he had enrolled. The persistence measure has value with respect to incompletes, because the university allows an incomplete to remain permanently on the transcript without ever changing to a failing grade. As such, a student can take an "I" in a difficult course, and avoid the detrimental effects of a low grade on his GPA by simply not completing the work required to receive a regular grade in the class.
The final criterion (F) classified the student according to his "Current Status With the University" as:
1. graduated; 2. currently enrolled; 3. withdrawn; 4. academically dismissed.

Six separate stepwise regressions were calculated, with each of the criteria being utilized separately as the dependent variable on which 24 of the historical variables were run. It was decided that the Upward-Bound and Scholarship variables were not suited for inclusion as potential predictors in the regression analyses. They were analyzed separately and reported as data descriptive only of the particular group of minority students sampled in the present study.
RESULTS

Six stepwise regressions were run with each of the six criteria serving individually as the dependent variable. The objective was to identify the significant potential predictors that could best be combined into multiple predictors of the different measures of success. The procedure in each of these regressions involved the sequential addition of independent variables to the regression equation. In each step, the predictor which exhibited the highest partial correlation with the dependent variable (when previously selected predictors were held constant) was added to the equation. As each independent variable entered, the F-value of the increase in the coefficient of determination was calculated. Addition of independent variables to the regression ceased when a step failed to provide an increase with an F-value significant at the .05 level. Tables 1-6 contain the title, F-level, standard error of estimate, and the coefficient of multiple regression of the variables entering significantly in each of the six stepwise regressions. A complete printout of data from steps contributing significant predictors to each of the six equations, as well as an ordered listing of variables entering non-significantly, can be found in Appendix B. The correlation tables in Appendix C contain the simple correlation
coefficients between the significant predictors and their respective dependent variables for each regression. Appendix D contains an intercorrelation matrix of all predictive variables that entered significantly in one or more of the stepwise regressions.
Table 1

Predictors Which Entered Significantly at the .05 Level in Regression Number One

Dependent Variable = 30-Hour GPA Outside of Special Sections

<table>
<thead>
<tr>
<th>Variable No.</th>
<th>Predictor</th>
<th>F-level</th>
<th>Standard error of estimate</th>
<th>Coefficient of multiple regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Siblings in College</td>
<td>7.21</td>
<td>0.51</td>
<td>0.28</td>
</tr>
<tr>
<td>08</td>
<td>High School GPA</td>
<td>5.93</td>
<td>0.50</td>
<td>0.37</td>
</tr>
<tr>
<td>01</td>
<td>Sex</td>
<td>2.86</td>
<td>0.49</td>
<td>0.41</td>
</tr>
<tr>
<td>10</td>
<td>Number of Activities</td>
<td>3.00</td>
<td>0.49</td>
<td>0.45</td>
</tr>
<tr>
<td>16</td>
<td>ACT Math Score</td>
<td>3.01</td>
<td>0.48</td>
<td>0.48</td>
</tr>
<tr>
<td>17</td>
<td>ACT Social Studies Score</td>
<td>2.16</td>
<td>0.48</td>
<td>0.50</td>
</tr>
<tr>
<td>07</td>
<td>High School Type</td>
<td>2.69</td>
<td>0.47</td>
<td>0.52</td>
</tr>
<tr>
<td>18</td>
<td>ACT Natural Science Score</td>
<td>3.31</td>
<td>0.47</td>
<td>0.55</td>
</tr>
<tr>
<td>06</td>
<td>High School Size</td>
<td>2.43</td>
<td>0.46</td>
<td>0.57</td>
</tr>
</tbody>
</table>
Table 2
Predictors Which Entered Significantly at the .05 Level in Regression Number Two

Dependent Variable = Overall GPA Outside of Special Sections

<table>
<thead>
<tr>
<th>Variable No.</th>
<th>Predictor</th>
<th>F-level</th>
<th>Standard error of estimate</th>
<th>Coefficient of multiple regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Sex</td>
<td>10.95</td>
<td>0.52</td>
<td>0.34</td>
</tr>
<tr>
<td>25</td>
<td>Siblings in College</td>
<td>6.95</td>
<td>0.50</td>
<td>0.43</td>
</tr>
<tr>
<td>08</td>
<td>High School GPA</td>
<td>6.61</td>
<td>0.49</td>
<td>0.49</td>
</tr>
<tr>
<td>12</td>
<td>ACT Composite Score</td>
<td>3.46</td>
<td>0.48</td>
<td>0.52</td>
</tr>
<tr>
<td>17</td>
<td>ACT Social Studies Score</td>
<td>5.20</td>
<td>0.47</td>
<td>0.57</td>
</tr>
<tr>
<td>04</td>
<td>Distance of Hometown From the University</td>
<td>3.68</td>
<td>0.46</td>
<td>0.59</td>
</tr>
<tr>
<td>07</td>
<td>High School Type</td>
<td>2.45</td>
<td>0.46</td>
<td>0.61</td>
</tr>
</tbody>
</table>
Table 3

Predictors Which Entered Significantly at the .05 Level in Regression Number Three

Dependent Variable = Overall GPA Reported on the Transcript

<table>
<thead>
<tr>
<th>Variable No.</th>
<th>Variable</th>
<th>F-level</th>
<th>Standard error of estimate</th>
<th>Coefficient of multiple regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>08</td>
<td>High School GPA</td>
<td>12.38</td>
<td>0.44</td>
<td>0.36</td>
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<td>01</td>
<td>Sex</td>
<td>8.30</td>
<td>0.42</td>
<td>0.46</td>
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<td>25</td>
<td>Siblings in College</td>
<td>5.32</td>
<td>0.41</td>
<td>0.51</td>
</tr>
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<td>16</td>
<td>ACT Math Score</td>
<td>5.13</td>
<td>0.40</td>
<td>0.55</td>
</tr>
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<td>04</td>
<td>Distance of Hometown From the University</td>
<td>2.72</td>
<td>0.40</td>
<td>0.57</td>
</tr>
<tr>
<td>06</td>
<td>High School Size</td>
<td>2.51</td>
<td>0.39</td>
<td>0.59</td>
</tr>
<tr>
<td>18</td>
<td>ACT Natural Science Score</td>
<td>2.54</td>
<td>0.39</td>
<td>0.60</td>
</tr>
</tbody>
</table>

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Table 4

Predictors Which Entered Significantly at the .05 Level in Regression Number Four

Dependent Variable = Total Hours of Credit Earned

<table>
<thead>
<tr>
<th>Variable No.</th>
<th>Predictor</th>
<th>F-level</th>
<th>Standard error of estimate</th>
<th>Coefficient of multiple regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Sex</td>
<td>5.27</td>
<td>36.35</td>
<td>0.24</td>
</tr>
<tr>
<td>23</td>
<td>Parents' Percent Contribution to Financing of Education</td>
<td>4.00</td>
<td>35.72</td>
<td>0.32</td>
</tr>
<tr>
<td>10</td>
<td>Number of Activities</td>
<td>3.24</td>
<td>35.25</td>
<td>0.37</td>
</tr>
</tbody>
</table>

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Table 5
Predictors Which Entered Significantly at the .05 Level in Regression Number Five

Dependent Variable = Persistence in Classes

<table>
<thead>
<tr>
<th>Variable No.</th>
<th>Predictor</th>
<th>F-level</th>
<th>Standard error of estimate</th>
<th>Coefficient of multiple regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Work Plans in College</td>
<td>5.14</td>
<td>11.68</td>
<td>0.24</td>
</tr>
<tr>
<td>3</td>
<td>Hometown Size</td>
<td>5.81</td>
<td>11.36</td>
<td>0.35</td>
</tr>
<tr>
<td>15</td>
<td>ACT English Score</td>
<td>3.60</td>
<td>11.19</td>
<td>0.40</td>
</tr>
<tr>
<td>1</td>
<td>Sex</td>
<td>2.99</td>
<td>11.05</td>
<td>0.43</td>
</tr>
<tr>
<td>25</td>
<td>Siblings in College</td>
<td>2.52</td>
<td>10.95</td>
<td>0.46</td>
</tr>
</tbody>
</table>
Table 6

Predictors Which Entered Significantly at the .05 Level in Regression Number Six

Dependent Variable = Student's Current Status with the University

<table>
<thead>
<tr>
<th>Variable No.</th>
<th>Predictor</th>
<th>F-level</th>
<th>Standard error of estimate</th>
<th>Coefficient of multiple regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Sex</td>
<td>5.56</td>
<td>0.96</td>
<td>0.25</td>
</tr>
<tr>
<td>08</td>
<td>High School GPA</td>
<td>3.87</td>
<td>0.95</td>
<td>0.31</td>
</tr>
</tbody>
</table>

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The variables which appear in Tables 1-6 represent the factors within the historical data gathered about these students that best combined to discriminate among those who subsequently performed at various levels on the various criteria. The correlation tables in Appendix C provide an index of the magnitude and direction of the simple correlations between the significant predictor variables and their respective criterion. The individual coefficients of the predictors (reported in Appendix B) indicate that, in all cases, the directional relationships expressed by the sign of the simple correlation coefficients in Appendix C represent the actual direction that the variables were operating in the regressions. The relationships between the variables and their respective criterion measures must be regarded as descriptive of the present sample and only potentially predictive of the performance of similar students in the same program or one similar to it. The results of the six stepwise regressions, as reported in Tables 1-6 and Appendix C, are indicative of the following directional relationships between the significant predictors and their respective success measures.

Regression Number One
30-Hour GPA Outside of Special Sections

The results of this regression appear in Table 1.
The first variable to enter significantly was Siblings in College. The simple correlation between this variable and criterion A (see Appendix C) was -.28, which indicates that there was a tendency for those students who had brothers and/or sisters in college to earn higher 30-Hour GPAs than those who did not. Students who were successful on this criterion also tended to have had higher GPAs in high school. This factor entered on the second step and recorded a .26 simple correlation with criterion A. Sex was the third variable to enter significantly, and the simple correlation of .23 with the criterion indicates that females tend to earn higher grades than their male counterparts in their classes outside of the special program.

Three ACT scores were significant factors in the prediction of this criterion. ACT Math was the fifth predictor selected, having a -.12 relationship with criterion A. This would appear to indicate that those with lower math scores tended to have higher GPAs. The inter-correlation matrix in Appendix D represents the relationships between all variables which entered significantly in one or more of the regressions. It can be seen in Appendix D, that the ACT Math scores were correlated with H-S GPA to a slightly greater degree (.16) than they were with the criterion. The ACT Social Studies variable entered on step six. The simple correlation between this
variable and the criterion was also quite low (0.14). Degree of knowledge in the area of social studies is, thus, positively related to a minor degree with this criterion. However, the test score may be contributing more to the multiple R due to its intercorrelations of 0.23 and 0.59 with H-S GPA and ACT English, respectively (see Appendix D). ACT Natural Science probably entered for the same reason. This variable expressed essentially no direct relationship to the criterion (-0.04), but was correlated with H-S GPA (0.26) and ACT English (0.34).

The fourth, seventh, and ninth variables to enter were aspects of the student's high school background and environment. The simple correlations between criterion A and H-S Type and H-S Size were -0.15 and 0.14, respectively, indicating a slight trend toward greater success for students from larger public schools. The students with higher 30-Hour GPAs also tended to have been involved in fewer extracurricular activities in high school. The correlation between this activity variable and criterion A was -0.13.

The final multiple regression coefficient for the nine factors was a respectable 0.57.

Regression Number Two
Overall GPA Outside of Special Sections

The results of this regression appear in Table 2.
Criterion B is an index of how well the students performed on a long range GPA with the special sections excluded. Females from public high schools with siblings in college and higher high school GPAs generally also scored better on this criterion. These four factors had more substantial simple correlations with criterion B than they did with criterion A. The simple coefficients of correlation with criterion B were .34, -.29, .30 and -.19 for Sex, Siblings in College, H-S GPA and H-S Type, respectively.

The ACT Composite and ACT Social Studies scores entered significantly into the equation, but recorded negligible direct relationship with the criterion (.07 and .006, respectively). The reason for their inclusion in the multiple R is once again probably due to the nature of their relationships with other significant predictors (see Appendix D). The ACT Composite score correlated .36 with H-S GPA, and .71 with ACT English. The ACT Social Studies test had correlations of .23 and .59, respectively, with the same two variables.

Also entering this regression was Distance of Hometown from the University. The simple correlation of .19 between this predictor and the criterion indicates that students whose homes were farther away from the university, tended to have had higher overall GPAs when the special sections were removed.

Potential prediction is slightly better for
criterion B than it is for criterion A. The final multiple $R$ was .61.

Regression Number Three
Overall GPA Reported on the Transcript

Significant predictors identified in regression three appear in Table 3. Criterion C differs from criterion B in that special section course work was included in the computation of the GPA. Once again, females with siblings in college and higher high school GPAs from larger schools, had superior criterion scores. H-S GPA was correlated .36 with success on this criterion. Sex, Siblings in College and H-S Size were correlated .33, -.25 and .11, respectively, with Overall GPA. Distance of Hometown from the University was again a positive correlate with higher GPAs.

ACT Math and Natural Science scores were negatively related to criterion C, but once again the correlations were lower than the intercorrelations of these variables with other significant predictors (see Appendix D). The pattern seems to indicate that the ACT tests are important in the prediction of success on GPA criteria, but in an indirect manner, owing to their correlations with other significant predictors.

The multiple regression coefficient for this overall GPA measure (.60) is nearly identical to that recorded
when the special sections were removed from the overall GPA (regression 2).

Regression Number Four
Total Hours of Semester Credit Earned

The results of this regression are reported in Table 4. The dependent variable evaluates the degree to which the student has earned credit toward graduation, rather than an average of course grades. Sex was the first factor to enter significantly on this criterion with a simple correlation of .24. Females again tended to perform better on the criterion. Students who had accumulated more credits also tended to have had fewer extracurricular activities in high school. The simple correlation between this factor and criterion D was -.18.

Parents' Percent Contribution to Educational Financing entered for the first time in regression three. The simple correlation coefficient of .22 between this factor and criterion D indicates that students who were more successful tended to have received less financial support from their parents.

Potential prediction of this criterion is moderate, with a final multiple R of .37.

Regression Number Five
Persistence in Classes

The significant variables identified in regression
five appear in Table 5. Three variables that had not entered significantly on the other criteria, were identified as potential factors in the prediction of Persistence in Classes. The first predictor to enter was Work Plans in College. Students who expected to work more hours while attending school, tended to drop out of fewer classes in their college careers. The simple correlation between this factor and the criterion was -.24. Students who were successful in completing more classes also were more likely to have been from smaller hometowns (.23).

ACT English also entered as a significant predictor for the first time. The simple correlation of .18 between this variable and criterion E indicates that those with higher ACT English scores tended to withdraw from more classes.

Sex and Siblings in College once again entered as significant predictors. Females tended to withdraw from fewer classes as indicated by the -.10 simple correlation with the criterion. The Sex variable had intercorrelations of .22 and .23 with ACT English and Hometown Size, respectively (Appendix D). The Siblings in College variable predicted in the opposite direction on this criterion than it did on the earlier success measures (-.15). Students without brothers and/or sisters in college tended to persist in a greater percentage of their
classes.

The final coefficient of multiple regression was .46 for prediction of criterion E.

Regression Number Six
Student's Current Status with the University

The results of regression six appear in Table 6. Only two variables entered significantly in the prediction of criterion F. Females with higher high school GPAs were more likely to have been currently enrolled or graduated as opposed to withdrawn or dismissed from the university at the time of this study. The simple correlations were -.25 and -.21 for Sex and H-S GPA, respectively.

The final coefficient of multiple regression was relatively low (.31). This was probably due in part to the discrete nature of criterion E.

Interrelationship of the Six Criteria

The six criteria were utilized as separate rather than multiple success measures. It is important, however, to keep in mind that these dependent variables are overlapping to varying degrees in the aspect of collegiate success which they represent. Table 7 contains the intercorrelations between the six criteria. These relationships aid in the determination of the uniqueness
of the areas of success tapped by each criterion. They provide an index upon which to evaluate the importance of predictors based on one's preferred definition of collegiate success. They also aid in the description of the nature of the relationship of a given predictor to the broad concept of success in college, which likely encompasses more than one of the individual criteria.
### Table 7

**Intercorrelation of the Six Criteria**

<table>
<thead>
<tr>
<th></th>
<th>30-Hr. GPA*</th>
<th>Overall GPA*</th>
<th>Overall GPA</th>
<th>Total Hours</th>
<th>Persistence</th>
<th>Current Status</th>
<th>30-Hr. GPA*</th>
<th>Overall GPA*</th>
<th>Overall GPA</th>
<th>Total Hours</th>
<th>Persistence</th>
<th>Current Status</th>
<th>30-Hr. GPA*</th>
<th>Overall GPA*</th>
<th>Overall GPA</th>
<th>Total Hours</th>
<th>Persistence</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-Hr. GPA*</td>
<td>1.00</td>
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<td>Overall GPA</td>
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<tr>
<td>Total Hours</td>
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<td>0.56</td>
<td>0.53</td>
<td>1.00</td>
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</tr>
<tr>
<td>Persistence</td>
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<td>-0.20</td>
<td>-0.42</td>
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<tr>
<td>Current Status</td>
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<td>-0.68</td>
<td>-0.67</td>
<td>-0.81</td>
<td>0.34</td>
<td>1.00</td>
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<td></td>
</tr>
</tbody>
</table>

*These GPAs do not include special sections or compensatory classes.*
The three GPA criteria are highly correlated, with the highest relationship obtained between the two different methods of computing an overall GPA (.97). The three non-GPA measures were more highly correlated with each other than with the GPAs. Persistence in Classes had the lowest correlations with the other criteria. All of the dependent variables were positively related with respect to the direction that would indicate increased success. For example, the negative correlation between criteria A and F is a result of the direction of success being coded in the opposite direction numerically for the two variables.

Analysis of the Two Descriptive Variables

Two of the variables (Received Scholarship and Upward-Bound Experience) were not included in the regression analyses. These factors were analyzed separately and are presented as data descriptive of the present program.

Received Scholarship

The scholarship variable was contaminated by the prior selection process that had been used to determine award winners, and was, therefore, unacceptable for inclusion as a potential predictor in the regression. It is valuable, however, to view the success on the six
criteria of the scholarship winners versus the others. This comparison provides an indication of the influence of the financial assistance and the validity of the procedures for selecting recipients. Table 8 contains the correlations of the six success criteria with the Received Scholarship variable.
Table 8

Correlation Between the "Received Scholarship" Variable and the Six Criteria

<table>
<thead>
<tr>
<th>Received Scholarship</th>
<th>-.26</th>
<th>-.22</th>
<th>-.20</th>
<th>-.57</th>
<th>.10</th>
<th>.35</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-Hr. Overall GPA*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall GPA*</td>
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<tr>
<td>Total GPA</td>
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</tr>
<tr>
<td>Persistence Status</td>
<td></td>
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<td></td>
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<tr>
<td>Current Status</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*These GPAs do not include special sections or compensatory classes.
The results indicate that students on scholarship performed better on all of the six success measures, particularly the measure of Total Credits Earned.

**Upward-Bound Experience**

The nature of the U-B Experience variable was such that hierarchical ordering of the responses was not meaningful. Direct interpretation of correlation coefficients with the criteria was thus not possible. The percentages in Tables 9 and 10 represent the proportion of the members of each classification of the U-B Experience variable that fell within a given grouped range on criterion A (Table 9) and criterion D (Table 10). The two criteria were selected for analysis as being representative of the GPA and non-GPA groups, respectively.
Table 9

Percentage of Members of Upward-Bound Groups Scoring at Various Range Levels on the 30-Hour GPA Criterion

<table>
<thead>
<tr>
<th>UPWARD-BOUND EXPERIENCE</th>
<th>N</th>
<th>0.00-1.99</th>
<th>2.00-2.49</th>
<th>2.50-2.99</th>
<th>3.00-4.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>No U-B Experience</td>
<td>67</td>
<td>31%</td>
<td>33%</td>
<td>27%</td>
<td>9%</td>
</tr>
<tr>
<td>All U-B Students</td>
<td>19</td>
<td>21%</td>
<td>47%</td>
<td>26%</td>
<td>6%</td>
</tr>
<tr>
<td>U-B at Institution X</td>
<td>7</td>
<td>43%</td>
<td>57%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>U-B at Institution Y</td>
<td>4</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>U-B at the Present</td>
<td>8</td>
<td>12.5%</td>
<td>62.5%</td>
<td>12.5%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Institution (Z)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 10

Percentage of Members of Upward-Bound Groups Scoring at Various Range Levels on the Total Hours Criterion

<table>
<thead>
<tr>
<th>UPWARD-BOUND EXPERIENCE</th>
<th>N</th>
<th>00-50</th>
<th>51-75</th>
<th>76-100</th>
<th>101 or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>No U-B Experience</td>
<td>67</td>
<td>25%</td>
<td>13%</td>
<td>15%</td>
<td>47%</td>
</tr>
<tr>
<td>All U-B Students</td>
<td>19</td>
<td>21%</td>
<td>21%</td>
<td>26%</td>
<td>32%</td>
</tr>
<tr>
<td>U-B at Institution X</td>
<td>7</td>
<td>43%</td>
<td>29%</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>U-B at Institution Y</td>
<td>4</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>U-B at the Present</td>
<td>8</td>
<td>0%</td>
<td>12.5%</td>
<td>37.5%</td>
<td>50%</td>
</tr>
<tr>
<td>Institution (Z)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Students with U-B experience tended to cluster more toward the medium range on the 30-Hour GPA (see Table 9), whereas the non-U-B group was more evenly spread across the entire range of values. All Ss whose U-B experience was at Institution X had GPAs in the lower two ranges. All those from Institution Y had GPAs between 2.51 and 3.00 on a 4-point scale. The majority of the Ss with U-B experience at the present university had GPAs between 2.01 and 2.50.

In terms of earning credits as measured by criterion D, Table 10 reveals that Ss from Upward Bound were about evenly distributed across all ranges of the variable. Of the students without U-B experience, 47% had accumulated 101 credits or more, as opposed to 32% of the U-B Ss. The performance of U-B students on criterion D was markedly diverse when broken down into individual programs. Those from Institution X tended to have 75 or fewer credit hours. Of the four students from Institution Y, one fell into each of the four categories of credit earned. Those who attended U-B classes at the present university (Z) substantially outperformed (on this criterion) those who enrolled without U-B experience in the disadvantaged black program at the same university.
DISCUSSION

The Two Descriptive Variables

The results of the analysis of the two descriptive variables are not surprising. With regard to financial assistance, Clark, et al., (1970) reported positive correlations between scholarship reception and collegiate success. Williams (1969), cited earlier, stressed the importance of financial aid as a factor in insuring the success of programs for disadvantaged black students. The scholarship variable was not included in the regressions as a potential predictor, because prior selection had been utilized to distribute the awards among the recruited applicants. This fact would tend to bias the variable as a predictor of later success. Scholarship reception did correlate positively with success on all six of the criteria, but the precise reasons behind these positive relationships are difficult to determine. One possible explanation might be that the selection criteria utilized in delegating the scholarships were effective in identifying the potential successes among the pool of applicants. On the other hand, the awards may have operated as incentives to better performance on the part of the recipients. A third possibility is that the scholarships simply provided the funds needed in order to
continue enrollment. Those without this aid may have been forced to take time away from their studies in order to earn money. The strong relationship between scholarship reception and criterion D (Total Hours), seems to indicate that recipients tended to persist in school longer. The moderate correlation with criterion F (Current Status) supports this contention in that recipients tended toward the "currently enrolled" or "graduated" end of this scale. The superiority of award winners on the three GPA criteria is not as clear cut, but the trend is toward higher averages for those who received scholarships. The positive correlation with criterion E (Persistence in Classes) indicates that recipients were not as inclined to withdraw from, or take incompletes in classes. This correlation adds creditability to the higher GPAs earned by the scholarship winners.

In conclusion, the results appear to justify the scholarship program, but interpretation as to how the financial aid makes its greatest contribution to the success of the program and its students is rather speculative.

The operation of the U-B variable is also somewhat difficult to evaluate. The differences in the n's of the U-B and non-U-B groups may be the most significant contributor to the slight difference in their performance
on the 30-Hour GPA criterion (see Table 9). The low GPAs of the U-B students from Institution X appear to have pulled down the performance of the total U-B group. The performance of the U-B group from the present university was slightly more consistent than that of the non-U-B enrollees, but the n's are very divergent in this comparison.

Success on the Total Hours criterion represents a turnabout, with the non-U-B group outscoring the U-B total group. Institution X again yielded U-B students who subsequently performed at a low level, perhaps indicating an inferior program at this university. The percentages for Institution Y are approximately the same as for the total group. The U-B students from the present university, however, substantially out-performed those who entered the program without U-B experience.

It appears that Upward-Bound programs are most beneficial when the student is associated with the university to which he subsequently is admitted. The added opportunity to adjust to the new environment may be a key factor in determining later success.

Rationale of the Data Analysis

The use of the stepwise regression technique on variables which were very diverse in nature probably resulted in conservative correlations and limited
increases in the coefficients of determination with
the addition of each variable. It was decided that the
desirability of the output format from this type of anal-
ysis outweighed the problem of increased difficulty in
qualifying variables for the predictive equations. This
was particularly true since the major aim of this research
was to identify potential predictors rather than to vali-
date them. The stepwise regression was ideally suited
for singling out individual variables and combining them
into multiple equations.

The six separate criteria were utilized because it
appeared that success of disadvantaged black students
means different things to different people. It seems
reasonable to assume that higher education is first and
foremost an academic undertaking, requiring an academic
measure of success. Therefore, all of the criteria
utilized were academic in nature though varied in approach
and interpretation.

The fact that different groups of variables entered
significantly as predictors of the different criteria
lends support for the need to view academic achievement
from several angles. This is only true provided that one
agrees with the designation of the various criteria as
valid reflections of some aspect of achievement or pro-
gress in college. However, it is noteworthy also that in
the 33 total significant steps of the six regressions,
only 14 different predictors were identified. This commonality of predictors is suggestive of overlap in the success measures.

The Criteria and Their Prediction

The 30-Hour GPA

It was anticipated that since this criterion was most like the traditional freshman average used in uncontaminated settings, traditional variables would contribute most to its prediction. The entrance of H-S GPA and ACT Math, Natural Science and Social Studies scores as significant predictors was, thus, not surprising. The positive correlation between H-S and college GPAs is consistent with the findings of Schmitz (1937) and Irvine (1966). Although the entrance of the ACT scores was expected, the nature of their action in the equation was not. The findings of Munday (1965) and Cleary (1968) lead one to expect high positive simple correlations between achievement test scores and college GPA. The ACT scores in the present study, however, exhibited low irregular correlations with the criteria in all regressions where they entered significantly. The action of the ACT tests will be discussed in greater detail later, but it should be mentioned that they have value in the regressions despite their lack of direct simple correlation with the
criterion measures. In the prediction of the 30-Hour GPA, the three ACT scores are probably acting as suppressor variables due to their intercorrelation with H-S GPA and ACT English. In other words, they contribute significantly to the prediction of the criterion by removing from the H-S GPA predictor, a portion of the error variance that exists in that variable due to the failure of the GPA to validly represent the student's knowledge of Math, Social Studies, Natural Science and English. The ACT English score, which had not entered significantly, thus indirectly influences the prediction of criterion A because of its high relationship to the other ACT scores.

The contributions of Sex and Siblings in College to the prediction of criterion A were not surprising either. With regard to Sex, several studies have reported greater predictability in the positive direction for females on GPA criteria (Seashore, 1962; Stanley, 1967). There are indications that Siblings in College has also been used as a predictor of college success, although it is not substantiated in the literature. This familial education factor appears to have been utilized frequently as an "unofficial" predictor to supplement the selection equation in borderline cases. This type of usage is not generally reported, but admissions personnel discuss it as though it were common knowledge.

The three remaining significant predictors of this
criterion were aspects of the student's high school environment. Students who were involved in fewer extracurricular activities in high school tended to have higher 30-Hour GPAs. This finding may support the conclusions of Nicholson (1970) regarding the use of an activity index to predict collegiate success of disadvantaged students. He found that success correlated positively with dramatic, literary, oratorical, musical and arts activities; and negatively with leadership, athletic and social activities. The activities in the present study were not categorized for analysis, but these students did tend to report a large number of leadership and athletic activities in their totals. If Nicholson is correct, the lumping of all activities into a total index in the present study should have suppressed the predictive power of the variable. The low simple correlation in the negative direction between this factor and criterion A would appear to support this contention. Future use of an activity index might yield a strong predictor if greater research is directed toward the identification, verification and separation of the activity data.

The results of the H-S Size and H-S Type data appear to indicate that, in terms of preparing the student to perform well on a short term GPA criterion, the small private schools are less adequate than the large public
schools. Hoyt (1959) also reported that students from smaller high schools tended to have lower freshman GPAs.

The final coefficient of multiple regression for this criterion was .57, indicating that approximately 33 percent of the variation in the 30-Hour GPAs can be estimated from the variation in the significant predictors. This multiple R is in the range typically reported for predictors of freshman GPA (Fishman and Pasanella, 1960).

Overall GPA Outside of Special Sections

This criterion was developed by the same method as the 30-Hour GPA, with the added feature of long term evaluation of performance in completed classes. Once again, the special sections were omitted to avoid possible grade contamination.

Sex, Siblings in College and H-S GPA were again the top three predictors, though in a different order. This is not surprising since criterion B is correlated .80 with criterion A. It appears that these three factors are important predictors of both long and short term collegiate GPA performance of minority students, provided they are combined with the other significant variables identified for the specific criterion measures.

The last point mentioned above is important since the H-S GPA variable seems to gain a great deal of its predictive strength from the interaction with the ACT.
scores. ACT Composite and ACT Social Studies scores entered significantly as predictors of criterion B, but their action appears to have been much the same as that of the ACT tests entering in regression one. Both of the variables were positively correlated with H-S GPA and ACT English. The result is a purification of the H-S GPA. It becomes a reflection of knowledge acquired, rather than simply a measure of the students' ability to earn high marks in secondary educational systems that generally utilize diverse grading standards.

H-S Type entered as it did in regression one, indicating a somewhat inferior preparation of students from private schools. Although H-S Size did not enter significantly into this regression, it had the highest partial of the non-significant variables (see Appendix B).

Distance of Hometown from the University was the other significant predictor of this special overall GPA. Williams (1969) wrote, "Without question, familial and sociological conditions in the ghetto are antithetical to academic development. Unless students are physically removed from these socially destructive circumstances they have little chance of success in college (p. 281)."

It seems plausible that the student who is a greater distance from his hometown may find it easier to break ties with his old environment and make the adjustments which appear to be critical to long term collegiate
success.

The multiple $R$ for prediction of criterion B was .61. In light of previous findings with regard to prediction of overall GPA, this is a substantial coefficient. Juola (1966) investigated the decrease of GPA predictability with each successive term of college enrollment. He reported a high correlation of .27 between intellectual predictors and GPA after seven semesters. In a similar study, Humphreys (1968) reported a correlation of only .22 between traditional predictors and a GPA computed after eight semesters. A task which remains is the validation of the findings of the present study on other samples.

**Overall GPA Reported on the Transcript**

This criterion was included for those who felt that the special sections should be included in the computation of the overall GPA. It was anticipated that the addition of this course work might identify different students as successes, and subsequently lead to the identification of different potential predictors. The results indicate, however, that the two overall measures are highly correlated (.97). The mean of criterion B was lower than that of criterion C (2.25 and 2.37, respectively), but the high correlation indicates that students who scored well on criterion C tended to do so on
criterion B, also. Any effects that the grading of
the special sections had on the short term GPA criterion
in regression one, seem to have dissipated in the overall
measure.

H-S GPA, Sex and Siblings in College again entered
as the top three predictors, but in yet a third order.

The significant ACT scores identified in this
regression were ACT Math and ACT Natural Science. They
seem to have had the same suppression effect on variation
in the H-S GPA variable that they did in the other regres-
sions.

Distance of Hometown from the University probably
acted in much the same way on this regression as it did
in regression number two. H-S Size was the fifth factor,
reaffirming the superiority of students from large public
schools on GPA criteria. Of the non-significant variables
in this regression, H-S Type had the highest partial
correlation with the criterion.

As might be expected, the multiple regression
coefficient was nearly identical to that reported for
criterion B.

**Total Hours of Semester Credit Earned**

It has been traditional to evaluate academic achieve-
ment in college in terms of a grade point average. The
The Total Hours criterion (and criteria E and F, as well)
was utilized to provide an alternative criterion that was sensitive to "progress toward a degree" rather than just average performance in completed classes.

The fact that H-S GPA and Siblings in College did not play a significant role in the prediction of this criterion appears to support its use as an alternative measure. Prediction of a high college GPA may not be at all the same as prediction of the accumulation of credits toward graduation. Females, however, continued to outperform their male counterparts, earning higher scores on this criterion also.

The emergence of Parents' Percent Contribution to Financing of Education as a negative correlate with the criterion may have seemed unusual were it not for the intercorrelation of this predictor and Scholarship Reception. The negative relationship between Scholarship Reception and Parent Contribution indicates that as the percentage of educational financing provided by the parents increased, the likelihood of the student having received a scholarship decreased. Scholarship Reception (as reported in Table 8) is highly correlated with success on the Total Hours criterion (.59). The Parent Contribution variable probably entered the regression equation due to the relationships mentioned, and the absence of the Scholarship Reception variable as a potential predictor in the regression analysis.
Number of Activities entered with about the same magnitude of correlation as it did on the GPA measures. Those who were involved in more activities in high school tended to subsequently have earned fewer credits in college.

This criterion is not as easy to predict as are the GPAs in the present study. The multiple R was only .37, indicating that only about 13 percent of the criterion variance has been explained by the predictor variation.

Persistence in Classes

This criterion, measuring the percentage of classes from which a student withdrew or received incompletes, emerged as the most unique of the success measures. The relationship of this dependent variable to the other success measures was very low (see Table 7), particularly with the GPA measures. It was, as might be expected, most highly correlated with the Total Hours criterion (-.42).

Sex entered as it has on all previous criteria, showing females to be more successful. Beyond that, the "independence" of the student may be the key element in the variables identified as predictors of this criterion. Siblings in College was a significant factor, but not in the same direction as it was on the previous criteria. Students without brothers or sisters in college tended
to withdraw from fewer classes. Work Plans in College, the most significant predictor, had a simple correlation with the criterion in the direction that indicates that students who are willing to work while attending college, may also be more inclined to persist in their classes.

Hometown Size entered for the first time in this study, as the second predictor of this criterion. Students from smaller hometowns were more likely to succeed on this criterion. If environmental adjustment does indeed aid the student in facing up to the challenges of college, than blacks from smaller towns may perform better on this criterion due to a greater similarity in their environments. The behaviors associated with large urban ghetto areas are probably more removed from acceptable college behavior patterns.

The entrance of the ACT English score is further evidence that this criterion is measuring a unique aspect of college success. The simple correlation is quite low (.18), indicating that again the ACT scores are not predicting as well in this study as they have in previous research.

The multiple R for this regression, though not as high as for the GPA criteria, was not too bad. It indicates that 21 percent of the criterion variation can be estimated from these predictors.
Current Status with the University

Of the progress criteria, Current Status is the most highly correlated with the GPA criteria. The significant entrance of Sex and H-S GPA as predictors of criterion F was, thus, not surprising.

Very few of the members of this class had graduated as of April, 1972, and the criterion became essentially a dichotomous index of "currently enrolled" versus "withdrawn or dismissed," rather than a four factor variable. The low multiple R (.30) most likely resulted from the discrete nature of the dependent variable, and the restricted range of the responses.

The Significance of the Significant Predictors

Sex

The implications of the findings with regard to this variable are simple and direct. Females are more predictable than males and they tend to succeed to a greater degree on all of the criteria than do males. The treatment of Sex as a moderator variable in future research might yield further insight into the operation of this factor in the regression equations.

Siblings in College

This is a valuable predictor if one is interested in
predicting one or more of the traditional GPA criteria.

**High School GPA**

The H-S GPA remains as a strong predictor of a like measure of college achievement. The results indicate, however, that H-S GPA may be predicting those who are likely to maintain high college grades and persistent enrollment, without necessarily identifying those who might do so without making satisfactory progress toward a degree.

**ACT Scores**

ACT scores made significant contributions to the prediction of four of the six criteria, but not in the manner expected. The simple correlations between the ACT variables and the success measures were always within ± .20 (see Appendix C). This would seem to indicate that the achievement test scores were contributing only indirectly to the prediction of success. The low correlations indicate that these black students have had inferior educational preparation and that the variation is large, but not consistent enough to account for later differences in collegiate performance. Utilized alone, the ACT scores would not be very predictive of the success of members of this group; but used in their respective regression equations, they contribute greatly to the
multiple Rs by eliminating error variance from the H-S GPA predictor, and by contributing a positive correlation with ACT English (a good traditional discriminator).

High School Size and Type

The results support a need for a closer analysis of the schools from which the students are to be selected. Students from larger public schools may be more adjusted to a large environment and better equipped to learn how to "beat the system" in order to maintain a higher college GPA. On the other hand, perhaps the large public schools are simply providing superior college preparatory experiences.

Number of Activities

As mentioned earlier, the indication is that Number of Activities, though a significant predictor now, could probably be improved through differentiation and verification of the various activities. This predictor was one of the few which entered significantly and predicted in the same direction on GPA as well as Progress measures.

Distance of Hometown from the University

This proved to be a valuable index of future performance on GPA criteria calculated on long term
classroom data. The implications with regard to emo-
tional adjustment suggest that some form of motivational, 
attitudinal and adaptability testing may yield valid 
predictors of overall GPA performance.

Work Plans in College

This predictor can be of significant value if one 
is interested in selecting students who are likely to 
persist in difficult classes. It is also suggestive of 
possible gains in criterion predictability through the 
addition of motivational measures.

Parents' Percent Contribution to Educational Financing

This factor, though not extraordinarily valid as 
a predictor of the criteria, reflects the impact of 
financial assistance on academic performance. Whether 
the scholarships have an influence before or after the 
fact, is indeterminate from the present data.

Choosing a Criterion

Selecting the appropriate criterion is a difficult 
task indeed. The relationships between the three GPAs, 
and the overlap of their significant predictors, narrows 
the choice down somewhat. In predicting a GPA, however, 
one may be selecting students who will become skilled at 
dodging difficult classes and avoiding probation and
dismissal by protecting their GPA. On the other hand, if one selects students who are likely to succeed on criteria D and E, he may have students who are more likely to persevere in difficult classes and possibly receive a better education for it. Their persistence may improve their personal knowledge at the expense of a lower GPA. The problem arises in that the GPA-oriented institutions of today are inclined to reward such persistence with probation and dismissal that washes out the student and reflects badly upon the apparent success of the program. It is unfortunate that solving this dilemma at the present time requires a value judgment on the part of the admissions officer and the program administrator.

Conclusions

The use of traditional predictors such as H-S GPA, Sex and Siblings in College to predict the success of black applicants selected from within a black population and compared with other blacks, seems to be supported by the findings of this study. However, there would appear to be other potential predictors, biographical and environmental in nature, that could be significant contributors to the regression equations. The present study was restricted by the limited amount of information available, and the depth to which it could be pursued. The restricted range of variables such as; Parental
Status, Parental Income, Level of Aspiration, Birthplace Size, etc; doubtless was partially responsible for their failure to enter significantly into the regression equations.

The present author concurs with Stanley (1971) on the need for greater amounts of information about disadvantaged applicants. The university of concern in this study is in immediate need of a more comprehensive application blank for all applicants, but particularly for disadvantaged students. Anastasi, et al. (1960) and Nichoson (1970) have developed forms that delve in detail into the kinds of information that were identified as potential predictors of success in the present study. Further, the results suggest that some form of attitudinal, personality, self-concept and capacity-for-adjustment measures might be very beneficial as added predictors.

A standard interview form should also be developed and utilized whenever applicants are interviewed, with the forms maintained in the student's permanent file.

With regard to success measures, the GPA criteria appear to be valid for evaluating black students against other blacks within the program, but the data also supports the use of the three non-GPA measures to cover for the loopholes which have developed in the traditional grade criteria.

Although the criteria were intended to be utilized
individually, it turned out to be profitable to analyze associations of significant variables across all of the success measures. Observing the action of the potential predictors in this manner helped to clarify the nature and possible causations of the correlations that developed. The ideal situation would be to select students who appeared likely to succeed on all of the criteria.

The most puzzling aspect of the results was the failure to obtain significant direct predictability from the ACT tests. In addition to the factors already mentioned, there is another possible contributor to these results. University officials expressed apprehension and doubt that all of the special sections for the black students could be identified. If, in fact, some were not located and removed from criteria A and B, these success measures may have recorded lower simple correlations with the ACT scores partially due to the lenient grading standards in those classes. Criteria C, D, E and F were all influenced by any grading leniency that may have existed in the special sections, since no attempt was made to remove them from these criteria. The restricted range of the grades in some classes may, thus, have contributed to the elimination of direct success prediction from ACT scores for this group. Continued utilization of the ACT tests is essential, however, due to their indirect influence on other significant factors in the regressions.
It appears that programs of the type studied in the present research are of value, and that they can be successful if students are carefully selected. It must again be stressed that although the present program was designed for minority students in general, the initial class was made up entirely of black students. All conclusions are, therefore, necessarily limited to this single minority group. Further investigation is in order, and it is hypothesized that the results of this study will be replicated on a sample from a program with a broader minority-student base.

Completely open admissions does not appear to be the best approach to filling either the black programs or the universities in general. Neither the awarding of an inferior degree, nor the opposite possibility of exposing an unqualified student to a "failure experience", is likely to benefit the student or the society. The results indicate that it is still possible to select the individuals with the highest success potential from a pool of high-risk applicants. In addition, there are large numbers of "fully-qualified" blacks who are unable to attend college under normal circumstances. Often these students are overlooked by even the disadvantaged programs because their grades and test scores are too high.

The universities, the minority groups and the individual applicants would all be best served by an admissions
system that carefully weighed the traditional as well as the non-intellectual predictors against the desired measure(s) of academic success.
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APPENDIX A

Description and Coding of Potential Predictors

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Description of Variable</th>
<th>Response Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>01   SEX</td>
<td></td>
<td>1) Male</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Female</td>
</tr>
<tr>
<td>02   AGE</td>
<td></td>
<td>Recorded directly</td>
</tr>
<tr>
<td>03   HOMETOWN SIZE</td>
<td></td>
<td>1) Population of 1500 or less</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) 1501-5000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) 5001-25,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) 25,001-75,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) 75,001-250,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6) 250,001-500,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7) More than 500,000</td>
</tr>
<tr>
<td>04   DISTANCE OF S's HOMETOWN FROM THE UNIVERSITY</td>
<td>1) 10 miles or less</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) 11-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) 51-150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) 151-300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) 301-600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6) More than 600</td>
</tr>
<tr>
<td>05   BIRTHPLACE SIZE</td>
<td></td>
<td>1) Population of 1500 or less</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) 1501-5000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) 5001-25,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) 25,001-75,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) 75,001-250,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6) 250,001-500,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7) More than 500,000</td>
</tr>
<tr>
<td>06   HIGH SCHOOL SIZE (Number of Students in Senior Class) From ACT Student Profile Card</td>
<td>1) Less than 25</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) 25-99</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) 100-399</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) More than 399</td>
</tr>
<tr>
<td>07   HIGH SCHOOL TYPE From ACT Student Profile Card</td>
<td>1) Public school</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Private school, non-denominational</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Private School, church</td>
</tr>
</tbody>
</table>

82

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### Appendix A (Continued)

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Description of Variable</th>
<th>Response Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>08</td>
<td>HIGH SCHOOL GPA</td>
<td>Recorded directly</td>
</tr>
<tr>
<td>09</td>
<td>CLASS RANK</td>
<td>Recorded as: Rank from top ( \frac{\text{Number in class}}{N} ) x 100</td>
</tr>
<tr>
<td>10</td>
<td>NUMBER OF ACTIVITIES (High School Participation)</td>
<td>Recorded directly</td>
</tr>
<tr>
<td></td>
<td>From ACT Student Profile Card</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>UPWARD-BOUND EXPERIENCE</td>
<td>1) No U-B experience, 2) U-B at institution X, 3) U-B at institution Y, 4) U-B at the present institution, Z</td>
</tr>
<tr>
<td>12</td>
<td>LEVEL OF ASPIRATION</td>
<td>1) Vocational, technical, junior college, etc., 2) BA, BS or equivalent, 3) Graduate Degree</td>
</tr>
<tr>
<td>13</td>
<td>WORK PLANS IN COLLEGE</td>
<td>1) Do not expect to work, 2) Expect to work 1-9 hours per week, 3) 10-19, 4) 20-29, 5) 30 or more</td>
</tr>
<tr>
<td></td>
<td>From ACT Student Profile Card</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>RECEIVED SCHOLARSHIP</td>
<td>1) Yes, 2) No</td>
</tr>
<tr>
<td>15</td>
<td>ACT ENGLISH SCORE</td>
<td>Recorded directly</td>
</tr>
<tr>
<td>16</td>
<td>ACT MATH SCORE</td>
<td>Recorded directly</td>
</tr>
<tr>
<td>17</td>
<td>ACT SOCIAL STUDIES SCORE</td>
<td>Recorded directly</td>
</tr>
<tr>
<td>18</td>
<td>ACT NATURAL SCIENCE SCORE</td>
<td>Recorded directly</td>
</tr>
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### Appendix A (Continued)

<table>
<thead>
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<th>Description of Variable</th>
<th>Response Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>ACT COMPOSITE SCORE</td>
<td>Recorded directly</td>
</tr>
<tr>
<td>20</td>
<td>PARENTS' OCCUPATIONAL LEVEL (Highest Level in Household)</td>
<td>Occupations were classified according to a scale ranging from a high of 1, to a low of 7</td>
</tr>
</tbody>
</table>
| 21              | PARENTAL STATUS (In Relation to the Student) | 01) S living with both parents  
02) Parents separated- S living with mother  
03) Parents separated- S living with father  
04) Father deceased- S living with mother  
05) Mother deceased- S living with father  
06) Father deceased- S living with mother and stepfather  
07) Mother deceased- S living with father and stepmother  
08) Parents separated- S living with mother and stepfather  
09) Parents separated- S living with father and stepmother  
10) S living with guardians  
11) One or both parents deceased- student living with guardians |
| 22              | PARENTAL INCOME | 1) Less than $1500 per year  
2) $1500-$2999 |
<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Description of Variable</th>
<th>Response Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>PARENTAL INCOME (Continued)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3) $3000-$4999</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4) $5000-$7499</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5) $7500-$9999</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6) $10,000-$12,499</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7) $12,500-$14,999</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>8) $15,000-$19,999</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>9) More than $20,000</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>PARENTS' PERCENT CONTRIBUTION TO S's EDUCATIONAL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FINANCING</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1) 20 percent or less</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2) 21-40</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3) 41-60</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4) 61-80</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5) More than 80</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>FAMILY SIZE - SIBLINGS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recorded as the number of dependent siblings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>living at home when S applied for admission to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>college</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>SIBLINGS IN COLLEGE</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1) Yes</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2) No</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>RACIAL BALANCE OF HIGH SCHOOL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recorded as:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of black students/Total Enrollment x 100</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

Data Output of the Six Stepwise Regressions

REGRESSION NUMBER ONE

Dependent Variable = 30-Hour GPA Outside of Special Sections

Variables entering with F-values significant at the .05 level

Step No. 1
Variable entering: Siblings in College
F-level: 7.21 Standard error of estimate: 0.51
Coefficient of multiple regression: 0.28
Coefficient of determination: 0.08 Constant: 2.83

Step No. 2
Variable entering: High School GPA
F-level: 5.93 Standard error of estimate: 0.50
Coefficient of multiple regression: 0.37
Coefficient of determination: 0.14 Constant: 1.93

Step No. 3
Variable entering: Sex
F-level: 2.86 Standard error of estimate: 0.49
Coefficient of multiple regression: 0.41
Coefficient of determination: 0.17 Constant: 1.72

Step No. 4
Variable entering: Number of Activities
F-level: 3.00 Standard error of estimate: 0.49
Coefficient of multiple regression: 0.45
Coefficient of determination: 0.20 Constant: 1.79

Step No. 5
Variable entering: ACT Math Score
F-level: 3.01 Standard error of estimate: 0.48
Coefficient of multiple regression: 0.48
Coefficient of determination: 0.23 Constant: 1.96

Step No. 6
Variable entering: ACT Social Studies Score
F-level: 2.16 Standard error of estimate: 0.48
Coefficient of multiple regression: 0.50
Coefficient of determination: 0.25 Constant: 1.87

Step No. 7
Variable entering: High School Type
F-level: 2.69 Standard error of estimate: 0.47
Coefficient of multiple regression: 0.52
Coefficient of determination: 0.27 Constant: 2.37
Appendix B (Continued)

REGRESSION NUMBER ONE (Continued)

Step No. 8
Variable entering: ACT Natural Science Score
F-level: 3.31  Standard error of estimate: 0.47
Coefficient of multiple regression: 0.55
Coefficient of determination: 0.30  Constant: 2.57

Step No. 9
Variable entering: High School Size
F-level: 2.43  Standard error of estimate: 0.46
Coefficient of multiple regression: 0.57
Coefficient of determination: 0.33  Constant: 2.34

Coefficients of the significant variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>0.12362</td>
</tr>
<tr>
<td>High School Size</td>
<td>0.10744</td>
</tr>
<tr>
<td>High School Type</td>
<td>-0.47879</td>
</tr>
<tr>
<td>Number of Activities</td>
<td>-0.01996</td>
</tr>
<tr>
<td>High School GPA</td>
<td>0.36231</td>
</tr>
<tr>
<td>ACT Math Score</td>
<td>-0.02146</td>
</tr>
<tr>
<td>ACT Social Studies Score</td>
<td>0.02321</td>
</tr>
<tr>
<td>ACT Natural Science Score</td>
<td>-0.02290</td>
</tr>
<tr>
<td>Siblings in College</td>
<td>-0.35627</td>
</tr>
</tbody>
</table>

Variables entering with F-values non-significant at the .05 level

Step No. 10: Distance of Hometown from the University
Step No. 11: Level of Aspiration
Step No. 12: Parental Status
Step No. 13: Hometown Size
Step No. 14: Birthplace Size
Step No. 15: Racial Balance of High School
Step No. 16: Class Rank
Step No. 17: Parents' Occupational Level
Step No. 18: Work Plans in College
Step No. 19: Parents' Percent Contribution to Financing of Education
Step No. 20: Family Size - Siblings
Step No. 21: Age
Step No. 22: ACT Composite Score
Step No. 23: Parental Income
Step No. 24: ACT English Score
Appendix B (Continued)

REGRESSION NUMBER TWO

Dependent Variable = Overall GPA Outside of Special Sections

Variables entering with F-values significant at the .05 level

Step No. 1
Variable entering: Sex
F-level: 10.95  Standard error of estimate: 0.52
Coefficient of multiple regression: 0.34
Coefficient of determination: 0.12  Constant: 1.67

Step No. 2
Variable entering: Siblings in College:
F-level: 6.95  Standard error of estimate: 0.51
Coefficient of multiple regression: 0.43
Coefficient of determination: 0.18  Constant: 2.25

Step No. 3
Variable entering: High School GPA
F-level: 6.61  Standard error of estimate: 0.49
Coefficient of multiple regression: 0.49
Coefficient of determination: 0.24  Constant: 1.38

Step No. 4
Variable entering: ACT Composite Score
F-level: 3.46  Standard error of estimate: 0.48
Coefficient of multiple regression: 0.52
Coefficient of determination: 0.28  Constant: 1.53

Step No. 5
Variable entering: ACT Social Studies Score
F-level: 5.20  Standard error of estimate: 0.47
Coefficient of multiple regression: 0.57
Coefficient of determination: 0.32  Constant: 1.47

Step No. 6
Variable entering: Distance of Hometown from the University
F-level: 3.68  Standard error of estimate: 0.46
Coefficient of multiple regression: 0.59
Coefficient of determination: 0.35  Constant: 1.33

Step No. 7
Variable entering: High School Type
F-level: 2.45  Standard error of estimate: 0.46
Coefficient of multiple regression: 0.61
Coefficient of determination: 0.37  Constant: 1.78
## REGRESSION NUMBER TWO (Continued)

### Coefficients of the significant variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>0.28308</td>
</tr>
<tr>
<td>Siblings in College</td>
<td>-0.34662</td>
</tr>
<tr>
<td>High School GPA</td>
<td>0.51032</td>
</tr>
<tr>
<td>ACT Composite Score</td>
<td>-0.08087</td>
</tr>
<tr>
<td>ACT Social Studies Score</td>
<td>0.04246</td>
</tr>
<tr>
<td>Distance of Hometown from the University</td>
<td>0.11228</td>
</tr>
<tr>
<td>High School Type</td>
<td>-0.37855</td>
</tr>
</tbody>
</table>

### Variables entering with F-values non-significant at the .05 level

- Step No. 8: High School Size
- Step No. 9: Hometown Size
- Step No. 10: Birthplace Size
- Step No. 11: Number of Activities
- Step No. 12: Parents' Occupational Level
- Step No. 13: Parental Status
- Step No. 14: Level of Aspiration
- Step No. 15: Class Rank
- Step No. 16: Parental Income
- Step No. 17: Family Size - Siblings
- Step No. 18: Age
- Step No. 19: ACT Math Score
- Step No. 20: ACT Natural Science Score
- Step No. 21: ACT English Score
- Step No. 22: Racial Balance of High School
- Step No. 23: Parents' Percent Contribution to Financing of Education
- Step No. 24: Work Plans in College

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Appendix B (Continued)

REGRESSION NUMBER THREE

Dependent Variable = Overall GPA Reported on the S's Transcript

Variables entering with F-values significant at the .05 level

Step No. 1
Variable entering: High School GPA
F-level: 12.38 Standard error of estimate: 0.44
Coefficient of multiple regression: 0.36
Coefficient of determination: 0.13 Constant: 1.24

Step No. 2
Variable entering: Sex
F-level: 8.30 Standard error of estimate: 0.42
Coefficient of multiple regression: 0.46
Coefficient of determination: 0.21 Constant: 0.97

Step No. 3
Variable entering: Siblings in College
F-level: 5.32 Standard error of estimate: 0.41
Coefficient of multiple regression: 0.51
Coefficient of determination: 0.26 Constant: 1.40

Step No. 4
Variable entering: ACT Math Score
F-level: 5.13 Standard error of estimate: 0.40
Coefficient of multiple regression: 0.55
Coefficient of determination: 0.30 Constant: 1.57

Step No. 5
Variable entering: Distance of Hometown from the University
F-level: 2.72 Standard error of estimate: 0.40
Coefficient of multiple regression: 0.57
Coefficient of determination: 0.32 Constant: 1.49

Step No. 6
Variable entering: High School Size
F-level: 2.51 Standard error of estimate: 0.39
Coefficient of multiple regression: 0.59
Coefficient of determination: 0.34 Constant: 1.25

Step No. 7
Variable entering: ACT Natural Science Score
F-level: 2.54 Standard error of estimate: 0.39
Coefficient of multiple regression: 0.60
Coefficient of determination: 0.36 Constant: 1.35
Appendix B (Continued)

REGRESSION NUMBER THREE (Continued)

Coefficients of the significant variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School GPA</td>
<td>0.48743</td>
</tr>
<tr>
<td>Sex</td>
<td>0.13876</td>
</tr>
<tr>
<td>Siblings in College</td>
<td>-0.28191</td>
</tr>
<tr>
<td>ACT Math Score</td>
<td>-0.02115</td>
</tr>
<tr>
<td>Distance of Hometown from the University</td>
<td>0.11738</td>
</tr>
<tr>
<td>High School Size</td>
<td>0.10033</td>
</tr>
<tr>
<td>ACT Natural Science Score</td>
<td>-0.01501</td>
</tr>
</tbody>
</table>

Variables entering with F-levels non-significant at the .05 level

Step No. 8: High School Type
Step No. 9: Number of Activities
Step No. 10: Parental Status
Step No. 11: Hometown Size
Step No. 12: ACT Social Studies Score
Step No. 13: ACT Composite Score
Step No. 14: Parents' Occupational Level
Step No. 15: Birthplace Size
Step No. 16: Age
Step No. 17: Family Size - Siblings
Step No. 18: Level of Aspiration
Step No. 19: Class Rank
Step No. 20: Work Plans in College
Step No. 21: Parents' Percent Contribution to Financing of Education
Step No. 22: Parental Income
Step No. 23: Racial Balance of High School
Step No. 24: ACT English Score
Appendix B (Continued)

REGRESSION NUMBER FOUR

Dependent Variable = Total Semester Hours of Credit Earned

Variables entering with F-values significant at the .05 level

Step No. 1
Variable entering: Sex
F-level: 5.27 Standard error of estimate: 36.35
Coefficient of multiple regression: 0.24
Coefficient of determination: 0.06 Constant: 58.78

Step No. 2
Variable entering: Parents' Percent Contribution to Financing of Education
F-level: 4.00 Standard error of estimate: 35.72
Coefficient of multiple regression: 0.32
Coefficient of determination: 0.10 Constant: 73.80

Step No. 3
Variable entering: Number of Activities
F-level: 3.24 Standard error of estimate: 35.25
Coefficient of multiple regression: 0.37
Coefficient of determination: 0.14 Constant: 80.81

Coefficients of the significant variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>17.56433</td>
</tr>
<tr>
<td>Parents' Percent Contribution to Financing of Education</td>
<td>-10.21851</td>
</tr>
<tr>
<td>Number of Activities</td>
<td>-01.17165</td>
</tr>
</tbody>
</table>

Variables entering with F-values non-significant at the .05 level

Step No. 4: Siblings in College
Step No. 5: High School Size
Step No. 6: Hometown Size
Step No. 7: Distance of Hometown from the University
Step No. 8: ACT Natural Science Score
Step No. 9: High School GPA
Step No. 10: Parents' Occupational Level
Step No. 11: High School Type
Step No. 12: Family Size - Siblings
Appendix B (Continued)

REGRESSION NUMBER FOUR (Continued)

Step No. 13: Work Plans in College
Step No. 14: ACT English Score
Step No. 15: Class Rank
Step No. 16: Age
Step No. 17: Birthplace Size
Step No. 18: ACT Composite Score
Step No. 19: Parental Income
Step No. 20: ACT Math Score
Step No. 21: Parental Status
Step No. 22: Level of Aspiration
Step No. 23: ACT Social Studies Score
Step No. 24: Racial Balance of High School

REGRESSION NUMBER FIVE

Dependent Variable = Persistence in Classes

Variables entering with F-values significant at the .05 level

Step No. 1
Variable entering: Work Plans in College
F-level: 5.14 Standard error of estimate: 11.68
Coefficient of multiple regression: 0.24
Coefficient of determination: 0.06 Constant: 19.78

Step No. 2
Variable entering: Hometown Size
F-level: 5.82 Standard error of estimate: 11.36
Coefficient of multiple regression: 0.35
Coefficient of determination: 0.12 Constant: 11.33

Step No. 3
Variable entering: ACT English Score
F-level: 3.60 Standard error of estimate: 11.19
Coefficient of multiple regression: 0.40
Coefficient of determination: 0.16 Constant: 6.19

Step No. 4
Variable entering: Sex
F-level: 2.99 Standard error of estimate: 11.05
Coefficient of multiple regression: 0.43
Coefficient of determination: 0.19 Constant: 9.93

Step No. 5
Variable entering: Siblings in College
F-level: 2.52 Standard error of estimate: 10.95
Coefficient of multiple regression: 0.46
Coefficient of determination: 0.21 Constant: 18.01
Appendix B (Continued)

REGRESSION NUMBER FIVE (Continued)

Coefficients of the significant variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Plans in College</td>
<td>-2.68946</td>
</tr>
<tr>
<td>Hometown Size</td>
<td>2.19420</td>
</tr>
<tr>
<td>ACT English Score</td>
<td>0.52571</td>
</tr>
<tr>
<td>Sex</td>
<td>-4.62119</td>
</tr>
<tr>
<td>Siblings in College</td>
<td>-4.17901</td>
</tr>
</tbody>
</table>

Variables entering with F-values non-significant at the .05 level

Step No. 6: ACT Composite Score
Step No. 7: Level of Aspiration
Step No. 8: High School Type
Step No. 9: Racial Balance of High School
Step No. 10: Age
Step No. 11: Birthplace Size
Step No. 12: Distance of Hometown from the University
Step No. 13: Parental Status
Step No. 14: Parental Income
Step No. 15: Parents' Percent Contribution to Financing of Education
Step No. 16: Family Size - Siblings
Step No. 17: ACT Social Studies Score
Step No. 18: High School GPA
Step No. 19: Class Rank
Step No. 20: Number of Activities
Step No. 21: High School Size
Step No. 22: Parents' Occupational Level
Step No. 23: ACT Natural Science Score
Step No. 24: ACT Math Score
Appendix B (Continued)

REGRESSION NUMBER SIX

Dependent Variable = Current Status with the University

Variables entering with F-values significant at the .05 level

Step No. 1
Variable entering: Sex
F-level: 5.56 Standard error of estimate: 0.96
Coefficient of multiple regression: 0.25
Coefficient of determination: 0.06 Constant: 3.09

Step No. 2
Variable entering: High School GPA
F-level: 3.87 Standard error of estimate: 0.95
Coefficient of multiple regression: 0.31
Coefficient of determination: 0.09 Constant: 4.20

Coefficients of the significant variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>-0.43718</td>
</tr>
<tr>
<td>High School GPA</td>
<td>-0.50241</td>
</tr>
</tbody>
</table>

Variables entering with F-values non-significant at the .05 level

Step No. 3: Parents' Percent Contribution to Financing of Education
Step No. 4: ACT Natural Science Score
Step No. 5: Siblings in College
Step No. 6: Distance of Hometown from the University
Step No. 7: Racial Balance of High School
Step No. 8: High School Size
Step No. 9: Number of Activities
Step No. 10: Parents' Occupational Level
Step No. 11: Hometown Size
Step No. 12: Family Size - Siblings
Step No. 13: High School Type
Step No. 14: Parental Status
Step No. 15: Work Plans in College
Step No. 16: Age
Step No. 17: Level of Aspiration
Step No. 18: ACT Social Studies Score
Step No. 19: ACT Composite Score

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Appendix B (Continued)

REGRESSION NUMBER SIX (Continued)

Step No. 20: ACT Math Score
Step No. 21: ACT English Score
Step No. 22: Parental Income
Step No. 23: Class Rank
Step No. 24: Birthplace Size
APPENDIX C

Simple Correlations Between the Success Criteria and Their Respective Significant Predictors

<table>
<thead>
<tr>
<th>CRITERION</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
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*These GPAs do not include special sections or compensatory classes.
APPENDIX D

Intercorrelation Matrix of the Predictive Variables that Entered Significantly into One or More of the Regression Equations
| 03 | .23 |
| 04 | .19 .05 |
| 06 | .03 .35 -.18 |
| 07 | -.12 .05 -.18 -.03 |
| 08 | .15 .17 .11 .11 -.11 |
| 10 | .03 -.02 .08 -.03 -.01 .08 |
| 13 | .13 .06 -.14 .24 -.13 .10 -.18 |
| 14 | -.22 -.09 .00 -.19 .16 .00 .27 -.13 |
| 15 | .22 .03 .09 -.02 .12 .35 .18 .06 .12 |
| 16 | -.16 .05 .22 .14 -.21 .16 -.15 .21 -.02 .05 |
| 17 | -.15 .18 .03 .06 .11 .23 .02 .07 .11 .59 .19 |
| 18 | -.15 -.04 .03 .09 -.13 .26 -.05 .12 .08 .34 .33 .43 |
| 19 | -.05 .12 .15 .07 -.04 .36 .01 .15 .11 .71 .53 .80 .71 |
| 23 | -.06 .11 -.07 -.12 .10 .03 .00 -.04 .21 .15 .14 .16 .05 .18 |
| 25 | -.08 -.13 .05 .05 .07 -.04 -.05 -.06 .00 .03 -.02 .00 -.16 -.06 .07 |

WHERE:

01 = Sex  
03 = Hometown Size  
04 = Distance of Hometown from the University  
06 = High School Size  
07 = High School Type  
08 = High School GPA  
10 = Number of Activities  
13 = Work Plans in College  
15 = ACT English Score  
16 = ACT Math Score  
17 = ACT Social Studies Score  
18 = ACT Natural Science Score  
19 = ACT Composite Score  
23 = Parents' Percent Contribution to Educational Financing  
25 = Siblings in College  
14 = Received Scholarship

*This variable, though not a predictor, was included for reference.