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ABSTRACT

The purpose of this study is the substantiation of the use of selective cognitive and affective measures for effective identification of degree and level of academic disadvantagement of Higher Education Opportunity Program (HEOP) students in New York State. This was accomplished by investigating the relationship between academic efficiency (e.g., selective cognitive and non-cognitive measures) and persistence (e.g., time spent in college); (b) establishing base rates of learner behaviors for each grade level for selected predictor and criterion measures; and, (c) investigating the relationship between academic efficiency and academic success criteria. The design of the study is based on two premises: that academic efficiency is related to persistence, and that it is also related to success. Predictors used are academic efficiency measures and biographic data, while criteria used are persistence measures and academic success measures. Major results and conclusions based are: (1) upper classmen perform more efficiently than lower classmen on the measures selected for inclusion in the study, leading to the acceptance that academic efficiency is related to persistence; (2) positive but weak relationships exist between individual academic efficiency measures; (3) relationships between persistence and sex, type of high school diploma, and ethnicity do not exist. (Author/AM)

JnD Research
Williamsville, New York

VALIDATION OF SPECIFIC TESTS

for

DIAGNOSTIC AND PRESCRIPTIVE PURPOSES

with

POTENTIAL HEOP STUDENTS

FINAL REPORT

By

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in cooperation with

Rosary Hill College
Snyder, New York

and the

Bureau of Higher Educational Opportunity Program
New York State Department of Education

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I. INTRODUCTION

In the last ten years, noteworthy efforts have been made to increase the accessibility of higher education. Such efforts are exemplified by the advent of open admissions policies and increased availability of state and federal grants-in-aid and low interest or deferred payment loans. As a result of these efforts, students with varied backgrounds and experiences are now being admitted to colleges and universities. The establishment of a large number of Educational Opportunity Programs combines extension of regular admission criteria and the availability of financial aid making it possible for students who are disadvantaged both financially and academically to receive the benefit of a college education.

The New York State Higher Education Opportunity Program (HEOP) states that its primary objective "is to serve as a vehicle through which a broad range of services are made available to young people, who, because of economic and educational deprivation, would otherwise be unable to attend a post-secondary institution according to traditional admission requirements." (1) On the basis of this statement of purpose and the definition of the target population contained within the statement, it would seem that preliminary identification of those students who qualify academically for HEOP programs would be a relatively simple procedure. Theoretically, it should be possible to identify these students through the use of the same admissions criteria used for regular admissions students; the difference being that the cut off or selection point would function as the upper rather than the lower limit. In other words, if regular admission students are defined as those students who score above a certain point on a number of selection measures, then it would follow that students scoring below this delineation would be defined as special admission candidates. The remaining task would then be to select for admission those special

admission candidates who can be identified as having the potential to benefit from a college education.

In spite of the fact that selection of disadvantaged students seems theoretically simple, in actuality it is complex. The complexity stems from controversy over measures commonly used to select regular admissions students and to discern academic potential. There has been a perdurant debate as to whether these standard predictors can be utilized with minority group students validly and without bias.

If valid prediction and lack of bias are the criteria for test selection, a review of the literature for the purpose of identifying usable non-cognitive and cognitive measures is somewhat illustrative. Only two non-cognitive instruments came close to empirically satisfying these criteria. These two instruments, the College Academic Performance Biographical Inventory, and the Survey of Study Habits and Attitudes, were used in this study. The fact that the major evidence pertaining to cognitive measures is contradictory, renders a search of the literature for the purpose of identifying usable cognitive measures almost worthless. A review of the literature does, however, exemplify the basis for controversies regarding the use of many identified measures with a group of disadvantaged students. The unresolved status of these issues may have precipitated recent decisions to admit disadvantaged students to colleges on the basis of alternative admissions criteria. Stanley (2) has noted this trend and has presented objections which are convincing:

> "Substituting principals' and teachers' ratings of probable college success for test scores and high school grades appears to me an unfortunate step backward into the subjectivity, invalidity, and social class biases of the 19th centruy. It would seem more sensible to predict the criterion for each applicant from all available predictors and then, if desired, to set up predictive lists separately for disadvantaged and non-disadvantaged. Those disadvantaged applicants who seem on the basis of all evidence most promising, academically and otherwise, can be accepted, offered financial aid, and where needed, given massive educational

remediation and tutoring.

> I would urge a reversal of the current trend. The more disadvantaged a college applicant seems to be socioeconomically, the more objective information one needs about him." (3)

If the argument propounded by Stanley can be accepted as providing sufficient rationale for cogent utilization of test scores, perhaps it will be possible to reverse the trend toward their non-use and dispel the climate of mistrust. The most viable approach appears to be the utilization of instruments which are relevant to and appropriate for the specific target population. In order to fulfill these requirements, those instruments should simultaneously provide both valid prediction of future academic success and effective identification of learner needs. This duality would facilitate selection of appropriate students for entrance into a higher education situation, and would aid curriculum personnel in providing necessary educational experience to maximize utilization of student potential.

II. STATEMENT OF PROBLEM

The purpose of this study is to substantiate the use of selected cognitive and affective measures for effective identification of degree and level of academic disadvantagement of Higher Education Opportunity Program students in New York State.

These purposes will be accomplished by:

A. Investigating the relationship between academic efficiency (e.g. selected cognitive and non-cognitive measures) and persistence (e.g. time spent in college);

B. Establishing base rates of learner behaviors for each grade level for selected predictor and criterion measures; and,

C. Investigating the relationship between academic efficiency and academic success (e.g. GPA) criteria.

III. DESIGN AND HYPOTHESES

The most favorable method for accomplishing the purposes outlined the Statement of Problem would be through the use of a longitudinal design. This, however, would entail four years of study. The urgency which accompanies the need to identify useful measures precluded the use of a longitudinal design. As a result, with cognition of its limitations, an alternate method requiring only one half year of study and utilizing special admission students at all four grade levels was designed and completed.

The design of the present study was based on the following two premises:

A. With a group predefined as academically disadvantaged, academic efficiency, as demonstrated by cognitive and affective test scores, is related to persistence; and,

B. With a group predefined as academically disadvantaged, academic efficiency is related to academic success.

Premise A

Academic efficiency is related to persistence.

Since academic efficiency is an original term, further clarification is appropriate. Academic efficiency can be defined as the degree to which an individual is able to perform educationally related tasks such as reading, writing, and mathematics, and to exhibit educationally related behaviors such as motivation for studying. Operationally, academic efficiency is defined as the performance levels of skill related and non-cognitive behaviors. Specifically, in this study, an operational definition of academic efficiency is provided by scores on the four predictor measures selected for inclusion in the study.

Persistence refers to time spent in college. Operationally, persistence can be defined as the grade level attained by a given student. Specifically, in this study, one operational definition of persistence

is provided by the number of course hours completed by a student. A second operational definition is provided by the dicotomous Hit/Miss variable. A score on this variable is based on a comparison between date of entry and expected grade level.

In considering premise A, it would not seem incorrect to assume that the sample of disadvantaged students becomes more selective (or more academically efficient) with each succeeding grade level. Of course, not all students drop out for academic reasons, but it would seem that this reason would take precedence over most others. Therefore, if premise A is true, the following hypotheses result:

1. Academic efficiency means will be higher for each succeeding grade level. In other words, Sophomores should have higher scores on selected cognitive and affective measures than Freshmen, Juniors should have higher scores than Sophomores, and Seniors should have the highest scores. In effect, the findings relating to this hypothesis will not only substantiate the premise but will establish base rates of learner behaviors for each grade level;
2. There will be significant relationships between measures of persistence and academic efficiency scores. This will provide an indication of those measures on which persisters excel, which in turn will suggest which measures more successfully denote potential; and
3. There will be significant relationships between measures of persistence and selected biographic data. An investigation of the relationship between persistence and selected biographic data will complete this aspect of the model by describing characteristics of persisters.

Premise B

Academic efficiency is related to academic success.

Academic success is a difficult criterion to measure due to the lack of a standard for the assignment of grades among schools. Nevertheless, grade point average has been utilized as the main criterion variable because it is the success criterion used by all colleges. In those analyses which utilize correlational procedures, this major weakness has been compensated for by standardizing grade point average by school. Consequently, the hypotheses which result from premise two have been tested using either grade point average or grade point average as a within school Z score. Therefore, if premise B is true, the following hypotheses result:

4. There will be significant relationships between academic efficiency scores and measures of academic success. This will provide an indication of which test best predicts academic success; and
5. There will be significant relationships between selected biographic data and measures of academic success. This will provide an indication of those characteristics which best predict academic success.

To complete the model, several additional hypotheses are necessary:

6. There will be zero correlations between measures of academic efficiency and selected biographic data. An investigation of relationships within the predictor set will determine the degree to which the academic measures selected for inclusion in this study are free from bias;

7. There will be significant relationships between measures of academic success and measures of persistence. This investigation of relationships within the criterion set will answer the question, "Do persisters succeed according to predetermined standards of success?"; and

8. Grade point average means will be higher for each succeeding grade level. Findings relating to this hypothesis will contribute to the establishment of base rates of learner behaviors for each grade level. More significantly, these findings will contribute to an understanding of the college effect by answering the question, "Do students tend to become more successful academically with time spent in college?"

Finally, since the present study was conducted at mid-year, it could be argued that mid-year Freshmen are not representative of entering Freshmen. In effect, this does not negate either of the premises upon which the study is based. It could however, have an effect on the establishment of baserates of Freshmen behavior, especially if one semester of higher education experience does significantly alter test scores. To test this question, the following hypothesis was included in the study:

9. There will be no significant differences between academic efficiency scores of mid-year Freshmen and new admittants.

As an adjunct to the main research, actual or expected major field of study as indicated by the students were classified into broad areas of study and analyzed through the use of data description techniques. The purpose of this analysis was to add to the existing knowledge base regarding the target population. Since this variable is categorical and uses a nominal scale, the analysis was treated as a separate study.

IV. METHOD

A. Sample

The sample consisted of academically and financially disadvantaged students enrolled in selected four year institutions in the State of New York. In order to insure a representative sample of the opportunity program effort in the State, institutions which represent the following school types were included in the study: large, small, urban, suburban, religious and secular. Commuter and residential students attend all schools.

Specifically, the following schools participated in the study:

1. Rosary Hill College
   Snyder, New York
   Program Director: Sister Mary Francis Welsh
   Director of Counseling: Dr. Thomas Miller

2. LeMoyne College
   Syracuse, New York
   Program Director: Carl Thomas

3. Utica College
   Utica, New York
   Program Directors: Paul Shelton
   Barbara Bell

4. Canisius College
   Buffalo, New York
   Program Director: Leroy Mitchell

5. State University College at Fredonia
   Fredonia, New York
   Program Director: Jeffrey J. Wallace

6. State University College at Buffalo
   Buffalo, New York
   Program Director: Dr. Isaiah Reid
   Associate Chief Counselor: Robert L. Palmer

7. Long Island University
   Brooklyn, New York
   Program Director: Professor Alphonso Haynes

Early in the Spring semester, selected measures were administered to 1,074 Freshmen, Sophomore, Junior, Senior and newly admitted Freshmen students at the seven institutions. Of this number, all Freshmen, Sophomore, Junior and Senior students for whom grade point average and number of hours completed were available were retained for inclusion in the study. Utilization of a special feature in the computer program used for the correlational analyses made it possible to include all subjects with data on any given variable pair. This resulted in different sample sizes within the correlation matrix dependent upon those variables which were available for a given student. The sample sizes ranged from 962 to 857.

Of the 962 Freshmen, Sophomore, Junior and Senior students retained in the study, 417 were males, 545 were females. Ages ranged from 16 to 58 years of age with the average age being 23.34 years.

Those newly admitted Freshmen for whom complete data was available on all four tests were also retained for inclusion in the study. Of the 101 new admittants tested, 82 were retained. Forty-six were males, 36 were females, and the average age was 23.13 years with the age range being 17 to 44 years.

Table One (page 11) presents a quantitative breakdown of the sample sizes by school and grade level.

Table Two (page 12) presents selected biographic information by grade level. More definitions of the variables have been presented in the next section.

TABLE ONE

SAMPLE SIZE BY SCHOOL AND GRADE LEVEL

School	Total Tested	Total Tested New Admits	Total Retained New Admits	Total Tested by Class	Total Retained by Class	Retained			
						Fresh-men	Sopho mores	Juniors	Seniors
Rosary Hill	56	4	4	52	52	20	20	9	3
LeMoyne	15	0	0	15	15	9	4	1	1
Utica	64	7	4	57	56	20	15	13	8
Canisius	43	1	1	42	40	16	10	11	3
SUC Fredonia	96	3	1	93	89	38	34	9	8
SUC Buffalo	795	86	72	709	705	288	191	147	79
L.I.U	5	0	0	5	5	3	2	0	0
	1,074	101	82	973	962	394	276	190	102

TABLE TWO

SELECTED BIOGRAPHIC INFORMATION BY GRADE LEVEL

Variable	Statistic	New Admits	Freshmen	Sophomores	Juniors	Seniors
SEX	N Total	82	394	276	190	102
	N Males	46	172	126	78	41
	N Females	36	222	150	112	61
AGE	N Total	82	393	276	189	102
	Mean	23.13	21.22	23.12	25.69	27.75
	SD	5.66	5.14	5.90	6.94	7.95
	Range	17 to 44	17 to 48	16 to 58	19 to 56	20 to 57
HIGH SCHOOL AVERAGE	N Total	56	341	240	159	87
	Mean	75.18	76.20	76.35	77.67	77.66
	SD	6.49	5.97	6.17	6.22	5.40
	Range	61 to 91	60 to 93	60 to 91	60 to 91	65 to 88
HIGH SCHOOL CODE	N Total	79	384	264	177	97
	N Equivalency	23	43	24	18	10
	N Averages	56	341	240	159	87
ETHNICITY (E1)	N Total	82	394	276	190	102
	N Black	58	271	191	138	77
	N Other	4	26	12	10	5
	N White	20	97	73	42	20
SCHOOL TYPE	N Total	82	394	276	190	102
	N HEOP	9	68	51	34	15
	N EOP	73	326	225	156	87

B. Variables

1. Predictors

a) Academic Efficiency Measures

Following the direction provided in a review of the literature and based on the opinion of expert judges (4), the following four instruments were selected for inclusion in the study:

1. College Academic Performance Biographical Inventory (CAP). Greensboro, N.C.: Prediction Press, 1969.

2. Survey of Study Habits and Attitudes (SSHA) Form C. New York, N.Y.: The Psychological Corp., 1967.

3. Stanford Test of Academic Skills (TASK) Level II-A. New York, N.Y.: Harcourt Brace Jovanovich, Inc., 1972.

4. Four out of eight sections of the: Comparative Guidance and Placement Program (CGP) of the College Entrance Examination Board, 1972.

A detailed description of each of the four tests may be found in Appendix A.

Specifically, utilization of the above instruments produced scores on the following fifteen measures of academic efficiency: (5)

1. CAP - College Academic Performance Scale
2. SSHA - Survey of Study Habits and Attitudes:
   - DA (delay avoidance)
   - WM (work methods)
   - TA (teacher approval)
   - EA (education acceptance)
   - SH (study habits)
   - SA (study attitudes)
   - SO (study orientation)
9. TASK - Stanford Test of Academic Skills:
   - Reading
   - English
   - Mathematics
12. CGP - Comparative Guidance & Placement:
   - Reading
   - Sentences
   - Mathematics
   - Year 2000

b) Biographic Data

The following biographic variables were included in the study:

1. Sex

Males were coded as (1); females as (2).

2. Age

Since the tests were administered during a two month period from the end of January to the end of March, a cut off point of March 1st, which was midway through the testing period, was utilized as the basis for determining age.

3. Grade Level

Since each school required the completion of a different number of hours for advancement to a subsequent grade level, the following code was used to determine grade level:

Freshman	0 to 29 hours completed
Sophomore	30 to 59 hours completed
Junior	60 to 89 hours completed
Senior	90 and above hours completed

4. High School Average (H.S.AV.)

5. High School Code (H.S. Code)

This variable was included because a number of students had taken the high school equivalency exam and did not have high school averages available. For this variable, therefore, those students with high school equivalency indicated on their records were coded as (1). Students who had high school averages were coded as (2).

6. Ethnicity (E1)

a) Three ethnicity codes were used in the study. Blacks were coded as (1), Whites were coded as (3), and Others were coded as (2). The latter group consisted mainly of students with Spanish surnames.

b) In order to verify correlations which utilized the above codes, two additional ethnicity variables were created for use in several of the analyses. The first of these variables (E2) was coded as follows:

-1 = Whites, 0 = Others, 1 = Blacks.

The second variable (E3) was coded in the following manner:

-1 = Whites, 0 = Blacks, 1 = Others.

7. Type of School

Students were divided into two groups depending on whether they participated in an HEOP (coded as (1)) program or an EOP program (coded as (2)).

8. Major Field of Study

Major fields of study were classified into seven broad categories. The categories and specific courses of study within each category are presented in Appendix C, Part I.

2. Criteria

a) Persistence Measures

1. Hours Completed

Courses which were completed successfully with a grade of A,B,C or D were included in the computation of this measure. For transfer students, hours completed at the present institution plus hours accepted for transfer were utilized.

2. Hit/Miss

This variable was included for the purpose of investigating relationships between predictor and criterion variables, and length of time from date of college entry to the present. Scores were calculated in the following manner.

Expected number of completed hours and expected grade level were established for specific entry dates. The chart presented below was then completed.

Entry Date	Expected Grade Level	Expected Number of Hours Completed
Fall 1973	1	15
Summer 1973	1	18
Spring 1973	2	30 - 59
Fall 1972	2	30 - 59
Summer 1972	2	30 - 59
Spring 1972	3	60 - 89
Fall 1971	3	60 - 89
Summer 1971	3	60 - 89
Spring 1971	4	90+
Fall 1970	4	90+
Summer 1970	4	90+

The following data was then obtained for each student:

(a) the date of his first registration at any college (entry date);
(b) the number of hours he had completed successfully; and
(c) his grade level based on (b).

Based on his actual entry date, it was ascertained whether or not he had attained the expected number of completed hours, and therefore, the expected grade level. If he was at or above grade level, he was classified as a Hit and given a score of 2. If he was below grade level, he was classified as a Miss and given a score of 1.

3. A discrepancy measure consisting of number of hours for which a student had registered minus number of hours completed was proposed for use in this study. However, it was impossible to obtain the information necessary to complete this variable due to the fact that most participating colleges do not have records of courses dropped. In addition, incompletes could not be obtained since one college transforms I's into F's shortly after the end of each semester and, therefore, does not retain records of I's.

b) Academic Success Measures

1. Grade Point Average (GPA) cumulative total

Since different types of grades were used to calculate GPA at some of the participating institutions, it was necessary to standardize the computation of GPA. This was accomplished by including only grades of A,B,C,D and F in the cumulative total. Grades of I (incomplete) and W (withdrew) were not included.

In addition, if a student had transferred from another institution, the GPA used for that student included only those grades which had been received at his present institution. This was necessary because it was not possible, in most cases, to obtain transfer records containing GPA.

2. Grade Point Average Transformed Z Score (GPAZ)

To compensate for the lack of a standard for the assignment of grades among the participating institutions, within school Z scores were calculated for GPA. This score was used in some of the analyses to control for a school effect.

C. Procedure

In order to insure the highest degree of cooperation, suggestions from program directors at all participating institutions were incorporated into the procedure. Consequently, the following procedures were utilized:

A battery of tests consisting of the four tests described above were administered to all HEOP or EOP students at the participating institutions during Spring semester, 1974. One day, selected by the college program director and occurring as early as possible in the semester, was designated as a testing day at each institution. All four tests were administered to each group of students on the designated date. When the student enrollment was too large to accomodate all students on one day, several days were designated. The important procedural factor was that a given student took all tests on one day. Two tests were administered during the morning session. This session took approximately four hours. Following a lunch break, the other two tests were administered. This session took approximately three hours. In addition to the designated testing day, makeups were given at six of the colleges.

The tests were administered by appropriate program personnel at two colleges (Rosary Hill and SUC Buffalo) and by the project test administrator at the other five colleges. All project and program personnel involved in test administration were trained in the methods of test administration by the researchers. The testing procedure training guide may be found in Appendix B.

Testing dates were as follows:

Rosary Hill	2/28/74
LeMoyne	2/ 5/74
Utica	3/ 2/74
Canisius	1/31/74 and 3/27/74
SUC Fredonia	2/12/74 and 2/14/74
SUC Buffalo	2/ 2/74, 2/9/74; 2/23/74, 3/2/74 and 3/3/74
L.I.U.	3/23/74

Academic performance criteria from first semester (January) transcripts, and biographic data were obtained for each student. This data was either supplied by Admissions and Records Departments or collected by program directors and project personnel. Obviously, college academic success measures for January admittants were not available.

D. Method of Analysis

The data was analyzed through the use of multivariate analysis of variance and multivariate correlation procedures.

Specifically, the multivariate analysis of variance computer program, NYBMUL, (6) was used to test for differences between means. This program requires that each subject have complete data on all variables used in a given analysis.

A Multiple Analysis Program System for Behavioral Science Research, MAPS, (7) was used for all other analyses. This system was chosen because it has a special feature which makes it possible to utilize data for a given subject providing that complete data is present for any specific variable pair. The following MAPS programs were selected for data analyses:

DATADES - Data Description
This program computes descriptive statistics for all variables. It is commonly used to check the accuracy of data and to provide descriptive information about the variables to aid in planning further analyses: (8)

RMATRIX - Correlation Matrix
This program provides information about intercorrelations of all variables by computing a correlation matrix in which each variable is correlated with each other variable. (9)

STEPREG - Step-Wise Multiple Regression Analysis
"This program computes a correlation matrix, then computes multiple correlations between selected independent variables and a designated dependent variable. Independent variables may be forced into regression in any desired order or may be selected in a step-wise fashion to maximize the multiple correlation at each step." (10) "Step-wise

regression may be used to develop an equation for the prediction of some variable of interest... It may also be used to study the relationships among variables with other variables statistically controlled, by using the forcing option to force the control variables into regression first." (11)

MULTR - Multiple Correlation Analysis

"This program uses the matrix file for input and computes the multiple correlation and associated statistics between several predictor variables and a criterion variable. The predictors may be divided into two sets in which case the regression analysis is done separately for each set alone and for both sets combined. This allows a partitioning of the criterion variance into parts uniquely predictable from each set and a part jointly associated with both sets." (12)

Both STEPREG and MULTR supply associated statistics which include an F test of the significance of the multiple correlation.

V. RESULTS AND DISCUSSION

Premise A: Academic efficiency is related to persistence.

Hypothesis 1. Academic efficiency means will be higher for each succeeding grade level.

Two methods were utilized as a test of this hypothesis. The first method, a one factor, four level multivariate analysis of variance (MANOVA), utilized NYBMUL to test for significant differences among the four grade level groups on 12 academic efficiency predictor variables and one academic success criterion variable. Although the academic success criterion variable is discussed under a different premise, it was included in the present analysis because GPA is part of each subject's vector of scores. To separate one measure from a vector of measures would be artificial and may give spurious results. The second method, a MAPS data description, allowed for the examination of group means utilizing the maximum sample size.

Tables Three and Four present results from the multivariate analysis of variance (MANOVA). Table Three (page 22) reports the means, rank of the mean by grade level, and the standard deviations for the four groups on the 13 variables.

Multivariate and univariate analysis of variance results are presented in Table Four (page 23).

Table Five (page 24) presents results from the data description. This table which can be compared to Table Three reports sample sizes, means, rank of the mean by grade level, standard deviations, and range for the four groups on the 13 variables.

Examination of Table Four indicates that the multivariate F of 3.43 is significant at the .0001 level. This means that there is a difference between grade level means. This result allows us to examine the

TABLE THREE

MANOVA RESULTS

SUBGROUP MEANS, RANK OF MEANS AND STANDARD DEVIATIONS FOR TEST SCORES AND GPA

Group	Statistic	CAP	CGP				TASK			SSHA				GPA
			Reading	Sentences	Math	Year 2000	Reading	English	Math	DA	WM	TA	EA	
Freshmen (N = 326)	Mean	100.94	46.58	46.05	48.77	45.17	50.22	48.58	25.38	22.59	24.33	23.30	24.50	2.06
	Sd	11.53	9.93	8.59	7.93	10.70	12.53	9.97	8.63	9.76	9.96	9.58	8.65	.54
	Rank*	1	1	1	1	1	1	1	1	1	1	1	1	1
Sophomores (N = 224)	Mean	104.26	50.87	48.90	50.67	48.61	54.58	50.58	27.37	24.46	26.44	23.64	25.99	2.28
	Sd	13.05	8.76	7.77	8.04	11.55	12.81	9.46	8.93	10.29	9.68	8.99	8.65	.54
	Rank	2	2	2	2	3	2	3	3	3	2	2	2	2
Juniors (N = 157)	Mean	104.70	51.59	50.12	53.24	49.14	55.94	51.18	28.69	24.48	27.38	23.82	26.68	2.48
	Sd	12.25	9.22	8.02	7.87	10.76	11.38	9.26	8.94	9.63	9.67	8.15	8.32	.45
	Rank	4	3	4	4	4	4	4	4	4	4	3	3	4
Seniors (N = 78)	Mean	104.57	51.76	49.76	52.05	47.54	54.60	50.17	26.71	24.35	26.97	24.99	27.37	2.45
	Sd	12.70	7.39	7.83	7.63	9.83	10.97	10.29	8.24	10.38	9.70	9.10	8.07	.41
	Rank	3	4	3	3	2	3	2	2	2	3	4	4	3

* Rank: 1=Lowest Rank of Grade Level Within Subtest

TABLE FOUR

MANOVA RESULTS : GENERAL ANALYSIS

MULTIVARIATE RESULTS

$F_{2278}^{39} = 3.43$ p Less Than .0001*

UNIVARIATE RESULTS

Variable		Mean Square Between	Mean Square Within	Univariate F_{781}^{3}	P Less Than
CAP		796.93	149.74	5.32	.0013*
CAP	Reading	1417.50	85.36	16.61	.0001*
	Sentences	788.08	66.84	11.79	.0001*
	Math	782.64	62.70	12.48	.0001*
	Year 2000	796.07	118.37	6.73	.0002*
TASK	Reading	1546.23	149.96	10.31	.0001*
	English	312.23	94.43	3.31	.0198*
	Math	430.05	76.47	5.62	.0009*
SSHA	DA	219.93	99.04	2.22	.0844
	WM	416.62	95.94	4.34	.0048*
	TA	61.44	82.72	.74	.5268
	EA	285.93	71.92	3.98	.0080*
GPA		7.59	.38	19.91	.0001*

* Significant

TABLE FIVE

DATA DESCRIPTION RESULTS

SUBGROUP SAMPLE SIZES, MEANS, RANK OF MEANS, STANDARD DEVIATIONS AND RANGE OF TEST SCORES AND GPA

Group	Statistic	CAP	CGP			TASK				SSHA				GPA
			Reading	Sentences	Math	Year 2000	Reading	English	Math	DA	WM	TA	EA	
Freshmen	N	353	372	372	368	370	380	379	377	366	366	366	366	394
	Mean	101.11	46.18	45.70	48.37	44.64	49.38	47.72	25.12	22.54	24.32	23.21	24.40	2.01
	Sd	11.61	10.18	8.74	8.21	10.84	13.08	10.71	8.95	9.84	10.02	9.43	8.55	.80
	Range	73-142	22-66	23-69	26-73	20-72	16-74	3-68	7-47	1-50	3-52	2-49	4-48	0-4.00
	Rank	1	1	1	1	1	1	1	1	1	1	2	1	1
Sophomores	N	239	267	267	264	267	271	272	271	260	260	260	260	276
	Mean	103.90	50.19	48.32	50.34	47.75	53.29	49.78	26.89	24.35	26.25	23.17	25.49	2.25
	Sd	13.08	8.93	8.07	8.05	11.62	13.17	10.07	9.16	10.05	9.55	9.11	8.56	.53
	Range	74-141	27-66	25-68	30-68	20-75	13-77	17-67	6-60	5-48	6-47	2-46	5-47	0-4.00
	Rank	2	2	2	2	3	2	2	3	2	2	1	2	2
Juniors	N	172	184	184	180	183	188	189	188	175	175	175	175	190
	Mean	104.42	50.40	49.15	52.57	48.09	55.08	50.71	28.26	24.38	27.35	23.43	26.41	2.44
	Sd	12.01	9.73	8.82	8.27	11.11	11.82	9.50	9.09	9.42	9.36	7.99	8.12	.44
	Range	78-134	24-66	26-68	30-76	20-72	15-74	22-68	8-48	5-45	6-50	6-48	7-43	1.54-3.61
	Rank	3	3	3	4	4	4	4	4	3	4	3	3	3.5
Seniors	N	88	96	96	96	96	101	101	101	91	91	91	91	102
	Mean	105.06	51.30	49.94	51.49	47.31	54.30	50.42	25.87	24.79	27.13	24.40	27.29	2.44
	Sd	12.68	8.04	7.82	7.51	9.99	11.83	9.98	8.50	10.20	9.33	9.09	7.80	.40
	Range	64-137	28-64	25-63	37-67	21-72	16-74	24-66	7-44	4-45	9-48	4-47	4-44	1.77-3.74
	Rank	4	4	4	3	2	3	3	2	4	3	4	4	3.5

univariate F's in Table Four to ascertain which variables are the most significant on an individual basis. It can be seen that GPA is significant and all tests, with the exception of SSHA DA (delay avoidance) and TA (teacher approval) are significant. The most significant are: (1) GPA; (2) CGP Reading; (3) CGP Math; (4) CGP Sentences; and (5) TASK Reading.

The existence of significant differences between grade levels is a necessary but insufficient test of hypothesis 1. In conjunction with the tests for significance, it is also necessary to examine the directions of the means. Examination of Tables Three and Five indicates that although the rank of the Seniors is somewhat erratic, in general upper classmen perform better than lower classmen. This lends support to the premise that academic efficiency is related to persistence.

One additional point related to this hypothesis deserves mention. Inspection of the group means for the College Academic Performance Scale (CAP) reveals a general increase in means from Freshmen to Senior year. Since the CAP scale contains questions relating to biographic and psychological information, it is interesting to speculate on possible causes for this increase. Perhaps the college experience contributes breadth to one's background and strength to one's self concept, causing members of each class to answer certain questions differently.

Hypothesis 2. There will be significant relationships between measures of persistence and academic efficiency scores.

The purpose of this aspect of the investigation was to identify those measures on which persisters excel. To test hypothesis 2, correlation analyses using the MAPS system were performed on the total sample. The total sample was formed by pooling the four grade levels and utilizing the maximum sample sizes within each grade level.

Table Six (page 27) presents the sample sizes, means, and standard deviations of the 2 persistence measures (hours completed and Hit/Miss) and the 12 academic efficiency measures for the total sample.

The intercorrelations (r) between the two sets of variables are presented in Table Seven (page 28). The sample size for each individual correlation is presented in parentheses beneath the correlation coefficient.

The test for significance of a correlation coefficient asks the question, "Is the r significantly different from zero?" With an N of 500, the coefficient must be .088 or higher in order to be significantly different from zero at the .05 level. It must be .115 or higher to reach the .01 level of significance.

Examination of Table Seven indicates that most of the correlations are significant at the .01 level. In addition, all correlations are positive. This suggests the existence of some structure within the matrix. However, the fact that the highest coefficient is only .20 implies that the structure is limited. One explanation for this might be the erratic pattern of the Seniors. The results of the MANOVA analysis and the data description presented previously, (Tables Four and Five respectively), support this explanation. Since by definition, Seniors have completed the most hours, it would be necessary for them to excel on most tests in order to achieve high correlation coefficients.

As a concurrent explanation, the low correlations may have resulted from the existence of a wide spread of test scores within each grade level accompanied by an overlap of scores between grade levels. Of course, the existence of excessive overlap would have resulted in failure to reject the null hypotheses that there is no difference between grade level means on academic efficiency measures. Since the null hypotheses was rejected, it is apparent that extreme overlap does not exist. The

TABLE SIX

TOTAL GROUP MEANS, STANDARD DEVIATIONS AND SAMPLE SIZES FOR PERSISTENCE AND ACADEMIC EFFICIENCY VARIABLES

Variable		Mean	Sd	N
Hours Completed		42.92	32.34	962
Hit/Miss		1.39	.49	962
CAP		102.97	12.33	852
CGP	Reading	48.72	9.76	919
	Sentences	47.60	8.63	919
	Math	50.11	8.26	908
	Year 2000	46.52	11.15	916
TASK	Reading	52.17	12.96	940
	English	49.20	10.29	941
	Math	26.34	9.07	937
SSHA	DA	23.66	9.90	892
	WM	25.76	9.77	892
	TA	23.36	9.04	892
	EA	25.42	8.46	892

TABLE SEVEN

CORRELATIONS BETWEEN PERSISTENCE AND ACADEMIC EFFICIENCY VARIABLES WITH SAMPLE SIZES

Variable		Hours Completed	Hit/Miss
CAP		.12** (852)	.13** (852)
CGP	Reading	.20** (919)	.16** (919)
	Sentences	.18** (919)	.16** (919)
	Math	.19** (908)	.14** (908)
	Year 2000	.11* (916)	.13** (916)
TASK	Reading	.17** (940)	.14** (940)
	English	.12** (941)	.13** (941)
	Math	.08 (937)	.13** (937)
SSHA	DA	.08 (892)	.14** (892)
	WM	.11* (892)	.13** (892)
	TA	.03 (892)	.04 (892)
	EA	.11* (892)	.14** (892)

* p<.05 (Significant)
** p<.01 (Significant)

fact that the multivariate F was small, however, does lend credence to the probability that there is a wide range of scores within each grade level.

Examination of the standard deviations and the range of test scores presented in Table Five, confirms the above view.

It would be inappropriate to conclude this discussion without mentioning an additional supposition. When the correlations within a matrix are all between -.25 and +.25, the possibility exists that the tests may be unreliable. Since all reliabilities reported by the test publishers are of high magnitude, and, therefore, are reliable for their norm groups, it could be inferred that the tests are not as reliable for this target population. If, in fact, this is true, the lack of reliability may have been caused by the conditions relating to the testing procedure, or may be a direct function of the tests themselves. Before any conclusion is drawn relating to reliability, it will first be necessary to examine the relationships between the tests and an alternate criterion, (i.e. GPA).

Based on the results of the test of hypothesis 2, any attempt to conclusively identify the 'best' tests from this analysis would be misleading. It is interesting to note, however, that although the Hit/Miss variable does not substantially differentiate between any particular test, hours completed does tend to correlate a bit more substantially with the three CGP basic skills subtests and the TASK Reading subtest.

Since the individual relationships cited above were hardly overwhelming, it seemed interesting to attempt to determine the extent to which the predictor set of academic efficiency measures is related to the criterion, i.e., hours completed. The method of multivariate analysis used to examine this relationship was multiple correlation analysis.

The results of this analysis indicate that the multiple correlation (R) is .293. This coefficient is the product-moment correlation of the best weighted linear composite of the predictors with the criterion. A test of the statistical significance of R yielded an F ratio of 7.455, which is significant at the .0001 level. The square of the multiple correlation coefficient is equal to .086. This indicates that 8.6% of the variance in number of hours completed is accounted for by the set of academic efficiency predictors. Since the highest single predictor (CGP reading) only accounted for 4% ($.20^2$) of the variance in hours completed, inclusion of multiple predictors is somewhat more useful.

The standardized partial regression coefficients or Beta weights for each predictor variable are also supplied by the MULTR program. Despite the fact that they tend to be unreliable, they are sometimes useful because they show the relative independent contribution of each variable to the prediction of the criterion. The qualifying term 'sometimes useful' has been placed in the above description because beta weights should not be interpreted unless they agree in sign with their corresponding predictor-criterion correlations. Since four beta weights in this analysis were negative, it was not appropriate to interpret them.

Hypothesis 3. There will be significant relationships between measures of persistence and selected biographic data.

As a test of hypothesis 3, correlations were computed between the two measures of persistence and selected biographic data. These analyses utilized maximum sample sizes within the total sample. Descriptive data for the persistence variables is presented in Table Six (page 27). Descriptive data for the biographic variables is presented in

Table Eight (page 32). The intercorrelations between the two sets of variables are presented in Table Nine (page 33). The sample size for each correlation is presented in parentheses beneath the correlation coefficient.

Examination of Table Nine reveals that the strongest relationship exists between age and hours completed. This coefficient simply indicates that older students tend to have completed more hours. Since it is common knowledge that older students tend to be at a more advanced grade level than their younger school mates, this finding is hardly interesting. The other significant correlation coefficients are really not high enough to deserve discussion. Tentatively, however, they do suggest that older students and students with higher high school averages have more of a tendency to be at or above grade level. In addition, the results suggest that students with higher high school averages have a slight tendency to have completed more hours.

Interestingly, it is the non-significant correlations which are the most intriguing. The fact that sex is unrelated to persistence in this study contradicts previous research. Typically, it has been reported that within the target population, females perform differently, often better, than males. In addition, the lack of significant relationships between persistence variables and type of high school diploma, ethnicity, and school type may very well contradict established points of view. Especially as it relates to type of diploma and ethnicity, the attempt to describe characteristics of persisters has provided evidence that certain characteristics may not be important factors in determining "who makes it and who doesn't" and, therefore, should not be given strong weight in admissions decisions.

TABLE EIGHT

TOTAL GROUP MEANS, STANDARD DEVIATIONS
AND SAMPLE SIZES FOR SELECTED BIOGRAPHIC DATA

Variable	Mean	Sd	N
Sex	1.57	.50	962
Age	23.34	6.48	960
High School Code	1.90	.30	922
High School Average	76.68	6.05	827
Ethnicity (E1)	1.54	.85	962
School Type	1.83	.38	962

TABLE NINE

CORRELATIONS BETWEEN PERSISTENCE AND SELECTED BIOGRAPHIC VARIABLES WITH SAMPLE SIZES

Variable	Hours Completed	Hit/Miss
Sex	.02 (962)	.08 (962)
Age	.36** (960)	.13** (960)
High School Code	.01 (962)	- .03 (962)
High School Average	.10* (827)	.17** (827)
Ethnicity (E1)	- .05 (962)	.08 (962)
School Type (HEOP, EOP)	.01 (962)	- .08 (962)

* $p < .05$ (Significant)
** $p < .01$ (Significant)

Premise B: Academic efficiency is related to academic success.

Hypothesis 4. There will be significant relationships between academic efficiency scores and measures of academic success.

Hypothesis 5. There will be significant relationships between selected biographic data and measures of academic success.

Because the criteria contained within both of the above hypotheses are identical, and because one of the analyses utilized to test both hypotheses contained both sets of predictors, it would be somewhat redundant to treat the two hypotheses separately. For this reason, both hypotheses will be considered simultaneously.

The purpose of this aspect of the investigation was to ascertain which single variable or set of variables best predicts academic success. Statistical procedures from the MAPS system were performed utilizing the maximum sample sizes within the total sample.

Descriptive data for the academic efficiency variables has been presented in Table Six. Descriptive data for selected biographic data has been presented in Table Eight. Descriptions of additional variables are presented in Table Ten (page 35).

Correlations between the predictors and the criteria are presented in Table Eleven (page 36). The sample sizes are the same for correlations between each predictor and the two criteria and therefore are presented to the right of the coefficients.

Examination of the academic efficiency coefficients presented in Table Eleven indicates that all correlations are significant and positive. Although not terribly high, comparatively they are higher than those found in the analysis which used hours completed as the criterion. The existence of a range of the correlations between .12 and .33 contributes some evidence that these tests are reliable for the target population.

TABLE TEN

DATA DESCRIPTION OF ADDITIONAL VARIABLES

Variable	Mean	Sd	N
GPA	2.21	.66	962
Ethnicity (E2)	.46	.85	962
Ethnicity (E3)	.19	.51	962
GPAZ	.00	1.00	962

TABLE ELEVEN

CORRELATIONS BETWEEN ACADEMIC EFFICIENCY, SELECTED BIOGRAPHIC, AND ACADEMIC SUCCESS VARIABLES WITH SAMPLE SIZES

Variable		GPA	GPAZ	N
CAP		.32**	.31**	852
CGP	Reading	.28**	.29**	919
	Sentences	.33**	.33**	919
	Math	.27**	.27**	908
	Year 2000	.23**	.24**	916
TASK	Reading	.32**	.33**	940
	English	.32**	.33**	941
	Math	.21**	.23**	937
SSHA	DA	.18**	.17**	892
	WM	.19**	.18**	892
	TA	.12**	.12**	892
	EA	.19**	.18**	892
Sex		.06	.05	962
Age		.18**	.15**	960
H.S.	Code	- .06	- .04	922
H.S.	Av.	.20**	.24**	827
Ethnicity	(E1)	.22**	.22**	962
	(E2)	- .22**	- .22**	962
	(E3)	- .15**	- .14**	962
School Type		.19**	.00	962

*p<.05 (Significant)
**p<.01 (Significant)

It is interesting to note that in both analyses, the same general pattern is manifested. In both analyses, the SSHA, CGP Year 2000, and the TASK Math tests seem to account for the least amount of variance.

In this particular analysis, those tests which require language arts skills (i.e. CGP Sentences, TASK Reading and English, and CGP Reading) as well as the CAP account for the most variance. However, since the size of the coefficients are so similar, it would be difficult to choose among them. In addition, the magnitudes of the correlation coefficients are such that, on the basis of this analysis, identification of any one test as a valid predictor for use in selection procedures is not warranted.

What would be warranted, however, would be the use of these tests for diagnostic and prescriptive purposes. Since it would be cumbersome for students to have to take more than one battery of tests, it would be useful to have some scientific basis for choosing among them. For this reason, a step-wise multiple regression analysis was performed using GPA as the dependent variable and the academic efficiency measures as the independent variables. Rather than force any of the independent variables into regression in a predetermined order, the option was chosen which allowed the program to freely select those variables, one at a time, which would maximize the multiple correlation between the independent and dependent variables at each step. With this option, selection ceases when none of the remaining variables can independently make a significant contribution to the prediction of the dependent variable. It was anticipated that, based on the results of this analysis, it would be possible to determine which test was 'best', because it would be selected first, which test was 'second best', because it would be selected second, and so on.

The results of the step-wise multiple regression analysis are presented in Table Twelve (page 39). The multiple correlation coefficient (R) is the multiple correlation of all variables in the equation with GPA. The square of the multiple correlation (RSQ) indicates the proportion of the variance in the criterion which is predictable from those predictors which are present in the equation at that point. The F value indicates the significance of the contribution of a given test to the prediction of GPA independent of all other variables in the equation. By definition, all reported F values are significant.

At first glance, it would seem as if the results presented in Table Twelve only confuse the issue. Surprisingly, CGP Reading has dropped out of the picture accompanied by an appearance of two of the SSHA scales. On the basis of this analysis, CGP Sentences is clearly the 'best' test, followed by the CAP, and the TASK Reading. It would seem as if our search for one battery to be used for diagnosis and prescription, has ended with a battery comprised of portions from each of the existing batteries.

To end the discussion at this point, however, would be a mistake. The most important finding which emerges from this analysis is not that any particular test is 'best', but that, working together, the six tests account for approximately 21% of the variance in the criteria, i.e. GPA. This represents a substantial increase over any single relationship and indicates that it is necessary to use a variety of measures with the target population. Unfortunately, 21% of the variance is still not substantial enough to satisfy established validity criterion.

Continuing on to hypothesis 5, which is to ascertain the relationships between selected biographic data and academic success criteria, it is necessary to re-examine Table Eleven. The results related to the biographic

TABLE TWELVE

RESULTS OF STEP-WISE MULTIPLE REGRESSION ANALYSIS

Step Number	Variable	Multiple R	R^2	Increase In R^2	F Value
1	CGP Sentences	.332*	.110	.110	119.041
2	CAP	.424*	.180	.070	81.299
3	TASK Reading	.441*	.195	.015	17.491
4	TASK English	.447*	.200	.005	6.564
5	SSHA DA	.451*	.204	.004	4.311
6	SSHA WM	.456*	.208	.004	4.735

Dependent Variable is GPA
* $p < .0001$ (Significant)

variables are again not overwhelming but do indicate that older students, students with higher high school averages, and whites followed by "Others", tend to have higher GPA's. The relationships between the variables and GPAZ are practically identical. However, the existence of a significant correlation between school type and GPA does indicate the presence of a school effect. Therefore, the coefficients between the variables and GPAZ are probably more meaningful for the total sample.

It is interesting to notice that the lack of a relationship between sex, type of diploma and hours completed holds up for this analysis. Apparently, neither the sex of students nor the type of diplomas earned, are significant factors in predicting success in college.

Considering the magnitude of both the academic efficiency coefficients and the biographic coefficients, and considering the results of the step-wise multiple regression analysis, it seemed useful to investigate the extent to which both sets of predictors, separately and in combination, are related to academic success. Multiple correlation analysis was performed to examine these relationships. Because of the school effect found previously (reported in Table Eleven), the criteria used for this analysis was GPAZ. Predictor set one contains sex plus 5 biographic variables which correlated significantly with GPA. These are: age, high school average, school type, Ethnicity (E2), and (E3). Since ethnicity variable E1 is simply the reverse of E2, only E2 (of the pair) was included in this analysis. Predictor set two contains the 12 academic efficiency variables.

The results of this analysis are presented in Table Thirteen (page 41). Since a number of beta weights in both sets of predictors did not agree in sign with their predictor-criterion correlations and therefore could not be interpreted, they were not included in the table of results.

TABLE THIRTEEN

RESULTS OF MULTIPLE CORRELATION ANALYSIS
BETWEEN PREDICTOR SETS AND GPAZ

	Multiple R	R^2	F	p less than
Predictor Set One (Biographic Variables)	.357	.127	23.203	.0001*
Predictor Set Two (Academic Efficiency Variables)	.464	.216	21.749	.0001*
Predictor Sets One And Two Combined	.505	.255	17.964	.0001*

Proportion Of Variance

Uniquely Associated With Set One	.040
F Test of Significance	8.366
p Value of F	.0001*
Uniquely Associated With Set Two	.128
F Test of Significance	13.519
p Value of F	.0001*
Jointly Associated With Both Sets	.088

* Significant

Upon examination of Table Thirteen, it is readily apparent that although the set of academic efficiency measures is the better predictor of GPAZ, the most effective prediction occurs when both sets of predictors are entered into the prediction equation.

It would seem that the suggestion made by Stanley which was quoted in the Introduction to this paper has been supported by findings related to a test of hypotheses 4 and 5. "It would seem more sensible to predict the criterion for each applicant from all available predictors ... The more disadvantaged a college applicant seems to be socioeconomically, the more objective information one needs about him."

Additional Hypotheses to Complete the Model

Hypothesis 6. There will be zero correlations between measures of academic efficiency and selected biographic data.

As a test of this hypotheses, intercorrelations within the predictor set were examined. These correlations were available from the matrix of intercorrelations among all variables in the study. It is this matrix, computed with the total sample, which has been the basis for Tables Seven, Nine and Eleven.

Table Fourteen (page 43) presents the correlations between the 12 academic efficiency measures and 8 biographic variables. Sample sizes are presented in parentheses beneath the coefficients.

The major purpose of this aspect of the investigation was to determine the degree to which the selected academic efficiency measures (test scores) are free from bias. If the correlation coefficient between a particular academic efficiency variable and a given biographic variable was close to zero, this would indicate the lack of a relationship between the two variables. This in turn would suggest that the academic efficiency measure did not discriminate against or penalize any given group.

TABLE FOURTEEN

INTERCORRELATIONS BETWEEN PREDICTOR SETS
WITH SAMPLE SIZES

Variable		Sex	Age	H.S. Code	H.S. Av.	E1	E2	E3	School Type
CAP		- .10* (852)	.04 (851)	- .07 (814)	.16** (732)	.10* (852)	- .10* (852)	- .10* (852)	.05 (852)
CGP	Reading	- .08 (919)	.04 (919)	- .10* (880)	.25** (788)	.30** (919)	- .30** (919)	- .22** (919)	.03 (919)
	Sentences	.05 (919)	.06 (919)	- .05 (880)	.25** (788)	.32** (919)	- .32** (919)	- .25** (919)	.07 (919)
	Math	- .15** (908)	- .04 (908)	- .03 (870)	.28** (779)	.33** (908)	- .33** (908)	- .24** (908)	.04 (908)
	Year 2000	- .05 (916)	- .06 (916)	- .06 (877)	.25** (786)	.37** (916)	- .37** (916)	- .28** (916)	.01 (916)
TASK	Reading	- .09* (940)	- .05 (939)	- .04 (900)	.22** (806)	.33** (940)	- .33** (940)	- .23** (940)	.01 (940)
	English	.11* (941)	- .02 (940)	.00 (901)	.28** (807)	.28** (941)	- .28** (941)	- .21** (941)	.02 (941)
	Math	.19** (937)	- .20* (936)	.05 (897)	.28** (804)	.32** (937)	- .32** (937)	- .21** (937)	.06 (937)
SSHA	DA	.29** (892)	.25** (892)	- .07 (854)	.09* (763)	.00 (892)	- .00 (892)	- .00 (892)	.00 (892)
	WM	.21** (892)	.14** (892)	- .06 (854)	.10* (763)	.02 (892)	- .02 (892)	- .03 (892)	- .01 (892)
	TA	.09* (892)	.18* (892)	- .08 (854)	.10* (763)	.13* (892)	- .13** (892)	- .10* (892)	- .07 (892)
	EA	.20** (892)	.28** (892)	- .10 (854)	.11* (763)	.07 (892)	- .07 (892)	- .04 (892)	- .02 (892)

* $p < .05$ (Significant)
** $p < .01$ (Significant)

The term 'group', as used in this analysis has been defined by each biographic variable. For example, males and females are part of the sex group, younger to older students comprise the age group variable, etc.

Examination of Table Fourteen indicates that school type is the only variable in the biographic set which does not correlate significantly with any test. HEOP and EOP students do not perform with any degree of difference on these tests.

For all practical purposes, the same can be said of High School Code (type of diploma) since the relationships with all but one variable are non significant. The one significant correlation coefficient indicates that students with high school equivalency rather than high school averages on their records tend to do slightly better on CGP Reading. Even though this relationship is significant, the coefficient is extremely low. Considered in combination with the 11 other zero order coefficients, it is suggested that little weight be placed on the significant relationship, and that the pattern of correlations be interpreted as suggesting that the academic efficiency measures do not discriminate between students on the basis of type of diploma.

No single pattern of correlations exists between the test scores and sex. In fact, the pattern seems to be somewhat irregular containing both positive and negative, significant and non significant correlations. For example, even though both correlations are significant, the CGP Math test favors males and the TASK Math test favors females. Since the content of both tests are similar, these results are difficult to explain. It would seem that the most useful point which could be made regarding these relationships is that all correlations, whether positive or negative, are rather low. In addition, it should be noted that these findings, because of the presence of significant correlations, contradicts the findings related to persistence and academic success.

The correlations between the test scores and age are also intriguing. Although older students seem to have better study habits, they do not appear to have higher achievement test or CAP scores. Again, this might be explained by the erratic pattern of the Seniors. Since they are older, they would have had to score higher than the other students in order for high correlations to result.

Interpretation of the remaining relationships is relatively clear cut. The relationships between the test scores and high school average are all positive and significant. Although the magnitude of the correlations is not large, the correlations still suggest that students with higher high school averages tend to perform better on the academic efficiency measures. As a result these measures do, by definition, discriminate between students.

Except for SSHA DA, WM and EA, all tests tend to differentiate between ethnic groups. The correlations within E1 indicate that whites perform better, followed by "Others". The coding in E2 is simply the reverse of E1 and, therefore, indicates the same results as E1 except in opposite directions. The coding in E3 was established to verify the second place taken by the "Other" group. By coding the "Other" group so that it was at one extreme, while at the same time coding the whites so that they were at the other extreme it was possible to observe a slight decrease in the negative correlations within E3. If the "Other" group had not been in second place, this slight decrease in the size of the correlations would not have occurred.

Even though the order of the groups within the ethnicity variable is of some interest, it is not the most important result in this analysis. Of greater significance is the fact that the magnitude of several individual coefficients within the ethnicity set are equal to or greater than any other individual coefficients thus far reported. Those tests

which seemed, on the basis of other analyses to 'best' predict persistence and GPA, seem on the basis of this analysis to contain a degree of bias. Although the SSHA, for the most part, does not fit into the latter category, neither does it fit into the former. It may not contain a great deal of bias, but it also does not function as a useful predictor.

Again, it must be concluded, that the academic efficiency measures do not meet the criterion of valid prediction.

Although not specifically a part of this analysis, two additional tables have been presented in this section. The purpose of this is to supply the reader with all sections of the matrix of intercorrelations among all variables in the study.

Table Fifteen (page 47) presents the intercorrelations between the 8 variables within predictor set one, i.e. selected biographic data. The I within the table refers to an indefinite argument due to the attempt to correlate a continuous variable with a single integer. Since no range is present in a single integer, no correlation is possible. This result is a function of coding - all students with high school averages were coded 2 for high school code.

Table Sixteen (page 48) presents the intercorrelations between the 12 variables within predictor set two, i.e. the academic efficiency tests.

TABLE FIFTEEN

INTERCORRELATIONS WITHIN PREDICTOR SET ONE

WITH SAMPLE SIZES

Variable	Sex	Age	H.S. Code	H.S. Av.	E1	E2	E3	School Type
Sex	1.00	.10* (960)	.10* (922)	.20** (827)	-.14** (962)	.14** (962)	.06 (962)	-.00 (962)
Age		1.00	-.38** (920)	-.09* (825)	-.05 (960)	.05 (960)	-.02 (960)	-.09* (960)
H.S. Code			1.00	I	-.05 (922)	.05 (922)	.06 (922)	-.03 (922)
H.S. Av.				1.00	.12** (827)	-.12** (827)	-.05 (827)	-.04 (827)
E1					1.00	-1.00 (962)	-.75** (962)	.01 (962)
E2						1.00	.75** (962)	-.01 (962)
E3							1.00	-.01 (962)
School Type								1.00

* p<.05 (Significant)
** p<.01 (Significant)

TABLE SIXTEEN

INTERCORRELATIONS WITHIN PREDICTOR SET TWO WITH SAMPLE SIZES

Variable		CAP	CGP				TASK			SSHA			
			Reading	Sentences	Math	Year 2000	Reading	English	Math	DA	WM	TA	EA
CAP		1.00	.22** (822)	.19** (822)	.21** (811)	.16** (819)	.23** (846)	.21** (846)	.23** (843)	.38** (805)	.38** (805)	.25** (805)	.32** (805)
CGP	Reading		1.00	.63** (919)	.42** (908)	.52** (916)	.69** (902)	.53** (902)	.43** (899)	.07 (885)	.28** (885)	.23** (885)	.19** (885)
	Sentences			1.00	.48** (908)	.54** (916)	.58** (902)	.61** (902)	.48** (899)	.08 (885)	.26** (885)	.20** (885)	.17** (885)
	Math				1.00	.58** (908)	.51** (892)	.49** (892)	.74** (889)	-.03 (879)	.09* (879)	.04 (879)	.04 (879)
	Year 2000					1.00	.56** (899)	.53** (899)	.59** (896)	-.01 (885)	.16** (885)	.13** (885)	.08 (885)
TASK	Reading						1.00	.62** (939)	.55** (935)	.03 (874)	.26** (874)	.18** (874)	.14** (874)
	English							1.00	.52** (937)	.12** (874)	.29** (874)	.20** (874)	.21** (874)
	Math								1.00	-.06 (871)	.07 (871)	.03 (871)	-.01 (871)
SSHA	DA									1.00	.72** (892)	.51** (892)	.73** (892)
	WM										1.00	.59 (892)	.72 (892)
	TA											1.00	.76 (892)
	EA												1.00

* $p < .05$ (Significant)
** $p < .01$ (Significant)

Hypothesis 7. There will be significant relationships between measures of academic success and measures of persistence.

The purpose of this aspect of the investigation was to ascertain whether persisters succeed according to predetermined standards of success, i.e. grade point average. Correlations within the criterion set were pertinent to a test of hypothesis 7 and were available from the matrix of intercorrelations among all variables in the study. As stated previously, this matrix was computed using the total sample.

Intercorrelations among the criterion variables are presented in Table Seventeen (page 50).

Examination of Table Seventeen indicates that all correlations are positive and significant. The strongest relationship exists between the academic success measures GPA and GPAZ. This can be explained by the apparent fact that standardizing GPA by school does not ostensibly change the rank of GPA's within the total sample.

The coefficient between the persistence measures, Hit/Miss and hours completed indicates that those students who have completed more hours, i.e. upperclassmen, tend to be hits. Even though a major factor in the construct Hit/Miss is hours completed, the fact that the coefficient is not higher should have been anticipated since many members of the target population (especially Freshmen) are encouraged by program personnel to take fewer courses than the number typically recommended for members of a non-disadvantaged group.

The results of this analysis between the persistence measures and the academic success measures indicate that students who are Hits (i.e. those who are at or above grade level) and the upperclassmen (i.e. students who have completed more hours) tend to have higher GPA's. The latter relationship is interesting because it supports

TABLE SEVENTEEN

INTERCORRELATIONS WITHIN THE CRITERION SET
WITH SAMPLE SIZES

Variable	Hours Completed	Hit/Miss	GPA	GPAZ
Hours Completed	1.00	.40** (962)	.29** (962)	.29** (962)
Hit/Miss		1.00	.24** (962)	.27** (962)
GPA			1.00	.97** (962)
GPAZ				1.00

** p less than .01 (Significant)

hypothesis 7 which hypothesizes that persistence is related to success in college. There is a tendency for persisters to academically demonstrate success in college according to those standards on which colleges normally base merit.

Hypothesis 8. Grade point average means will be higher for each succeeding grade level.

The purpose of this aspect of the investigation was to answer the question, "Do students become more academically successful with time spent in college?" It was anticipated that the findings related to this question would contribute to an understanding of the effect college has upon academically disadvantaged sutdents.

Since it was undesirable to separate GPA from the vector of measures which described academic performance, GPA was included as a dependent variable in the one factor, four level multivariate analysis of variance. As described previously under the description of the methods used to test hypothesis 1, this analysis tested the significance of differences among the four grade level groups on 12 academic efficiency measures and GPA. This analysis utilized all subjects with complete data on all 13 variables.

Table Three (page 22) presents descriptive statistics from the multivariate analysis of variance (MANOVA). Multivariate and univariate analysis of variance results are presented in Table Four (page 23).

In order to be consistent, GPA was also included in the report of the MAPS data description which presented descriptive statistics for all 13 variables. Table Five (page 24) presents these results. It should be noted that the means presented in Tables Three and Five represent base rates of learner behavior for each grade level.

Examination of Table Four indicates that the multivariate F of 3.43 with 39 and 2278 degrees of freedom is significant at the .0001 level. Inspection of the univariate F's reveals that of the 11 significant variables, GPA is the most significant on an individual basis.

The results of this analysis, however, only provide a first step in the test of hypothesis 8. The second step involves an examination of the means reported in Tables Three and Five in order to ascertain whether a hierarchical arrangement exists.

When this examination is made, it can be seen that with the exception of the means for Seniors, grade point average means are higher for each succeeding grade level. It is apparent that for some reason, the mean for Seniors is the same as the mean for Juniors (MAPS results, Table Five), or less than the mean for Juniors (MANOVA results, Table Three). The difference in the statistic for the same variable reflects the difference in the sample sizes used in tabulations generated by each program.

It is worthwhile to speculate for a moment on the effect that these findings may have on some of the other results of this study. First, the size of a multivariate F of 3.43, even though significant, is indisputably small. The erratic pattern of the Seniors on 9 of the 12 academic efficiency variables and GPA could, in part, account for the limited size of the F. In addition, the correlations between these variables and hours completed are of small magnitude. Since Seniors have by definition completed the most hours, their erratic pattern could suppress the correlations between hours completed and the 13 academic performance measures.

It would be possible to test these possibilities by eliminating Seniors and reanalyzing the data using Freshmen, Sophomores and Juniors. Even if this were done, however, and it was found that Senior's scores

had suppressed the results, we would still be unable to account for our new findings. Therefore, it is much more appropriate to attempt to explain the erratic pattern of Seniors. One possibility might be that the attitude of the Seniors toward the tests and testing procedures was less positive than the attitude of any other group. Because they were relatively near to graduation, perhaps they felt more confident that the test results would not effect them and therefore did not pursue excellence.

Another possibility might be related to the provision of supportive services. Supportive services refers to program provision for counseling and educational assistance or remediation. The latter is supplied through tutorial services and developmental or remedial courses in the areas of basic skills and college content. These services are offered to all program participants during the school year and for pre-Freshmen during the summer preceeding their Freshmen year.

It is known that Seniors entered college at a time when Educational Opportunity Programs were in their infancy and therefore supportive services were minimal. If lack of supportive services makes a difference, this could explain the pattern of means and the low correlations. Fortunately, the existence of two groups within the total sample consisting of those schools with strong supportive services and those with minimal supportive services makes it possible to conduct a preliminary test of this supposition by comparing the correlations between hours completed and the 13 academic performance measures for the two groups. Even though all Seniors entered college when supportive services were limited, it is possible that those who attended schools where a greater emphasis was placed on the provision of those services took advantage of this opportunity to some degree. If this were the case, correlation coefficients

for the group with strong supportive services should be higher.

The two correlation matrices were computed using the RMATRIX program from the MAPS system. Maximum sample sizes within each group were utilized. Table Eighteen (page 55) presents the means, standard deviations and samples sizes for the two groups on the 13 variables.

Table Nineteen (page 56) presents the results from the correlation analysis. It should be noted that with an N of 150, the coefficient must be .159 or higher to be significant at the .05 level and .208 or higher to be significant at the .01 level. For an N of 125, .05 = .174, .01 = .228.

Examination of Table Nineteen indicates that the coefficients between hours completed and the 12 academic efficiency measures are still fairly small. In addition, the pattern is similar to that obtained with the total sample. Several differences are noteworthy. The first observation to be made is the large difference in sample size between the two groups. The fact that so many students are from one type of program served to suppress some of the correlations between variables for the other type of program when the total (combined) group was used as the sample for analysis. When the groups are separated, it is possible to observe that the TASK Reading subtest and the CGP Year 2000 test correlate more strongly with hours completed for the strong supportive group than they did within the total sample. In addition, it seems as if the SSHA has no relationship with hours completed for the strong supportive group. Without examining a pattern of grade level means for each group, however, this is difficult to explain. In any case, since all the coefficients related to the academic efficiency measures continue to be small, it must be concluded that these measures of academic efficiency do not relate substantially

TABLE EIGHTEEN

DATA DESCRIPTION FOR TWO GROUPS

Strong Supportive Services and Minimal Supportive Services

Variable		Strong Supportive Services Mean	Sd	N	Minimal Supportive Services Mean	Sd	N
CAP		101.59	12.89	136	103.23	12.20	716
CAP	Reading	48.13	10.02	140	48.83	9.71	779
	Sentences	46.14	9.45	140	47.86	8.44	779
	Math	49.30	8.41	137	50.25	8.23	771
	Year 2000	46.19	11.36	140	46.57	11.11	776
TASK	Reading	51.90	13.06	163	52.23	12.93	777
	English	48.70	10.83	164	49.31	10.17	777
	Math	27.58	9.04	163	26.08	9.06	774
SSHA	DA	23.63	10.31	136	23.66	9.83	756
	WM	25.96	9.53	136	25.73	9.81	756
	TA	24.80	9.20	136	23.10	8.99	756
	EA	25.91	8.25	136	25.33	8.49	756
GPA		1.94	.67	168	2.25	.64	794

TABLE NINETEEN

CORRELATIONS BETWEEN HOURS COMPLETED AND ACADEMIC PERFORMANCE MEASURES FOR TWO GROUPS : STRONG SUPPORTIVE SERVICES VRS MINIMAL SUPPORTIVE SERVICES WITH SAMPLE SIZES

	Variable	Hours Completed	
		Strong Supportive Services	Minimal Supportive Services
CAP		.04 (136)	.13** (716)
CGP	Reading	.19* (140)	.20** (779)
	Sentences	.16* (140)	.18** (779)
	Math	.13 (137)	.19** (771)
	Year 2000	.21* (140)	.09* (776)
TASK	Reading	.32** (163)	.14** (777)
	English	.18* (164)	.11* (777)
	Math	.08 (163)	.08 (774)
SSHA	DA	- .02 (136)	.10* (756)
	WM	- .02 (136)	.14** (756)
	TA	.07 (136)	.02 (756)
	EA	.00 (136)	.13** (756)
GPA		.49** (168)	.25** (794)

* $p < .05$ (Significant)
** $p < .01$ (Significant)

enough with hours completed to provide support for this explanation. In addition, this analysis has once again indicated that regardless of whether they are considered with the total sample or with subgroups within the total sample, relationships between the 12 tests and hours completed are not strong enough to identify specific measures on which persisters excel. For this reason, they would not individually be useful indicators of student potential.

The two remaining coefficients in Table Nineteen are striking. The coefficient between GPA and hours completed for the strong supportive group is almost double the coefficient for the other group. This shows that there is a stronger relationship between the variables for the strong supportive group than for the minimal supportive group indicating that as students at the strong supportive schools progress through college, their GPAs tend to improve. There is then a success factor related to persistence for the strong supportive group which is not accounted for by the battery of tests.

The major differences between the two types of programs are: the services available at strong supportive schools include extensive provision of tutoring, counseling, and developmental or basic skills courses, as well as pre-Freshman programs; the services available at the minimal supportive schools include tutoring and counseling only. It has been stated by program personnel at the minimal supportive schools that they feel their supportive services are not at the level needed to make the programs as effective as they could be.

Without more extensive data analysis and a larger sample size from the strong supportive schools, it is perhaps premature to draw conclusions from this digressive investigation. The comparative results of the correlations between GPA and hours completed, however, would seem to

indicate that the degree of provision of supportive services might explain the presence of a college success factor for persisters at strong supportive schools. This in turn could indicate that these services are beneficial to the target population and therefore should be encouraged.

Hypothesis 9. There will be no significant differences between academic efficiency scores of mid-year Freshmen and new admittants.

The purpose of this aspect of the analysis was to ascertain whether mid-year Freshmen are representative of entering Freshmen. This hypothesis was added to the study because the testing, which was originally scheduled for Fall semester, could not take place until early Spring. If the tests are to be used with beginning Freshmen as an aid in diagnosis and prescription, it would seem useful to describe the base rate of actual beginning Freshmen performance.

A one factor, two level multivariate analysis of variance (MANOVA) was used to test this hypothesis. Since the NYBMUL program requires that all subjects have a complete vector of scores, only those students in each group who had scores on all 12 academic efficiency measures were included in the analysis.

Table Twenty (page 59) presents the means and standard deviations for the two groups on the 12 academic efficiency measures. The results of the multivariate analysis of variance are presented in Table Twenty-One (page 60).

Examination of Table Twenty-One indicates that the multivariate F is small but significant. When we examine the univariate F's in Table Twenty-One to ascertain which individual variables are the most significant, we can observe that only one variable is significant. It is, therefore, this variable, TASK English, which accounts for the difference between the

TABLE TWENTY

MEANS AND STANDARD DEVIATIONS FOR 12 ACADEMIC EFFICIENCY MEASURES FOR MID-YEAR FRESHMEN AND NEW ADMITTANTS

Variable		Statistic	Mid-Year Freshmen N = 255	New Admittants N = 82
CAP		Mean	101.28	102.46
		Sd	11.10	11.70
CGP	Reading	Mean	46.10	47.78
		Sd	10.13	11.07
	Sentences	Mean	45.63	45.40
		Sd	8.70	9.06
	Math	Mean	48.42	48.44
		Sd	8.08	8.26
	Year 2000	Mean	44.39	44.62
		Sd	10.71	11.81
TASK	Reading	Mean	49.58	49.32
		Sd	12.53	13.94
	English	Mean	48.07	45.23
		Sd	10.03	10.93
	Math	Mean	25.04	23.21
		Sd	8.49	8.87
SSHA	DA	Mean	22.84	24.43
		Sd	9.34	11.31
	WM	Mean	24.35	24.91
		Sd	9.89	9.55
	TA	Mean	23.42	25.73
		Sd	9.66	9.57
	EA	Mean	24.70	25.95
		Sd	8.50	9.43

TABLE TWENTY-ONE

MANOVA RESULTS: GENERAL ANALYSIS FOR MID-YEAR FRESHMEN AND NEW ADMITTANTS

MULTIVARIATE RESULTS

$F_{324}^{12} = 2.01$ p Less Than .0231*

UNIVARIATE RESULTS

	Variable	Mean Square Between	Mean Square Within	Univariate F_{335}^{1}	p Less Than
CAP		87.13	126.51	.69	.4072
CGP	Reading	174.82	107.53	1.63	.2032
	Sentences	3.25	77.19	.04	.8375
	Math	.01	66.05	.00	.9881
	Year 2000	3.28	120.69	.03	.8693
TASK	Reading	4.43	165.93	.03	.8703
	English	500.06	105.21	4.75	.0300*
	Math	209.11	73.73	2.84	.0931
SSHA	DA	155.62	97.12	1.60	.2065
	WM	19.58	96.20	.20	.6523
	TA	332.82	92.90	3.58	.0593
	EA	97.44	76.31	1.28	.2593

* Significant

two groups. The only conclusion that can be drawn from this analysis is that the groups do differ, but only on one variable. If we are establishing base rates of Freshmen behavior, we can perhaps receive some direction by examing the Table of Means (Table Twenty page 59). This examination reveals that the largest difference between the groups is on the TASK English where the difference is approximately 3 points. All other differences are within a two point range and, it will be noted, do not all favor the same group. Therefore, it would appear that a base rate could be established which is approximate but still within the range of the means presented in the table. Since the means for both groups are all below those of the Sophomores and Juniors, the pattern of means in this analysis and previous analyses are consistent.

Adjunct Investigation

Major Field of Study:

The purpose of this aspect of the investigation was to add to the knowledge base regarding the target population. This was accomplished by presenting descriptive statistics for seven broad areas of study. These descriptive statistics are presented in Appendix C, Part II.

VI. CONCLUSIONS

The purpose of this study was to substantiate the use of selected cognitive and affective measures for effective identification of degree and level of academic disadvantagement of Higher Education Opportunity Program students in New York State. The substantiation process was predicated on relevancy, appropriateness, validity, and lack of bias of each measure.

The measures which were included in this study were selected from a larger group of instruments by a panel of experts. Since these experts deemed the selected measures both relevant to and appropriate for the target population, the present study concentrated upon an investigation of the two remaining qualifications - valid and unbiased prediction of academic success. The assumptions underlying satisfaction of these criteria supposed that upperclassmen would receive higher grade point averages and higher scores on the selected instruments than would lowerclassmen. In addition, it was assumed that all those students from the total sample who received higher grade point averages would receive higher scores on the measures in question.

Two premises, therefore, provided a framework for the design of this investigation:

A. Academic efficiency is related to persistence; and

B. Academic efficiency is related to academic success.

A summary of the major results accompanied by conclusions based on these results are presented below.

1. In general, upperclassmen perform more efficiently than lowerclassmen on the measures selected for inclusion in this study (hypothesis 1). It can be concluded, therefore, that premise A can be accepted.

2. Positive but weak relationships exist between individual academic efficiency measures and persistence measures. Although the relationship becomes stronger when academic efficiency measures are combined to investigate the relationship with hours completed, it is still weak (hypothesis 2). Therefore, on the basis of these analyses, it is not possible to identify with any degree of validity those measures on which persisters excel.

3. Relationships between persistence and sex, type of high school diploma, and ethnicity are non significant (hypothesis 3). In view of these results, it is suggested that these characteristics be given little weight in admissions decisions.

4. In terms of premise B, positive but weak relationships exist between individual academic efficiency measures and academic success. Although the relationship is strengthened when the academic efficiency measures are considered as a set, the strength of the relationship is still not sufficient to meet established validity criteria. The most valid relationship between predictors and criteria appears to exist when scores from the selected instruments and biographic data are considered as a set (hypotheses 4 and 5). If the criteria, i.e. GPA, is itself a valid one, these findings lead to the conclusion that a variety of information is needed before admissions decisions can be made for a disadvantaged student.

5. There is a tendency for the achievement measures to discriminate among members of the target population on certain biographic variables such as high school average and ethnicity. There is less of a tendency for the affective measures to do so (hypothesis 6). The fact that these tests show a relationship between higher school averages and improved performance on the tests is both expected and desirable. The fact that

these tests show a relationship between higher test scores and ethnicity is neither expected nor desired. That these measures do relate to ethnicity suggests possible limitations regarding their use in Educational Opportunity Programs.

6. In general, students who are at or above grade level and students who have completed more hours, i.e. upperclassmen, tend to have higher grade point averages (hypotheses 7 and 8). In effect, this says that academic success is related to persistence. This finding is valuable because it compliments those results which are directly related to premises A and B. In addition, it represents a logical extension of the two premises; an extension which is needed to complete the model.

The results of the present investigation suggest restrictions on the use of the measures in question. The magnitude of the validity coefficients in combination with findings related to bias, place stipulations on the use of these measures for making admissions decisions. Rather than relying upon one battery of tests, admissions decisions must be predicated upon an examination of a variety of types of information. These might include biographic data, cognitive and affective test scores, and personal interviews.

Regardless of the problems associated with admissions decisions, programmatic decisions would be facilitated by the effective identification of learner needs. The measures included in this study were selected because their content focused on areas of potential need. Those measures which are concerned with affective characteristics such as interests, self-concept, and study habits and attitudes would certainly be useful for counselors. Those measures which concentrate on academic skill areas could provide a basis for the provision of educational assistance

and remediation. In addition to their usefulness in these contexts, the validity coefficient of the combined measures is not unreasonable when considered in this context. Furthermore, since the selected measures were written by experts in the field, it is highly probable that attempts to improve upon them would be unfruitful. Perhaps some energy should be directed toward the development of alternative testing techniques especially as they relate to the admissions process. In terms of program planning, however, it is recommended that program personnel select from among the measures investigated in this study, utilizing both cognitive and affective measures so that sound bases for program planning for each individual student will be available.

Although the findings of this study do not allow strong recommendations of a specific battery of tests, a serendipitous finding is of value to personnel involved in Educational Opportunity Programs. This finding suggested that the grade point averages of students who attend programs which provide strong supportive services tend to improve as these students progress through college. This result lends credence to the supposition that provision of supportive services is a key variable in the maximization of student potential. It is for this reason that the recommendations stressed a cogent utilization of instrumentation directed toward diagnosis and prescription. Any or all of the measures investigated in this study would be useful in this context.

VII. FOOTNOTES

1. Interim Report 1970-71: Higher Education Opportunity Program. Albany, New York: The University of The State of New York, The State Education Department Division of Higher Education. 1971, 4.

2. Stanley, Julian C. Predicting college success of educationally disadvantaged students. Report No. 79. Baltimore, Maryland: The Johns Hopkins University. 1970. (ERIC NO. Ed043295).

   _____, Predicting college success of the educationally disadvantaged. Science. 1971, 171 (3972), 640-647.

3. Stanley, Julian C. Predicting college success of the educationally disadvantaged. Science. 1971, 171 (3972), 642.

4. A review of the literature, as well as the criteria and procedure for test selection are presented in detail in the proposal previously submitted for this study.

5. Since SSHA scores are additive (i.e. DA + WM = SH; TA + EA = SA; SH + SA = SO) only the four basic subscale scores were used in the analyses.

6. Finn, Jeremy D. MULTIVARIANCE: Univarate and Multivariate Analysis of Variance, Covariance, and Regression. A Fortran IV Program, Version V. Ann Arbor, Michigan: National Educational Resources, Inc. March, 1972.

7. Nichols, Robert C. MAPS-A Multiple Analysis Program System for Behavioral Science Research, Version 1.0, Provisional Users Manual, State University of New York at Buffalo, April, 1972.

8. Ibid., 36

9. Ibid., 61

10. Ibid., 86

11. Ibid., 88

12. Ibid., Errors and Additions: 3

APPENDIX A

TEST DESCRIPTION

1. College Academic Performance Biographical Inventory (CAP)
Greensboro, N.C.: Prediction Press, 1969.
Now available from:
Institute for Behavioral Research in Creativity (IBRIC)
1417 South 11th East
Salt Lake City, Utah 84106

The College Academic Performance Biographical Inventory is a composite instrument comprised of 200 multiple-choice items taken from the 300 item Alpha Biographical Inventory. The instrument requires that an individual describe himself and his background and includes a variety of questions about childhood activities, academic experiences, attitudes, interests, and self-description evaluations. Since the items are written at a vocabulary level which is appropriate for high school use, HEOP students would experience little difficulty with reading. CAP is untimed and most students should be able to complete it in approximately one hour.

Several methods are available for scoring CAP. In this study, the instrument will be scored with the Academic Performance Key. This key was developed by a process which selects and weighs various combinations of items until a maximum correlation with the appropriate criterion (e.g. GPA) has been reached. The use of this key yields one score, The Academic Performance Score, which will be utilized in the analysis.

Test-retest reliabilities for the Academic Performance Score are .86 for males and .88 for females. Use of an original technique for estimating reliability coefficients which provides a measure of item consistency produced a coefficient of .88. This method has been described in the Manual for Alpha (1968) which is available from IBRIC.

2. Survey of Study Habits and Attitudes (SSHA) Form C. New York, N.Y.: The Psychological Corp., 1967.

The Survey of Study Habits and Attitudes (SSHA) is comprised of 100 items which measure an individual's methods of study, motivation for studying, and certain attitudes toward scholastic activities. The SSHA is useful as an aid in understanding students with academic difficulties and also provides a basis for helping these students improve their study habits and attitudes.

The SSHA consists of numbered statements to which a student may respond in one of five ways: Rarely (0-15% of the time), Sometimes (16-35%), Frequently (36-65%), Generally (66-85%) or Almost Always (86-100%). Estimated completion time for this untimed instrument is 20 to 35 minutes.

Four basic subscales consisting of 25 items each are contained within the instrument. The Delay Avoidance subscale and the Work Methods subscale provide a measure of study habits. Study attitude is measured by the Teacher Approval subscale and the Education Acceptance subscale.

Seven scores may be derived. The four subscales provide one score each. The scores on the first two subscales can be combined to provide a score for Study Habits. The scores on the last two subscales can be combined to provide a score for Study Attitudes. In addition, a total score labeled Study Orientation may be derived by combining the four subscale scores.

Internal consistency and test-retest reliability data are available from the four subscales. The internal consistency estimates of reliability using the Kuder-Richardson Formula 8, ranged from .87 to .89. Test-retest reliabilities for a four week and a fourteen week period ranged from .83 to .93.

3. Stanford Test of Academic Skills (TASK) Level II-A
New York, N.Y.: Harcourt Brace Jovanovich, Inc., 1972

The Stanford Test of Academic Skills (TASK) Level II-A is designed to measure the basic skills of reading, English and mathematics at the junior college level. The battery consists of three tests, one for each of the skill areas. All items are of the multiple-choice variety, some with four options, some with five. The items range from quite easy to fairly difficult. Each of the tests yields a single score. The working time for each of the three tests is 40 minutes resulting in a total time of two hours.

The three tests are described as follows:

Reading

The 78 item reading test contains two parts. Part A of this test measures Reading Comprehension and Part B measures Vocabulary. In Part A, (items 1-42), the student is instructed to read a paragraph and then answer the questions which follow it. The student may re-read the paragraph in answering the questions. Items 43-51 of Reading Part A require the student to read a paragraph in which several words are missing. The student must then choose from among 4 options the word or words that should be inserted in the paragraph to have it read correctly. Technically this may be thought of as a modified cloze technique. Part A tests the student's ability to comprehend what is explicit in the material, to judge what is implied, and to draw inferences with reference to other situations.

In Part B (items 52-78) the Vocabulary section, the student is given a word and instructed to match it with one of the five choices which is most closely related to the given word. For example, if the

presented word were "triangle", the student would be expected to match it with "geometry" rather than "economics", "botany", "prejudice", or "reasoning", the other four options.

English

The English test measures the student's knowledge and effective use of the English language. The 69 item test contains five parts. Part A (items 1-15) deals with learning skills such as dictionary use, reference sources, and the nature and structure of language.

In Part B (items 16-36) the student is to determine for each underlined passage in a short narrative whether there is an error in capitalization, grammar, punctuation, or if there is no error present. Part C (items 37-51) is a spelling test. The types of spelling errors presented are based primarily on phonics and word building skills. Part D (items 52-57) tests English expression. The student is presented with items containing four compound or complex sentences from which he chooses the one which expresses the idea best. Part E (items 58-69) presents a series of four-sentence paragraphs in which the logical sequence of the sentences in the paragraph has been jumbled. The student is to reorder the sentences so that the paragraph presents the idea properly.

Mathematics

This test consisting of 48 items is designed to measure general mathematical competence; it emphasizes arithmetical and numerical concepts, computation, and applications with some minor emphasis on algebra, geometry, and measurement. The content covered by the test is that which is considered to be an integral part of general education and to be basic preparation for more advanced study in mathematics. The test includes a modest emphasis on "new mathematics".

Typically, the student will have been exposed to most, if not all, of the content of this test by the end of the seventh or eighth grade.

Because of the recent development of this test, reliability information for college students is not yet available from the publisher. However, the manual presents split-half (Spearman Brown, r_{11}) and internal consistency (Kuder Richardson, $r_{KR_{20}}$) subtest reliabilities based on 12th grade students. Reliability coefficients for each subtest are as follows: Reading $r_{11} = .95$, $r_{KR_{20}} = .94$; English $r_{11} = .95$, $r_{KR_{20}} = .94$; Math $r_{11} = .94$, $r_{KR_{20}} = .94$.

3. Four out of eight sections of the: Comparative Guidance and Placement Program (CGP) of the College Entrance Examination Board, 1972.

The Comparative Guidance and Placement Program (CGP) is a comprehensive battery of six tests and two inventories designed to gather a wide range of information about a student's abilities, interests, and needs. In this study, the four tests which measure basic skills will be utilized. These are Reading (25 minutes), Sentences (25 minutes), Mathematics (40 minutes), and Year 2000 (10 minutes). The latter section provides a measure of a student's ability to follow directions. Administration time for the four tests totals two hours.

The Reading test consists of 8 brief passages (50-250 words) followed by 35 related questions that measure four crucial skills: 1) comprehension of the main idea; 2) comprehension of specific details; 3) ability to make inferences; and 4) ability to extract the meaning of vocabulary from context. The subject matter in the

passages is varied and is directed toward a variety of interests and reading preferences. The level of difficulty of the test facilitates identification of students who need remedial work. In addition, the test differentiates among levels of skill throughout most of the range of reading ability.

The test, entitled Sentences, measures a student's mastery of standard written English. The section, which contains 40 questions, presents a series of sentences, many of which contain the types of errors frequently made in grammar, usage, choice of words, idiom, capitalization, and punctuation. The student is asked to recognize faulty written English where it occurs. Research has shown that performance on similar questions is closely related to essay scores based on several independent readings. Thus, a student who scores high on this CGP test is likely to be one who can write correctly and effectively.

There are three mathematics tests - Mathematics C, Mathematics D, and Mathematics E. Students take only one of these tests. Mathematics C consists of computation and problems in applied arithmetic. Students will take Test C if they have not studied algebra or if they have studied algebra for less than one year. Test D, consisting of computation and elementary algebra problems, is for students who have studied algebra for one year. Test E, an algebra test, is for people who have studied algebra for more than a year. Note that some questions appear in both Tests C and D, other questions in both Tests D and E.

Below are descriptions of each of the tests:

Mathematics Test C

This test consists of two sections containing 35 and 25 items respectively. In the first section, the student will be required to add, subtract, multiply, and divide with whole numbers, fractions, decimals, and percents. In the second section, he will be expected to apply arithmetic skills to the solution of practical problems.

Mathematics Test D

This test consists of two sections containing 35 items each. In the first section, as in Test C, the student will be required to add, subtract, multiply, and divide with whole numbers, fractions, decimals, and percents. The second section measures the knowledge and skills normally acquired in a first year high school algebra course.

Mathematics Test E

This test consists of two sections containing 35 items each. The first section is like the second section in Test D. The second section tests additional algebraic topics that are usually covered in a second year high school algebra course.

Year 2000

This test consists of a calendar for the first six months of the year 2000 and a set of 20 directions for finding certain dates on the calendar. Each direction serves as a test question, and the student marks the date he chooses on the special calendar printed directly on the answer sheet.

The directions become increasingly complex as the student prodeeds through the test; eventually he is required to use several rules in order to select a date.

Test-retest reliability was supplied from a draft edition of the CGP technical manual. The reliability coefficients for the subtests are as follows: Reading .88, Sentences .83, Math C total .91, Math D total .89, Math E total .89, and Year 2000 .73.

APPENDIX B

TESTING PROCEDURE TRAINING GUIDE

1. Start testing 1/2 hour after schedule time - therefore schedule 1/2 hour earlier than you wish to begin.
2. Explain purpose for testing.
3. Simultaneously (with #2) have proctors pass out test #1 and pencils.
4. Give instructions for test #1 (CAP)
   a) explain that the test is (i.e. bio inventory, achievement test, etc.)
   b) have students fill out bio data on answer sheet (MAJOR TO BE LISTED ON ANSWER SHEET).
   c) explain how answer sheet works
   d) tell them how much time they will have
   e) ask for questions
   f) stress that it is important to answer every question
   g) have them begin
5. When everyone has finished have:
   -1/2 of the proctors collect the test and answer sheet
   -1/2 of the proctors pass out the 2nd test
   -if only a few students have not finished stop anyway and have them finish after test 2 is over.
6. Give instructions for test #2 (TASK) as in #4 above. In addition.
   a) follow the times indicated in the manual for each part
   b) be sure to tell students how much time they will have prior to completing each part
   c) ask them to try their best
7. Dismiss them for lunch.
   -have proctors at every exit to collect tests, answer sheets and pencils.
   -tell them when to return - allow 15 extra minutes (i.e. tell them to come back 15 minutes before you actually want them).

8. Pass out test #3 (CGP), answer sheets and pencils.
9. Give instructions for test #3 (as in #4)
   a) Be sure the students understand where on the answer sheet to record their answers for a given part.
   b) We will only use 4 of the 8 tests. Make sure no one is putting answers in the wrong place.
10. Proceed as in #5 above.
11. Give instructions for test #4 (SSHA) as in #4 above.
12. Let each student leave when he is finished - handing his test, answer sheet and pencil to a proctor.
13. As a student leaves, thank him for participating.

For testing - You will need:

-4 tests

-4 sets of answer sheets

-sharpened pencils

-a stop watch

-proctors - 4 is a good number

APPENDIX C

MAJOR FIELDS OF STUDY

PART I: CLASSIFICATION
PART II: DATA DESCRIPTION

Art and Letters	Educational Studies	Health Science	Science and Math	Administration and Business	Social Science	Undecided
Art	Art Ed.	Dietetics	Bio-Chemistry	Accounting	Afro-Asian Studies	
Studio Art	Business Ed.	Dietician	Biology	Business	Anthropology	
Communications	Early Childhood	Medical Records	Chemistry	Business Administration	Criminal Justice	
Media	Elementary Ed.	Medical Technology	Computer Science	Business Economics	Economics	
Contracting and	Exceptional Ed.	Nursing	Geology	Environmental and	Geography	
Construction	Communication	Nutrician and Food	Mathematics	Consumer Studies	History (Social Studies)	
Design	Disorders	Service	Physics	Fashion Institute of	Human Development,	
English	Distributive Ed.	Occupational Therapy		Technology	Family and Community	
Foreign Languages	Learning Disabilities	Physical Therapy		General Business	Relations (HDFCR)	
General College	Mental Retardation	Pre Med		Industrial Relations	International Studies	
Program	Physically			Industrial Technology	Latin American Studies	
German	Handicapped			Marketing	Philosophy	
Humanities	Vocational			Sales and Marketing	Political Science	
Interdisciplinary	Technology				Pre Law	
Degree	French Ed.				Psychology	
Journalism	Home Economics				Religious Studies	
Language Arts	Industrial Arts				Social Welfare	
Liberal Arts	Math Ed.				Social Work	
Modern	Music Ed.				Sociology	
Languages	Physical Ed.				Speech Communication	
Music	Secondary Ed.				Speech and Hearing	
Spanish	Social Studies Ed.				Urban Studies	
Speech	Spanish Ed.					
T.V. Production						
Theater						

MAJORS - Classification scheme for collapsed categories

ART AND LETTERS

VARIABLE	N	MEAN	SD	SKEW	KURT.	MIN	MAX	FREQUENCY COUNT OR ABOVE, PERCENTILE BELOW 0	1	2	3	4	5	6	7	8	9 <0>9
1. SPANS	106	1.00	.96	.45	-.78	1	4	0	45	37	14	10	0	0	0	0	0
(1)	100.0							0.0	42.5	34.9	13.2	9.4	0.0	0.0	0.0	0.0	0.0
2. SEX	106	1.44	.50	.23	-1.95	1	2	0	59	47	0	0	0	0	0	0	0
(2)	100.0							0.0	55.7	44.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. MEOP (1) OR FOP (2)	106	1.81	.39	-1.59	.53	1	2	0	20	86	0	0	0	0	0	0	0
(3)	100.0							0.0	18.9	81.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. SCHOOL	106	4.81	1.69	-1.47	.59	1	6	0	14	2	4	0	36	50	0	0	0
(4)	100.0							0.0	13.2	1.9	3.8	0.0	34.0	47.2	0.0	0.0	0.0
5. ID	106	134.75	207.91	.99	-.55	1	674	0	2	0	2	0	1	1	1	1	97
(5)	100.0							0.0	1.9	0.0	1.9	0.0	.9	.9	.9	.9	91.5
6. ETHNICITY 3 GROUP	106	1.71	.49	.61	-1.66	1	3	0	62	13	31	0	0	0	0	0	0
(6)	100.0							0.0	58.5	12.3	29.2	0.0	0.0	0.0	0.0	0.0	0.0
7. ETHNICITY MIN(1) MAJ(2)	106	1.29	.45	.91	-1.17	1	2	0	75	31	0	0	0	0	0	0	0
(7)	100.0							0.0	70.8	29.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. SEX	106	1.44	.50	.23	-1.95	1	2	0	59	47	0	0	0	0	0	0	0
(8)	100.0							0.0	55.7	44.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. AGE	106	22.58	6.89	3.07	10.07	16	56	0	0	0	0	0	0	0	0	0	106
(9)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
10. HIGH SCHOOL CODE 1=EQUIV 2=DIP	101	1.92	.27	-3.12	7.71	1	2	0	8	93	0	0	0	0	0	0	0
(10)	95.3							0.0	7.9	92.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. HIGH SCHOOL AVERAGE	92	77.43	5.77	-.20	-.03	60	91	0	0	0	0	0	0	0	0	0	92
(11)	86.7							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
12. MAJOR	106	1.00	0.00	I	I	1	1	0	106	0	0	0	0	0	0	0	0
(12)	100.0							0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13. HOURS COMPLETED	106	410.00	311.87	.77	-.32	30	1220	0	0	0	0	0	0	0	0	0	106
(13)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
14. CEP	98	102.91	11.62	.17	-.35	75	131	0	0	0	0	0	0	0	0	0	98
(14)	92.5							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
15. CGP READING	101	49.86	10.44	-.51	-.93	27	66	0	0	0	0	0	0	0	0	0	101
(15)	95.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
16. CGP SENTENCES	101	49.49	9.14	-.56	.08	23	68	0	0	0	0	0	0	0	0	0	101
(16)	95.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
17. CGP MATH	99	49.07	8.43	-.13	-.22	26	73	0	0	0	0	0	0	0	0	0	99
(17)	93.4							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
18. CGP YEAR 2000	101	48.68	13.59	-.03	-.77	24	72	0	0	0	0	0	0	0	0	0	101
(18)	95.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
19. TASK READING	101	54.53	11.22	-.78	.36	13	77	0	0	0	0	0	0	0	0	0	101
(19)	95.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
20. TASK ENGLISH	101	49.42	11.18	-.53	-.53	19	66	0	0	0	0	0	0	0	0	0	101
(20)	95.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
21. TASK MATH	101	26.14	5.31	.04	-.60	9	46	0	0	0	0	0	0	0	0	3	98
(21)	95.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	97.0
22. SSHA OL	99	22.65	5.35	.22	-.62	4	43	0	0	0	0	1	1	0	2	1	3	90
(22)	93.5							0.0	0.0	0.0	0.0	1.0	1.0	0.0	2.0	1.0	3.1	91.8
23. SSHA WM	98	26.26	5.54	.05	-.59	8	46	0	0	0	0	0	0	0	1	0	97
(23)	92.5							0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	99.0
24. SSHA FA	98	24.80	5.59	-.17	-.13	5	45	0	0	0	0	0	1	2	2	1	1	91
(24)	92.5							0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.0	1.0	1.0	92.9
25. SSHA FA	98	25.60	7.64	-.11	-.73	10	40	0	0	0	0	0	0	0	0	0	98
(25)	92.5							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
26. SSHA SH	98	48.62	15.92	.26	-.51	18	84	0	0	0	0	0	0	0	0	0	98
(26)	92.5							0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	100.0
27. SSHA SA	98	50.42	15.39	-.15	-.31	15	81	0	0	0	0	0	0	0	0	0	98
(27)	92.5							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
28. SSHA SO	98	99.22	21.51	.02	-.50	34	160	0	0	0	0	0	0	0	0	0	98
(28)	92.5							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
29. ENTRY DATE	106	739.77	13.19	-1.01	.18	682	733	0	0	0	0	0	0	0	0	0	106
(29)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
30. HIT 2 MISS 1	106	1.37	.48	.55	-1.70	1	2	0	67	39	0	0	0	0	0	0	0
(30)	100.0							0.0	63.2	36.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31. GPA	106	225.51	64.55	-.22	.31	20	360	0	0	0	0	0	0	0	0	0	106
(31)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
32. COMPLETE DATA	86	1.00	0.00	I	I	1	1	0	86	0	0	0	0	0	0	0	0
(32)	81.1							0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

EDUCATIONAL STUDIES

VARIABLE	N / %	MEAN	SD	SKEW	KURT	MIN	MAX	FREQUENCY COUNT IN ROW, PERCENTAGE BELOW: 0	1	2	3	4	5	6	7	8	9 <0<9
1. GRADE (1)	216 100.0	2.49	1.14	.02	-1.17	1	4	0 0.0	45 20.8	65 30.1	61 28.2	45 20.8	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
2. SEX (2)	216 100.0	1.77	.42	-1.30	-.33	1	2	0 0.0	49 22.7	167 77.3	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
3. MAOR (1) OR EOP (2) (3)	216 100.0	1.91	.28	-2.91	6.46	1	2	0 0.0	19 8.8	197 91.2	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
4. SCHOOL (4)	216 100.0	5.64	.99	-3.38	11.65	1	6	0 0.0	6 2.8	0 0.0	4 1.9	9 4.2	14 6.5	179 82.9	0 0.0	0 0.0	0 0.0
5. ID (5)	216 100.0	316.73	211.75	.14	-1.16	1	703	0 0.0	1 .5	2 .9	1 .5	1 .5	0 0.0	1 .5	0 0.0	1 .5	0 0.0	209 96.8
6. ETHNICITY & GROUP (6)	216 100.0	1.50	.44	1.14	-.63	1	3	0 0.0	157 72.7	9 4.2	50 23.1	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
7. ETHNICITY MINI(1) MAJ(2) (7)	216 100.0	1.23	.42	1.27	-.38	1	2	0 0.0	166 76.9	50 23.1	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
8. SEX (8)	216 100.0	1.77	.42	-1.30	-.33	1	2	0 0.0	49 22.7	167 77.3	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
9. AGE (9)	216 100.0	24.78	5.61	1.74	3.16	17	55	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	216 100.0
10. HIGH SCHOOL CODE 1=EQUIV 2=DIP (10)	216 100.0	1.93	.26	-3.29	8.51	1	2	0 0.0	15 7.3	191 92.7	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
11. HIGH SCHOOL AVERAGE (11)	191 88.4	77.79	5.83	-.15	-.53	62	90	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	191 100.0
12. MAJOR (12)	216 100.0	2.00	1.00	I	I	2	2	0 0.0	0 0.0	216 100.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
13. HOURS COMPLETED (13)	216 100.0	592.36	335.34	.16	-.96	0	1280	2 .9	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	214 99.1
14. GAP (14)	196 90.7	192.83	13.20	.09	-.12	64	141	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	196 100.0
15. CGP READING (15)	213 98.6	44.94	9.39	-.38	-.76	27	66	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	213 100.0
16. CGP SENTENCES (16)	213 98.6	48.88	5.65	-.28	-.61	25	65	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	213 100.0
17. CGP MATH (17)	210 97.2	51.19	5.20	-.15	-.55	34	76	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	210 100.0
18. CGP YEAR 2000 (18)	211 97.7	47.08	11.02	.20	-.95	20	75	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	211 100.0
19. TASK READING (19)	214 99.1	52.42	11.62	-.50	-.39	19	75	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	214 100.0
20. TASK ENGLISH (20)	214 99.1	51.49	9.73	-.58	-.05	17	68	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	214 100.0
21. TASK MATH (21)	210 97.2	26.46	3.15	-.17	-.91	7	48	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 .5	1 .5	3 1.4	207 97.6
22. SSHA DA (22)	202 93.5	25.02	13.27	.19	-.55	5	48	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 .5	1 .5	2 1.0	3 1.5	6 5.0	189 93.6
23. SSHA DM (23)	202 93.5	26.43	9.92	-.07	-.67	4	52	0 0.0	0 0.0	0 0.0	0 0.0	1 .5	2 1.0	0 0.0	2 1.0	1 .5	2 1.0	194 96.0
24. SSHA TA (24)	202 93.5	23.04	9.22	.20	-.53	2	47	0 0.0	0 0.0	1 .5	1 .5	1 .5	0 0.0	0 0.0	3 1.5	3 1.5	2 1.0	191 94.6
25. SSHA FA (25)	202 93.5	26.21	5.47	-.14	-.45	4	47	0 0.0	0 0.0	0 0.0	0 0.0	1 .5	1 .5	1 .5	1 .5	0 0.0	0 0.0	196 96.0
26. SSHA SA (26)	202 93.5	51.43	15.83	.04	-.75	11	95	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	202 100.0
27. SSHA SA (27)	202 93.5	49.06	16.87	.03	-.42	7	93	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 .5	1 .5	0 0.0	200 99.0
28. SSHA SD (28)	202 93.5	101.48	33.67	.04	-.56	26	188	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	202 100.0
29. ENTRY DATE (29)	216 100.0	712.66	13.57	-4.67	48.79	522	733	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	216 100.0
30. YET * MISS 1 (30)	216 100.0	1.48	.50	.07	-1.99	1	2	0 0.0	112 51.9	104 48.1	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
31. GPA (31)	216 100.0	233.60	54.44	-.47	2.34	0	381	2 .9	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	214 99.1
32. COMPLETE DATA (32)	192 88.9	1.00	1.00	I	I	1	1	0 0.0	192 100.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0

HEALTH SCIENCE

VARIABLE	N	MEAN	SD	SKEW	KURT.	MIN	MAX	FREQUENCY COUNT (N ABOVE, PERCENTAGE BELOW) 0	1	2	3	4	5	6	7	8	9	<0>9
1. GRADE	27	1.81	.90	.97	.15	1	4	0	12	10	3	2	0	0	0	0	0	0
(1)	100.0							0.0	44.4	37.0	11.1	7.4	0.0	0.0	0.0	0.0	0.0	0.0
2. SEX	27	1.85	.36	-1.98	1.92	1	2	4	4	23	0	0	0	0	0	0	0	0
(2)	100.0							0.0	14.8	85.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. HFOP (1) OR EOP (2)	27	1.59	.49	-.38	-1.96	1	2	0	11	16	0	0	0	0	0	0	0	0
(3)	100.0							0.0	40.7	59.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. SCHOOL	27	4.52	2.13	-.78	-1.12	1	7	3	6	0	3	1	0	16	1	0	0	0
(4)	100.0							0.0	22.2	0.0	11.1	3.7	0.0	59.3	3.7	0.0	0.0	0.0
5. ID	27	234.33	257.48	.69	-1.28	2	688	0	0	1	1	0	1	0	0	0	0	24
(5)	100.0							0.0	0.0	3.7	3.7	0.0	3.7	0.0	0.0	0.0	0.0	88.9
6. ETHNICITY 3 GROUP	27	1.41	.78	1.47	.95	1	3	0	21	1	5	0	0	0	0	0	0	0
(6)	100.0							0.0	77.8	3.7	18.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. ETHNICITY MINOR MAJOR	27	1.19	.39	1.62	.63	1	2	0	22	5	0	0	0	0	0	0	0	0
(7)	100.0							0.0	81.5	18.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. SEX	27	1.85	.36	-1.98	1.92	1	2	0	4	23	0	0	0	0	0	0	0	0
(8)	100.0							0.0	14.8	85.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. AGE	27	23.63	7.77	1.89	2.91	18	47	0	0	0	0	0	0	0	0	0	0	27
(9)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
10. HIGH SCHOOL CODE 1=EQUIV 2=DIP	27	1.96	.19	-4.90	22.94	1	2	0	1	26	0	0	0	0	0	0	0	0
(10)	100.0							0.0	3.7	96.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. HIGH SCHOOL AVERAGE	26	77.54	5.83	.05	-.57	65	88	0	0	0	0	0	0	0	0	0	0	26
(11)	96.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
12. MAJOR	27	3.00	0.00	I	I	3	3	0	0	0	27	0	0	0	0	0	0	0
(12)	100.0							0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13. HOURS COMPLETED	27	242.04	283.81	.77	-.94	30	1020	0	0	0	0	0	0	0	0	0	0	27
(13)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
14. GAP	24	102.96	12.97	-.10	-1.17	82	125	0	0	0	0	0	0	0	0	0	0	24
(14)	88.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
15. GGP READING	26	46.12	9.53	-.42	-.73	27	60	0	0	0	0	0	0	0	0	0	0	26
(15)	96.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
16. GGP SENTENCES	26	45.04	6.46	-.44	-.69	32	56	0	0	0	0	0	0	0	0	0	0	26
(16)	96.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
17. GGP MATH	26	43.08	9.00	-.01	-.51	33	65	0	0	0	0	0	0	0	0	0	0	26
(17)	96.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
18. GGP YEAR 2000	26	41.77	11.88	.05	-.98	21	63	0	0	0	0	0	0	0	0	0	0	26
(18)	96.3							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
19. TASK READING	27	47.22	12.26	-.18	-.76	24	67	0	0	0	0	0	0	0	0	0	0	27
(19)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
20. TASK ENGLISH	27	42.07	11.34	-.76	-.74	24	63	0	0	0	0	0	0	0	0	0	0	27
(20)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
21. TASK MATH	27	24.59	9.22	-.17	-.67	7	42	0	0	0	0	0	0	0	1	1	0	25
(21)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	3.7	0.0	92.6
22. SSHA OA	27	28.74	7.55	.08	-1.16	14	43	0	0	0	0	0	0	0	0	0	0	27
(22)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
23. SSHA WM	27	27.33	9.51	-.32	-.72	7	43	0	0	0	0	0	0	0	1	0	0	26
(23)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	96.3
24. SSHA IA	27	27.48	9.81	.29	-.47	12	49	0	0	0	0	0	0	0	0	0	0	27
(24)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
25. SSHA FA	27	29.56	7.29	-.17	-.72	15	43	0	0	0	0	0	0	0	0	0	0	27
(25)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
26. SSHA SM	27	56.87	16.40	-.21	-.97	25	84	0	0	0	0	0	0	0	0	0	0	27
(26)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
27. SSHA SA	27	56.04	16.34	.05	-.52	29	91	0	0	0	0	0	0	0	0	0	0	27
(27)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
28. SSHA SD	27	112.11	31.76	-.10	-.94	57	175	0	0	0	0	0	0	0	0	0	0	27
(28)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
29. ENTRY DATE	27	719.44	23.16	-2.93	9.76	633	733	0	0	0	0	0	0	0	0	0	0	27
(29)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
30. HIT 2 MISS 1	27	1.33	.47	.71	-1.50	1	2	0	18	9	0	0	0	0	0	0	0	0
(30)	100.0							0.0	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31. GPA	27	192.33	51.06	-.75	-.14	67	260	0	0	0	0	0	0	0	0	0	0	27
(31)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
32. COMPLETE DATA	23	1.00	0.00	I	I	1	1	0	23	0	0	0	0	0	0	0	0	0
(32)	85.2							0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SCIENCE AND MATH

VARIABLE	N	MEAN	SD	SKEW	KURT.	MIN	MAX	FREQUENCY COUNT (N ABOVE, PERCENTAGE BELOW) 0	1	2	3	4	5	6	7	8	9	<<9
1. GRADE	33	2.03	1.04	.64	-.46	1	4	0	14	9	6	4	0	0	0	0	0	0
(1)	100.0							0.0	42.4	27.3	18.2	12.1	0.0	0.0	0.0	0.0	0.0	0.0
2. SEX	33	1.45	.50	.18	-1.97	1	2	0	18	15	0	0	0	0	0	0	0	0
(2)	100.0							0.0	54.5	45.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. MEOP (1) OR EOP (2)	33	1.76	.43	-1.20	-.55	1	2	0	6	25	0	0	0	0	0	0	0	0
(3)	100.0							0.0	24.2	75.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. SCHOOL	33	5.52	1.26	-2.13	4.26	1	7	0	1	1	0	4	1	24	2	0	0	0
(4)	100.0							0.0	3.0	3.0	0.0	12.1	3.0	72.7	6.1	0.0	0.0	0.0
5. ID	33	753.45	221.54	.74	-1.37	1	668	0	1	1	0	0	1	0	0	0	2	28
(5)	100.0							0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	6.1	84.8
6. ETHNICITY 3 GROUP	33	1.61	.49	.86	-1.18	1	3	0	22	2	9	0	0	0	0	0	0	0
(6)	100.0							0.0	66.7	6.1	27.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. ETHNICITY MIN(1) MAJ(2)	33	1.27	.45	1.02	-.96	1	2	0	24	9	0	0	0	0	0	0	0	0
(7)	100.0							0.0	72.7	27.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. SEX	33	1.45	.50	.18	-1.97	1	2	0	18	15	0	0	0	0	0	0	0	0
(8)	100.0							0.0	54.5	45.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. AGE	33	23.36	2.52	1.51	2.19	18	29	0	0	0	0	0	0	0	0	0	0	33
(9)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
10. HIGH SCHOOL CODE 1=EQUIV 2=DIP	33	1.97	.17	-5.48	28.93	1	2	0	1	32	0	0	0	0	0	0	0	0
(10)	100.0							0.0	3.0	97.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. HIGH SCHOOL AVERAGE	32	80.37	5.21	.07	-.99	71	91	0	0	0	0	0	0	0	0	0	0	32
(11)	97.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
12. MAJOR	33	4.00	0.00	I	I	4	4	0	0	0	0	33	0	0	0	0	0	0
(12)	100.0							0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
13. HOURS COMPLETED	33	441.52	343.47	.76	-.32	0	1140	1	0	0	0	0	0	0	0	0	0	32
(13)	100.0							3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.0
14. CAP	27	105.85	11.08	-.08	-.39	84	127	0	0	0	0	0	0	0	0	0	0	27
(14)	81.8							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
15. CAP READING	32	44.25	10.62	-.96	-.23	23	61	0	0	0	0	0	0	0	0	0	0	32
(15)	97.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
16. CAP SENTENCES	32	45.19	9.57	-.33	-.41	26	62	0	0	0	0	0	0	0	0	0	0	32
(16)	97.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
17. CAP MATH	31	52.68	9.75	-.00	-.30	37	70	0	0	0	0	0	0	0	0	0	0	31
(17)	93.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
18. CAP YEAR 2000	31	46.06	9.38	-.37	-.53	24	63	0	0	0	0	0	0	0	0	0	0	31
(18)	93.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
19. TASK READING	33	53.64	11.23	-.89	.72	23	71	0	0	0	0	0	0	0	0	0	0	33
(19)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
20. TASK ENGLISH	33	50.79	7.51	-.18	-.39	34	64	0	0	0	0	0	0	0	0	0	0	33
(20)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
21. TASK MATH	32	31.06	7.89	-.72	.14	9	43	0	0	0	0	0	0	0	0	0	1	32
(21)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	97.0
22. SSHA OA	30	26.73	9.53	.22	-1.21	9	46	0	0	0	0	0	0	0	0	0	1	29
(22)	90.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	96.7
23. SSHA MM	30	26.50	5.44	-.41	-.39	8	41	0	0	0	0	0	0	0	0	1	1	28
(23)	90.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	93.3
24. SSHA TA	30	25.07	9.56	-.31	-.61	3	44	0	0	0	0	1	0	0	1	0	0	28
(24)	90.9							0.0	0.0	0.0	0.0	3.3	0.0	0.0	3.3	0.0	0.0	93.3
25. SSHA EA	30	28.10	7.53	-.25	-1.33	14	42	0	0	0	0	0	0	0	0	0	0	30
(25)	90.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
26. SSHA SM	30	53.20	16.45	-.10	-.66	22	82	0	0	0	0	0	0	0	0	0	0	30
(26)	90.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
27. SSHA SA	30	53.17	15.13	-.30	-.96	20	79	0	0	0	0	0	0	0	0	0	0	30
(27)	90.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
28. SSHA SD	30	106.37	27.88	-.34	-.70	46	163	0	0	0	0	0	0	0	0	0	0	30
(28)	90.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
29. ENTRY DATE	33	720.85	13.04	-.82	-.24	692	733	0	0	0	0	0	0	0	0	0	0	33
(29)	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
31. HIT ? MISS 1	33	1.45	.50	.18	-1.97	1	2	0	18	15	0	0	0	0	0	0	0	0
(30)	100.0							0.0	54.5	45.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31. SPR	33	214.64	61.87	-.44	2.25	0	345	1	0	0	0	0	0	0	0	0	0	32
(31)	100.0							3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.0
32. COMPLETE DATA	25	1.00	0.00	I	I	1	1	0	25	0	0	0	0	0	0	0	0	0
(32)	75.8							0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ADMINISTRATION AND BUSINESS

VARIABLE	N	%	MEAN	ST	SKEW	KURT.	MIN	MAX	FREQUENCY COUNT (N ABOVE), PERCENTAGE BELOW 0	1	2	3	4	5	6	7	8	>8	<0>0
1. GRADE (1)	74	100.0	2.22	.89	.14	-.46	1	4	0 0.0	18 24.3	27 36.5	24 32.4	5 6.8	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
2. SEX (2)	74	100.0	1.35	.48	.62	-1.61	1	2	0 0.0	48 64.9	26 35.1	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
3. MEOP (1) OR EOP (2) (3)	74	100.0	1.66	.47	-.69	-1.53	1	2	0 0.0	25 33.8	49 66.2	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
4. SCHOOL (4)	74	100.0	4.73	1.82	-1.05	-.48	1	6	0 0.0	8 10.8	6 8.1	4 5.4	7 9.5	4 5.4	45 60.8	0 0.0	0 0.0	0 0.0	0 0.0
5. IQ (5)	74	100.0	219.53	227.53	.76	-.92	3	706	0 0.0	0 0.0	0 0.0	1 1.4	2 2.7	2 2.7	1 1.4	1 1.4	2 2.7	1 1.4	64 86.5
6. ETHNICITY 3 GROUP (6)	74	100.0	1.57	.89	.96	-1.94	1	3	0 0.0	52 70.3	2 2.7	20 27.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
7. ETHNICITY MIN(1) MAJ(2) (7)	74	100.0	1.27	.44	1.03	-.93	1	2	0 0.0	54 73.0	20 27.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
8. SEX (8)	74	100.0	1.35	.48	.62	-1.61	1	2	0 0.0	48 64.9	26 35.1	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
9. AGE (9)	73	98.6	22.51	4.73	2.15	4.53	18	42	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	73 100.0
10. HIGH SCHOOL CODE 1=EQUIV 2=OTH (10)	71	95.9	1.93	.26	-3.36	9.28	1	2	0 0.0	5 7.0	66 93.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
11. HIGH SCHOOL AVERAGE (11)	66	89.2	76.53	5.86	.03	-.54	65	90	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	66 100.0	0 0.0
12. MAJOR (12)	74	100.0	5.00	0.00	I	I	5	5	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	74 100.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
13. HOURS COMPLETED (13)	74	100.0	501.35	273.72	.13	-.46	5	1210	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 1.4	0 0.0	0 0.0	0 0.0	0 0.0	73 98.6
14. OSP (14)	65	87.8	101.51	11.78	.21	-.13	75	130	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	65 100.0
15. OSP READING (15)	65	87.8	49.05	5.69	-.45	-.02	24	66	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	65 100.0
16. OSP SENTENCES (16)	65	87.8	46.31	7.27	.15	-.32	24	62	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	65 100.0
17. OSP MATH (17)	63	85.1	53.95	7.97	-.45	-.61	33	67	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	63 100.0
18. OSP YEAR 2000 (18)	65	87.8	47.34	11.18	.28	-.29	28	72	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	65 100.0
19. TASK READING (19)	70	94.6	52.90	13.11	-.59	-.33	19	75	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	70 100.0
20. TASK ENGLISH (20)	71	95.9	48.54	8.95	-.53	-.37	26	64	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	71 100.0
21. TASK MATH (21)	71	95.9	29.72	9.04	-.32	-.95	11	44	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	71 100.0
22. SSHA DA (22)	67	90.5	20.51	3.55	.68	.09	5	43	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 1.5	1 1.5	0 0.0	0 0.0	2 3.0	63 94.0
23. SSHA MM (23)	57	90.5	24.13	13.16	.39	-.47	6	47	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 1.5	1 1.5	1 1.5	4 6.0	60 89.6
24. SSHA TA (24)	67	90.5	20.42	7.98	.40	-.41	7	43	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 1.5	1 1.5	4 6.0	61 91.0
25. SSHA EA (25)	67	90.5	22.69	7.41	.16	-.34	6	41	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 1.5	1 1.5	0 0.0	2 3.0	63 94.0
26. SSHA SH (26)	57	90.5	43.52	17.20	.50	-.45	16	90	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	57 100.0
27. SSHA SA (27)	67	90.5	43.10	14.49	.11	-.59	15	77	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	67 100.0
28. SSHA SO (28)	67	90.5	86.93	29.44	.43	-.28	32	165	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	67 100.0
29. ENTRY DATE (29)	74	100.0	717.09	13.56	-.64	.61	682	732	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	74 100.0
30. SEX 2 MISS 1 (30)	74	100.0	1.49	.50	.06	-2.00	1	2	0 0.0	38 51.4	36 48.6	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
31. GPA (31)	74	100.0	215.72	56.12	-1.09	2.42	0	318	1 1.4	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	73 98.6
32. COMPLETE DATA (32)	57	77.0	1.00	0.00	I	I	1	1	0 0.0	57 100.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0

SOCIAL SCIENCE

VARIABLE	N	MEAN	SD	SKEW	KURT.	MIN	MAX	FREQUENCY COUNT (N ABOVE, PERCENTAGE BELOW) 0	1	2	3	4	5	6	7	8	9	<0>9
1. GRADE (1)	259	2.38	.96	.11	-.95	1	4	0	52	86	78	34	0	0	0	0	0	0
	100.0							0.0	20.1	33.2	30.1	13.1	0.0	0.0	0.0	0.0	0.0	0.0
2. SEX (2)	259	1.54	.50	-.16	-1.97	1	2	0	115	135	0	0	0	0	0	0	0	0
	100.0							0.0	46.0	54.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. MEDP (1) OR EOP (2) (3)	259	1.72	.45	-.94	-1.36	1	2	0	70	180	0	0	0	0	0	0	0	0
	100.0							0.0	28.0	72.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. SCHOOL (4)	258	5.05	1.59	-1.36	.46	1	7	0	16	6	34	13	7	171	1	0	0	0
	100.0							0.0	6.4	2.4	13.6	5.2	2.8	68.2	.4	0.0	0.0	0.0
5. ID (5)	250	257.69	223.12	.48	-1.23	1	705	0	2	3	1	2	2	2	3	1	2	232
	100.0							0.0	.8	1.2	.4	.8	.8	.8	1.2	.4	.8	92.8
6. ETHNICITY 3 GROUP (6)	258	1.50	.84	1.17	-.57	1	3	0	161	10	57	0	0	0	0	0	0	0
	100.0							0.0	73.2	4.0	22.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. ETHNICITY MINUS1 MAJ2 (7)	250	1.23	.42	1.30	-.32	1	2	0	193	57	0	0	0	0	0	0	0	0
	100.0							0.0	77.2	22.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. SEX (8)	259	1.54	.50	-.16	-1.97	1	2	0	115	135	0	0	0	0	0	0	0	0
	100.0							0.0	46.0	54.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. AGE (9)	250	24.73	7.08	2.11	5.38	17	58	0	0	0	0	0	0	0	0	0	0	250
	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
10. HIGH SCHOOL CODE 1=EQUIV 2=DIP (10)	227	1.89	.32	-2.43	3.91	1	2	0	27	210	0	0	0	0	0	0	0	0
	96.5							0.0	11.4	88.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. HIGH SCHOOL AVERAGE (11)	219	75.86	5.99	-.01	-.21	60	91	0	0	0	0	0	0	0	0	0	0	219
	84.9							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
12. MAJOR (12)	258	6.00	1.30	I	I	6	6	0	0	0	0	0	0	258	0	0	0	0
	100.0							0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
13. HOURS COMPLETED (13)	250	546.96	291.28	.22	-.67	0	1230	2	0	0	0	0	0	0	0	0	0	248
	100.0							.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.2
14. GEP (14)	223	184.13	13.27	.30	-.14	73	142	0	0	0	0	0	0	0	0	0	0	223
	89.2							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
15. GGP READING (15)	237	49.80	9.66	-.56	-.39	23	66	0	0	0	0	0	0	0	0	0	0	237
	94.8							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
16. GGP SENTENCES (16)	237	47.75	9.59	-.87	-.16	26	69	0	0	0	0	0	0	0	0	0	0	237
	94.8							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
17. GGP MATH (17)	236	50.15	7.90	.08	-.46	30	68	0	0	0	0	0	0	0	0	0	0	236
	94.4							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
18. GGP YEAR ZERO (18)	237	47.42	11.84	-.86	-.41	20	72	0	0	0	0	0	0	0	0	0	0	237
	94.8							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
19. TASK READING (19)	249	52.01	14.84	-.74	-.13	13	74	0	0	0	0	0	0	0	0	0	0	249
	96.1							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
20. TASK ENGLISH (20)	250	49.46	13.73	-.77	.29	16	68	0	0	0	0	0	0	0	0	0	0	250
	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
21. TASK MATH (21)	250	26.27	9.74	.34	-.37	7	60	0	0	0	0	0	0	1	0	1	240	
	100.0							0.0	0.0	0.0	0.0	0.0	0.0	.4	0.0	.4	99.2	
22. SSHA DA (22)	225	24.00	10.05	.23	-.73	5	47	0	0	0	0	0	3	3	2	3	5	209
	90.0							0.0	0.0	0.0	0.0	0.0	1.3	1.3	.9	1.3	2.2	92.9
23. SSHA (23)	225	26.53	9.63	.03	-.55	3	50	0	0	0	1	0	0	2	1	1	1	217
	90.0							0.0	0.0	0.0	.4	0.0	0.0	.9	.4	.4	1.3	96.4
24. SSHA TA (24)	225	23.33	9.54	-.02	-.67	3	42	0	0	0	1	1	0	0	4	2	4	212
	90.0							0.0	0.0	0.0	.4	.4	0.0	0.0	1.8	.9	1.8	94.2
25. SSHA EA (25)	225	25.88	9.24	-.25	-.63	7	44	0	0	0	0	0	0	0	2	3	2	218
	90.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	.9	1.3	.9	96.9
26. SSHA SH (26)	225	50.54	14.25	.15	-.57	10	94	0	0	0	0	0	0	0	0	0	0	225
	90.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
27. SSHA SS (27)	225	49.49	15.92	-.04	-.65	11	99	0	0	0	0	0	0	0	0	0	0	225
	90.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
28. SSHA SO (28)	225	99.95	31.14	-.11	-.59	21	171	0	0	0	0	0	0	0	0	0	0	225
	90.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
29. ENTRY DATE (29)	250	715.94	13.84	-.99	1.12	662	733	0	0	0	0	0	0	0	0	0	0	250
	100.0							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
30. HET 2 MISS 1 (33)	258	1.51	.50	-.03	-2.38	1	2	0	123	127	0	0	0	0	0	0	0	0
	100.0							0.0	49.2	50.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31. GPA (31)	254	233.06	51.99	-.34	1.77	9	400	2	0	0	0	0	0	0	0	0	0	252
	98.4							.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.2
32. COMPLETE DATA (32)	206	1.80	.80	I	I	1	1	0	206	0	0	0	0	0	0	0	0	0
	81.5							0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

UNDECIDED

VARIABLE	N X	MEAN	SD	SKEW	KURT.	MIN	MAX	FREQUENCY COUNT IN ABOVE; PERCENTAGE BELOW 0	1	2	3	4	5	6	7	8	9 <0:9
1. GRADE (1)	256 100.0	1.23	.50	2.62	8.39	1	4	0 0.0	206 81.3	42 16.4	4 1.6	2 .8	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
2. SEX (2)	256 100.0	1.52	.50	-.06	-2.00	1	2	0 0.0	124 48.4	132 51.6	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
3. HEOP (1) OR FOR (2) (3)	256 100.0	1.96	.23	-3.7	12.13	1	2	0 0.0	15 5.9	241 94.1	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
4. SCHOOL (4)	256 100.0	5.77	.59	-3.50	14.12	1	7	0 0.0	1 .4	0 0.0	7 2.7	6 2.3	23 9.0	218 85.2	1 .4	0 0.0	0 0.0
5. ID (5)	256 100.0	791.93	215.44	.33	-1.20	1	704	0 0.0	1 .4	0 0.0	1 .4	2 .8	0 0.0	1 .4	1 .4	1 .4	0 0.0	249 97.3
6. ETHNICITY X GROUP (6)	256 100.0	1.53	.65	1.06	-.77	1	3	0 0.0	180 70.3	16 6.3	60 23.4	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
7. ETHNICITY MINE(1) MAJ(2) (7)	256 100.0	1.23	.42	1.25	-.43	1	2	0 0.0	196 76.6	60 23.4	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
8. SEX (8)	256 100.0	1.52	.50	-.06	-2.00	1	2	0 0.0	124 48.4	132 51.6	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
9. AGE (9)	255 99.6	21.76	5.70	2.54	7.45	16	53	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	255 100.0
10. HIGH SCHOOL CODE 1=EQUIV 2=DIP (10)	247 96.5	1.85	.36	-1.92	1.68	1	2	0 0.0	38 15.4	209 84.6	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
11. HIGH SCHOOL AVERAGE (11)	239 93.8	75.51	6.09	.30	-.03	60	93	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	239 100.0
12. MAJOR (12)	256 100.0	7.00	0.00	I	I	7	7	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	256 100.0	0 0.0	0 0.0	0 0.0
13. HOURS COMPLETED (13)	256 100.0	169.13	152.10	1.65	10.96	0	1160	9 3.5	0 0.0	0 0.0	1 .4	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	246 96.1
14. GAP (14)	219 85.5	101.95	11.62	.01	-.43	73	129	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	219 100.0
15. OGP READING (15)	245 95.7	47.29	9.94	-.46	-.54	22	66	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	245 100.0
16. OGP SENTENCES (16)	245 95.7	46.27	9.63	-.08	-.92	23	68	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	245 100.0
17. OGP MATH (17)	247 96.5	49.47	9.87	.20	-.90	32	64	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	247 100.0
18. OGP YEAR 2000 (18)	245 95.7	44.61	11.30	.28	-.21	20	72	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	245 100.0
19. TASK READING (19)	246 96.1	50.49	12.71	-.49	-.33	16	75	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	246 100.0
20. TASK ENGLISH (20)	245 95.7	47.45	10.28	-.69	.71	3	67	0 0.0	0 0.0	0 0.0	1 .4	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	244 99.6
21. TASK MATH (21)	243 94.9	24.58	9.78	.18	-.46	6	45	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 .4	0 0.0	2 .8	3 1.2	237 97.5
22. SSHA DA (22)	243 94.9	22.53	9.79	.33	-.46	1	50	0 0.0	1 .4	0 0.0	0 0.0	3 1.2	0 0.0	4 1.6	4 1.6	1 .4	5 2.1	225 92.6
23. SSHA MM (23)	247 96.5	24.78	13.08	.12	-.91	5	48	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 .4	2 .8	2 .8	4 1.6	2 .8	232 95.5
24. SSHA TA (24)	243 94.9	23.25	9.23	.07	-.46	2	46	0 0.0	0 0.0	1 .4	0 0.0	1 .4	0 0.0	3 1.2	3 1.2	3 1.2	4 1.6	228 93.8
25. SSHA/FA (25)	247 96.5	24.14	9.79	-.09	-.67	4	48	0 0.0	0 0.0	3 1.2	0 0.0	1 .4	1 .4	0 0.0	1 .4	4 1.6	6 2.5	230 94.7
26. SSHA SM (26)	247 96.5	47.28	15.67	.22	-.79	12	98	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	247 100.0
27. SSHA SS (27)	247 96.5	47.60	16.96	-.00	-.69	8	94	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 .4	0 0.0	242 99.6
28. SSHA SD (28)	247 96.5	95.40	33.63	.10	-.40	24	187	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	243 100.0
29. ENTRY DATE (29)	256 100.0	724.05	5.04	-4.11	23.13	662	733	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	256 100.0
30. HIT 2 MISS 1 (30)	256 100.0	1.17	.37	1.78	1.16	1	2	1 .3	213 83.2	43 16.8	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
31. GPA (31)	256 100.0	204.29	75.82	-.52	.45	0	400	9 3.5	0 0.0	0 0.0	1 .4	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	246 96.1
32. COMPLETE DATA (32)	256 100.0	1.00	0.00	I	I	1	1	0 0.0	256 100.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0