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On the Allocation of Federal Funds for Science Education

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ON THE ALLOCATION OF FEDERAL FUNDS FOR SCIENCE EDUCATION

A Case Study of the NSF College Science Improvement Program

David E. Drew

American Council on Education

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On the Allocation of Federal Funds for Science Education¹

A Case Study of the NSF College Science Improvement Program

Massive Federal expenditures for science research and development have been commonplace since World War II and the spectacular technical success of the Manhattan project. Shortly after the war the case for continued government support of basic science research was made by Vannevar Bush (1945) and others; the major organization which grew out of this Federal concern was the National Science Foundation. Subsequently the late fifties (and the voyage of Sputnik) saw science education become a national priority. That period spawned a wide array of measures in support of science education, e.g., the National Defense Education Act.

The passage of time brought increased governmental concern with monitoring and evaluating federally supported programs and a reluctance to simply underwrite projects with a blank check. Thus, for example, the landmark 1965 Elementary and Secondary Education Act (ESEA) contained measures requiring evaluation of projects it was launching. The present research grew out of a request for this kind of impact evaluation by the directors of a key National Science Foundation program. This NSF unit is the College Science Improvement Program (COSIP) which dispenses millions of dollars each year with the goal of improving undergraduate science education.

The data used in these analyses were derived from the longitudinal research program of the American Council on Education (ACE) Office of Research.

¹This research was supported in part by National Science Foundation Grant #GR-89. Janice Peterson and Susan Sharp provided valuable assistance in this study. The manuscript was typed by Melvena Wimbs. James Kellett and Alice Alexander of the National Science Foundation provided extensive information about the College Science Improvement Program.

While the major focus of research in the past using this data bank has been on educational issues, several studies have been performed with these data evaluating the impact of specific projects. These have included analyses of other NSF programs (e.g., Astin, 1969) and studies of the effects of special programs for disadvantaged students (Astin, 1970).

An empirical evaluation of the COSIP logically requires two stages, each becoming in effect a separate study. In the impact research itself it is necessary to control for any initial differences which existed between schools receiving COSIP grants and other schools in the eligible population prior to the awarding of the funds. Identifying these initial differences constitutes Phase 1 and yields considerable information about the kinds of schools which receive COSIP grants. The subsequent analysis of the effects of an influx of COSIP funds upon the students will be Phase 2. This paper reports the results of Phase 1.

The College Science Improvement Program

The College Science Improvement Program was launched in 1966 and has as its stated goal ". . .to accelerate the development of the science capabilities of predominantly undergraduate institutions and to enhance their capacity for continuing self-renewal" (National Science Foundation, 1969, p. 90). Between the program's inception and the end of fiscal year 1969, COSIP made 105 grants representing a total amount of over \$18,000,000 to such institutions.²

²It should be emphasized that the focus of this study is only upon those schools which received major COSIP institutional grants. In fiscal year 1969, for the first time, NSF also awarded eight interinstitutional grants. These are smaller, special awards, typically given to a consortium consisting of a number of schools. Also excluded were interinstitutional grants awarded to consortia of two-year colleges; all of the schools considered in this research are four-year institutions.

The range of departments which receive funds from COSIP grants is wide and falls into the following NSF categories:

- Biological Sciences
- Chemistry
- Computer Science
- Earth Sciences
- Engineering
- Mathematics
- Physics
- Psychology
- Social Sciences
- Interdisciplinary
- Multidisciplinary

Within any given department the use of the money may vary among the following categories:

- Faculty research and scholarly activities
- Local course and curriculum studies
- Instructional equipment
- Undergraduate student activities
- Other activities

The ACE Longitudinal Research Program

As indicated above, the data presented in this research report are a direct product of the Cooperative Institutional Research Program (CIRP) being conducted by the Office of Research of the American Council on Education. Since this program was launched in 1966, over a million undergraduates have completed questionnaires. Work prior to the CIRP program included a prototype study carried out with students who entered college in 1961 and a pilot study of 1965 freshmen. Each fall since 1966, when the full-scale research program was launched, approximately a quarter of a million students from a wide range of colleges and universities have filled out questionnaires containing items about their previous academic experiences, educational and professional aspirations, attitudes, etc. In addition, follow-up questionnaires have been sent to subsamples of each entering cohort at periodic intervals.

This framework makes possible both descriptive profiles and longitudinal studies of undergraduate development. The former are based on a complex set of weighting procedures (Creager, 1968), which lead to national normative reports. These have been produced with respect to entering freshmen (e.g., Creager, Astin, Boruch, Bayer, and Drew, 1969) and at subsequent intervals in the college experience (Bayer, Drew, Boruch, Astin, and Creager, 1970) as well as with respect to specific subgroups of students (e.g., Drew, 1970a). Analytical studies have been conducted with respect to such topics as the dimensions of the college environment (Astin, 1968a) and undergraduates planning a career in medicine (e.g., Drew, 1970b). An accessing system has been established to make these data available to a wide range of social and educational researchers (Bayer, Astin, Boruch, and Creager, 1969); concurrently a series of steps have been taken which assure the confidentiality of the information provided by the research subjects (Astin and Boruch, 1970).

Definition of the Sample

Sample definition (and in fact definition of the eligible population) was an important and complex process. In essence it amounted to determining which schools in the ACE Data Bank were eligible institutions in terms of the COSIP definition and, of those, which had received COSIP grants.

The sample of institutions should remain identical from Phase 1 to Phase 2. The impact research (Phase 2) will trace the effect of COSIP grants on the aspirations and performances of the undergraduates. In light of the time periods involved the optimal cohort of students to be studied were those who had entered college in the fall of 1966 (before COSIP was launched).

The 1966 Data Bank included information from students at 307 institutions, data from 251 of which were used in computing the National Freshmen Norms for

that year (Astin, Panos and Creager, 1966). Table 1 contains information about the population, sample, and sample weights used in 1966 broken down by stratification cell or type of institution. Table 2 indicates the actual number of participants in each of several categories of institutions as well as the weighted population estimates within those categories.

The 1966 freshmen received a follow-up questionnaire during December of 1969, their senior year. For an institution to be relevant with respect to this impact research, it must have participated in the follow-up. Thus, the total from the 1966 freshmen sample was reduced to those schools which also were included in the follow-up; this group consisted of 186 institutions.

At this point we had only defined the sample of institutions with respect to the ACE Data Bank. The next task was determining that subset of the above institutions which was eligible to receive a COSIP grant.

The formal statement of institutional eligibility is given in a publication by the National Science Foundation about the College Science Improvement Program.

Eligibility for participation in the College Science Improvement Program is extended to any science baccalaureate-granting institution in the United States or its territories which, during academic years 1961-62 to 1963-64, inclusive, granted not more than 10 Ph.D.'s in the sciences. Although the group of eligible institutions is not otherwise circumscribed, strong preference will be given, at least in the early years of the Program, to those institutions granting 100 or more baccalaureates in science in the 3-year period of 1963-64 to 1965-66, inclusive (or in any later period for which substantiating data are available). An eligible institution may not request support for any academic unit which is the subject of a proposal or a grant under the Foundation's Departmental Science Development Program (National Science Foundation, 1968, p. 4).

In fact the strong preference group referred to above has always been used as the pragmatic definition of eligibility. This, then, became the

basis for the definition of eligibility used in this research. However, some additional refinements were necessary.

Technically the 100 baccalaureates or more should have been given within the most recent 3-year period. NSF officials have determined this by looking at the cover sheets of proposals received and checking with the registrars of the institutions. As a reference list they used information obtained from the Office of Education concerning the period between 1963-64 and 1965-66. (It should be noted that one criterion used by NSF was that once a school was eligible, it remained eligible.) Our research used this list. However, since the information could be superseded by data from the institution in the NSF decision-making process, we made a special review of the eligibility of any school which had applied for a grant. There was no reasonable way to determine the few schools in the population who may also have been eligible, but were not on the basic list. Using these criteria we found that 94 of the ACE Data Bank institutions mentioned above had been eligible to receive COSIP grants. These are listed in Appendix A.

Similar considerations arose in the process of determining which schools received COSIP grants. As the dependent variables were measured in December of 1969, no school could be considered as having received a grant (for purposes of this study) which had not obtained funds prior to this time, i.e., no school could be considered to which the funds had not been sent by fiscal year 1970. Thus, if a school had been awarded a grant in fiscal year 1969, but the money was not to be given to the school until fiscal year 1971, this institution was not considered as having received a grant. Of the eligible institutions 29 had received COSIP grants and are indicated in the Appendix A list. While data from these schools are used in the analyses below, in accordance with the Council's confidentiality policies, information concerning

a specific college is not presented. Five schools had applied for grants but had their proposal denied.³ These schools remained in the sample of 65 non-recipients.

Characteristics of Students and Institutions

Two general sets of variables were examined in the analyses below: one containing institution characteristics and the other containing student data as summarized from the fall 1966 Student Information Form.

The institution characteristics were taken from a file prepared for use in educational research (Creager and Sell, 1969) which contains extensive information about each college. Among the variables used in the analyses below are indicators of whether the school was public or private, male, female or coed, the enrollment, selectivity level, the percentage of Ph.D.s on the staff, the number of volumes in the library, the amount of student fees, the market value of the endowment, the total Federal support per student, etc. The total list of institution variables is presented in Appendix B.

The basic freshman questionnaire is a four page document containing a series of multiple choice items. A copy of the form used in the fall of 1966 is shown in Appendix C. The questionnaire was constructed so that the responses could be recognized by optical scanning equipment and written on a data tape for subsequent computer analysis. The responses to these questions were given by the freshmen after matriculation but before they experienced college,

³ In the population the ratio of NSF approvals to denials is approximately 1:1. The small number of denials which appeared in the ACE sample may reflect oversampling of selective schools by the Council. An alternative hypothesis is that colleges which provide poor grant proposals also tend to provide poor (i.e., unacceptable) data for the ACE research.

In addition to the Phase 2 impact study a special additional analysis is planned in which the entire population of grant approvals and denials is compared with respect to a limited number of characteristics. This kind of examination originally was planned with the data discussed above but had to be abandoned in light of the small number of denials among the sample institutions.

i.e., during their orientation period. For each institution a "score" for each variable was obtained which was an indication of the percentage of students who had selected that option. Thus, for example, there were four variables indicating the percentage of students in the school who had attended the following kinds of secondary schools: public, private (denominational), private (non-denominational) and others. In some cases it was necessary to collapse categories in the computer processing but the variables used essentially reflect the contents of the Student Information Form.

Data Analyses

The major analysis sought to isolate those factors -- both in terms of institution characteristics and student characteristics -- which were related to subsequent receipt of a COSIP grant. Initially this involved looking at zero-order differences as reflected in the correlation coefficient; following this a more complete analysis was carried out via multiple regression.

Institution Characteristics

As a first step all the variables listed in Appendix B were correlated with the dichotomous criterion variable -- receipt of a COSIP grant or not. The results presented in Table 3 include those variables which had significant correlations.⁴ Institutions receiving COSIP grants are characterized by a high percentage of Ph.D.s on the faculty, large endowments and selective admissions standards. These schools tend to be private, nonsectarian, liberal arts colleges with relatively few commuters, part-time students, or female students. The comparatively low proportions of freshmen at these institutions

⁴ A few redundant variables were omitted. Thus, only one measure of student selectivity is reported although three other equivalent scales were significantly related to the criterion.

may indicate that COSIP grants are not going to rapidly growing institutions. Alternatively, this could reflect low drop-out rates among grant recipients.

Multiple regression provided a more penetrating analysis. All the institution variables were presented as an independent variable pool using a step-wise regression algorithm, with the same dichotomous criterion variable. These results are summarized in Table 4, which contains all variables which contributed significantly to the prediction of the dependent variable. For each of these independent variables Table 4 indicates the zero-order correlation with the criterion as well as a measure of the importance of its contribution (the F value to remove it from the final equation).

Clearly NSF has been giving COSIP grants to schools with high academic ratings. The factors reflecting this in the regression equation, of course, are the measures of the percentage of Ph.D.s on the staff and of students awarded scholarships. However, while the zero order correlations show a high relationship between receipt of a grant and the size of the school's endowment, the grant recipients were schools which previously had received less money for research than other institutions. Finally, the presence of the "percent male" variable is not surprising in light of the fact that these funds tend to go to the physical sciences which are predominantly male fields.

Student Characteristics

The next step in the analyses sought to predict whether or not an institution would receive a COSIP grant on the basis of characteristics of the student body. This concern seemed particularly relevant for several reasons. First, recent research (Astin, 1968b) has demonstrated that the major differential effects of colleges appear to be less a function of institution facilities and wealth than of the characteristics of the entering students. The second reason was the importance of student measures as criteria in the

analyses planned for Phase 2. In this future work we shall want to be sure we have controlled for all student characteristics which differentiated COSIP grant recipients from the rest of the eligible sample.

As indicated above, the institution "score" for each student characteristic was the percentage of the freshmen who checked that item on the questionnaire. Thus each of the independent variables in the analysis below was a number between 0 and 100 percent.

As before, the first step involved examining the correlation coefficients between the student characteristics and the criterion of whether or not the school had received a COSIP grant. The results of this analysis are presented in Table 5. Several questionnaire items e.g., whether or not the student is a twin, whether he expects to marry while in college, etc., have been omitted as they were, at best, indirectly relevant to the present concerns. For each questionnaire item in Table 5 only those options which yielded significant correlations are presented.

The students at COSIP schools were likely to have attended nondenominational private secondary schools and to have maintained a superior academic record. In addition they achieved various other secondary school honors, particularly with respect to science. In fact, there are several indicators of a strong science orientation on the part of the students at these schools. In addition to past achievements, their future majors and careers as well as their objectives all reflect this orientation. Thus, the highest correlations among the major fields is with physical sciences and among the probable career occupations with research scientist. Students at these colleges have lofty educational aspirations and appear to be planning on high-level professional careers. Finally, the profile they present of their college is of a cohesive, progressive school with a considerable amount of academic competition and pressure.

Multiple regression was used to isolate those student characteristics uniquely associated with receipt of a COSIP grant by the college. All items from the Student Information Form (see Appendix C) were used as the independent variable pool. The results are presented in Table 6 which includes any variable which significantly predicted whether or not an institution received a grant. The image which emerges from study of Table 6 is of a relatively progressive college (athletics not emphasized and classes informal). The students tend to be Protestant and to have high educational aspirations, although the exact meaning of the emphasis on the law is unclear. The findings that these students were significantly less likely to have gone to the movies during the past year is difficult to interpret directly. It may simply reflect a tendency by these students to pursue serious extra-curricular activities.

Supplementary Analyses

The preceding analyses completed the major work for Phase 1. However, it seemed valuable to examine the data further to see if there were special factors associated with receipt of a COSIP grant for work in a particular field or for a particular purpose. As indicated above, there were eleven categories of academic fields in which COSIP funds have been awarded. A given institution, of course, could receive funds to be distributed within several of these fields. In coding the data for analysis, we created a series of dichotomous variables indicating whether or not a school received COSIP funds in each of these categories. A similar coding scheme was followed with respect to the purposes for which the money was used (e.g., scientific equipment, etc.).

In the first set of supplementary analyses, each field became a separate dependent variable. The entire battery of institution variables listed in

Appendix B was used as a predictor pool. Table 7 summarizes the results from these analyses.

Equations were not calculated for several fields: computer science, engineering, social sciences, interdisciplinary. The base rate (i.e., the number of schools receiving a grant in each of these categories) was too low to satisfy fundamental statistical assumptions. Inclusion in this analysis required that at least nine schools had received grants in the category.

The findings are mixed and difficult to interpret. The prediction of receipt of a COSIP grant is strongest in the fields of chemistry, physics, and mathematics. As expected the general predictors revealed in the major analysis show their effect again here. The objective of these analyses was to detect new factors uniquely associated with receiving a grant in a particular field above and beyond these general predictors.

The earlier analyses indicated that no region of the country was significantly more likely than others to receive a COSIP grant. However, there appears to be a slight regional bias with respect to the awarding of grants in chemistry and those which are multidisciplinary.

The second set of supplementary analyses predicted the purposes for which COSIP funds were allocated. Separate regression equations were computed in which each of the goals listed earlier in this paper was predicted on the basis of the institution characteristics in Appendix B. Here, the base rate in each of the five categories was sufficient to allow calculation of the equation. The results are summarized in Table 8.

Apparently, institutional policy with respect to automobiles on campus is a good indicator of these phenomena. The finding that schools with unusual calendar plans, as opposed to the usual semester or trimester schedule, are

more likely to receive grants for undergraduate student projects is understandable. These colleges probably have a progressive approach and are more flexible.

Summary and Conclusions

This research drew upon the ACE data bank in an analysis of the characteristics of institutions which were the recipients of grants from the NSF College Science Improvement Program. The sample consisted of 94 colleges which were eligible to receive COSIP grants; of these 29 had been awarded grants. Multiple regression equations were computed in which both characteristics of the institutions and of the student body were used to predict subsequent receipt of a COSIP grant by the school. Supplementary analyses were carried out exploring the predictors of a grant within a particular field or for a particular purpose.

The ability to predict the dependent variable (as reflected in the multiple R) was respectable, but far from perfect. That is, even with a large battery of predictor variables, one cannot entirely account for the decisions made. In part, this may be a reflection of a rather vague NSF definition of the criteria upon which the grants were awarded. The evaluation standards set forth in one of their publications are as follows:

"Primary consideration will be given to the degree of academic improvement to be expected if the proposed project is supported. Each individual activity for which support is requested (as well as the improvement plan as a whole) will be examined in the light of the question: How and to what extent will it improve the quality of science education received by the students? Support in order of merit to the extent of available funding is the rule, except that, in cases of substantially equal merit, consideration will be given to such other factors as disciplinary and geographical balances." (National Science Foundation, 1968, p. 8)

Analyses of the data led to the following profile of a grant recipient school. Selectivity, faculty quality and affluence, correlated with each other in higher education, appear also to be related to receiving a COSIP grant. Of all institution characteristics the percentage of Ph.D.s on the staff was most significantly related to the criterion. This is intriguing inasmuch as the COSIP literature stresses that institutions may want to upgrade academic science through improvement of teaching. This finding may also be related to evaluation procedures which include examining the competence of the faculty members involved.

In the case of many COSIP grants the institution is expected to make a contribution itself. This may be one factor which is related to the affluence of grant recipients. Also it may well be that only those colleges with heavy endowments can afford the luxury of maintaining personnel whose task it is to aid in writing "creative proposals." Finally, while grant recipients tend to be more affluent institutions than nonrecipients, they are significantly lower in the category of sponsored research.

In addition to these characteristics, grant recipients were likely to be nonsectarian liberal arts colleges which were relatively progressive (informal classes, athletics not emphasized). The students at these schools tended to be male and Protestant with superior academic records. They had high professional aspirations and a strong orientation toward science.

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Table 1

Final 1966 ACE Sample and Weights Used in Computing National Norms

Stratification Cell For Sampling	Number of Institutions Participants: Used In			Cell Weights* Applied To Data From:	
	Popu- lation	Total	Norms	Men	Women
<u>2-Year Public Colleges</u>					
Enrollment:					
1. less than 500	111	6	3	25.667	23.477
2. 500-999	99	3	3	36.844	32.476
3. 1000-2499	108	6	5	22.143	21.778
4. 2500-4999	40	4	4	8.773	9.305
5. 5000 or more	35	5	4	7.347	6.993
<u>2-Year Private Colleges</u>					
Enrollment:					
6,7. less than 1000	173	6	5	45.436	25.136
8,9. 1000 or more	27	5	5	4.567	6.260
<u>4-year Colleges</u>					
** Expenditures:					
10. Unknown	254	9	9	3.030	3.219
11. less than \$750	109	23	21	7.468	7.392
12. \$750-999	234	20	15	16.717	15.367
13. \$1000-1249	236	23	19	13.676	14.948
14. \$1250-1499	160	26	23	6.210	7.978
15. \$1500-1749	78	19	19	3.915	5.483
16. \$1750-1999	51	24	21	3.990	2.583
17. \$2000-2249	21	9	5	8.916	5.850
18. \$2250-2499	20	10	8	8.916	2.308
19. \$2500 or more	39	21	18	2.033	2.405
<u>Universities</u>					
** Expenditures:					
20. Unknown	14	3	2	8.099	7.427
21. less than \$750	10	4	4	2.141	2.407
22. \$750-999	7	4	3	1.715	2.185
23. \$1000-1249	18	6	5	2.651	3.477
24. \$1250-1499	24	11	9	2.643	2.619
25. \$1500-1749	11	5	5	2.872	2.522
26. \$1750-1999	24	15	10	2.373	2.150
27. \$2000-2249	20	17	12	1.688	1.694
28. \$2250-2499	13	5	4	2.453	3.522
29. \$2500 or more	32	18	10	3.341	3.554
Totals:	1,968	307	251		

* Ratio between the number of 1965 first-time students enrolled in all colleges and the number of 1965 first-time students enrolled at colleges in the ACE sample.

**Per student expenditures for educational and general purposes.

Table I

Table 2

Institutions and Students Used in Computing the 1966 Weighted National Norms

	Number Used In Norms	Number of 1966 Entering Freshmen*	
		Actual Participants	Weighted Totals Number % Men
All Institutions	251	206,865	1,163,123 54.3
All Two-Year Colleges	29	22,901	290,072 58.2
All Four-Year Colleges	158	61,433	527,320 49.5
All Universities	64	122,531	345,732 58.2
* First-time, full-time.			
19. \$2500 or more 39 21 18 3.402 18. \$2250-2499 20 10 8 2.308 17. \$2000-2249 21 9 5 2.820 16. \$1750-1999 21 24 12 2.283 15. \$1500-1749 27 19 11 2.483 14. \$1250-1499 101 28 23 1.710 13. \$1000-1249 258 23 19 1.610 12. \$750-999 234 20 12 1.217 11. \$500-749 201 109 11 1.024 10. Unknown 252 9 9 0.303 9. Less than \$250 173 27 2 0.257 8. 1000 or more 173 27 2 0.257 7. 1000 or more 173 27 2 0.257 6. 1000 or more 173 27 2 0.257 5. 1000 or more 173 27 2 0.257 4. 1000 or more 173 27 2 0.257 3. 1000 or more 173 27 2 0.257 2. 1000 or more 173 27 2 0.257 1. 1000 or more 173 27 2 0.257			

Table 3

Correlations Between Receipt of a COSIP Grant and Institution
Characteristics
(N = 94 Institutions)

			<u>Correlation Coefficient*</u>
% Ph.D. on Staff			.387
Endowment (market) Per Student			.372
Total Revenues Per Student (Affluence)			.292
% Full-Time of Total Enrollment			.285
% of Full-Time Enrollment Awarded Scholarships	+		.273
Roman Catholic College	-		-.256
Selectivity Level			.234
Aid Per Student	+		.232
Private-Nonsectarian College			-.219
Residence Hall Capacity (% of Full-Time Enrollment)			.205
Autos Allowed	+		-.202
Liberal Arts College			.194
% Full-Time Male of Total Enrollment			.192
% Freshmen of Full-Time Enrollment			-.189
% Resident of Total Enrollment			.182
Fees Per Student			.181
Academic Science Per Student 1963			.175

*
 $r_{.05} = .17$; $r_{.01} = .24$.

Table 4

Prediction of Receipt of a COSIP Grant on the
Basis of Institution Characteristics
(N = 94 Institutions)

Multiple R = .549	<u>Sign</u>	<u>F Ratio</u> <u>In The Final Equation</u>	<u>Zero-Order</u> <u>Correlation</u>
% Ph.D. On Staff	+	22.027	.387
Sponsered Research	-	7.868	-.119
% Full-Time Male of Total Enrollment	+	6.359	.192
% of Full-Time Enroll- ment Awarded Scholar- ships	+	6.307	.273

Table 5

Correlations Between Receipt of a COSIP Grant and
Selected Student Characteristics
(N = 94 Institutions)

	<u>Correlation Coefficient*</u>
Type of Secondary School	
Private (Denominational)	-.262
Private (Nondemoninational)	.256
Average Grade in High School	
A or A+	.247
A-	.281
B-	-.234
C+	-.240
Secondary School Achievements	
Elected President of a Student Organization	.295
Had Original Writing Published	.273
Participated in NSF Summer Program	.303
Placed in a State/Regional Science Contest	.304
Was a Member of a Scholastic Honor Society	.297
Highest Academic Degree Planned	
Bachelors Degree (B.A., B.S.)	-.336
Ph.D. or ED.D	.382
M.D., D.D.S., or D.V.M.	.217
LL.B. or J.D.	.278
Probable Major Field of Study	
Education	-.197
History, Political Science	.237
Mathematics or Statistics	.194
Physical Sciences	.274
Pre-Professional	.230
Probable Career Occupation	
College Professor	.294
Doctor (M.D.)	.257
Educator (Secondary)	-.234
Elementary Teacher	-.243
Health Professional (Non-M.D.)	-.208
Lawyer	.295
Research Scientist	.306
Undecided	.197
Objectives Considered To Be Essential or Very Important	
Making a Theoretical Contribution to Science	.186
Writing Original Works	.230
Never Being Obligated to People	-.176

Table 5

(Continued)

	<u>Correlation Coefficient*</u>
Major Sources of Financial Support	
During Freshman Year	
Employment During Summer	-.195
Scholarship	.221
G.I. Bill	-.180
Personal Savings	-.231
Parental Aid	.255
Federal Government	-.259
Commercial Loan	-.221
<hr/>	
Very Descriptive of the Atmosphere of the	
College	
Intellectual	.310
Practical-Minded	-.318
Realistic	-.161
Liberal	.202
<hr/>	
Applies to this College (Yes)	
Students Under Great Pressure to get High Grades	.197
Students' Academic Calibre High	.221
There is Keen Competition for Grades	.197
I Felt Lost When I First Came to this Campus	-.177
Classes Are Usually Informal	.395

*
 $r_{.05} = .17$; $r_{.01} = .24$.

Table 6

Prediction of Receipt of a COSIP Grant on the Basis
of Student Characteristics
(N = 94 Institutions)

Multiple R = .585	<u>Sign</u>	<u>F Ratio</u> <u>In The Final Equation</u>	<u>Zero-Order</u> <u>Correlation</u>
% of Students Indicating That:			
Classes Are Usually Informal	+	14.714	.395
They Are Protestant	+	10.605	.306
Atheletics Are Over-Emphasized	-	6.422	-.150
They Aspire to an LL. B. or J.D. Degree	+	6.108	.278
They Went to the Movies Frequently	-	5.144	-.074

Table 7

Prediction of Receipt of a COSIP Grant in a Particular Field
on the Basis of Institution Characteristics
(N = 94 Institutions)

	<u>Sign</u>	<u>F Ratio In The Final Equation</u>	<u>Zero-Order Correlation</u>
<u>Biological Sciences (R = .379)</u>			
Endowment (market) Per Student	+	15.402	.379
<u>Chemistry (R = .578)</u>			
Research Funds Per Student	-	10.332	-.130
% of Full-Time Enrollment			
Awarded Scholarships	+	10.194	.310
Endowment (market) Per Student	+	9.850	.392
Academic Science Per Student 1963	+	6.351	.104
College in Southeast Region	+	5.916	.226
<u>Earth Sciences (R = .435)</u>			
Endowment (book) Per Student	+	9.150	.278
Unusual or Unknown Calander Plans	+	5.377	.286
Research Funds Per Student	-	5.127	-.191
<u>Mathematics (R = .522)</u>			
Endowment (market) Per Student	+	26.301	.431
Research Funds Per Student	-	6.494	-.169
% Baccalaureates on Staff	-	4.674	-.171
<u>Physics (R = .564)</u>			
Endowment (market) Per Student	+	34.781	.474
Fees Per Student	-	9.672	-.009
% Full-Time of Total Enrollment	+	4.755	.224
<u>Psychology (R = .382)</u>			
R & D Plant Per Student 1966	+	8.748	.237
Research Funds Per Student	-	6.275	-.153
% of Full-Time Enrollment			
Awarded Scholarships	+	4.731	.169
<u>Multidisciplinary (R = .332)</u>			
Average Freshmen SAT (Verbal + Mathematics) Score	+	10.879	.254
College in Southeast Region	+	4.627	.059

Table 8

Prediction of Receipt of a COSIP Grant for a Particular Purpose
on the Basis of Institution Characteristics
(N = 94 Institutions)

	<u>Sign</u>	<u>F Ratio In The Final Equation</u>	<u>Zero-Order Correlation</u>
<u>Faculty Research & Scholarly Activities (R = .362)</u>			
Endowment (market) Per Student	+	7.343	.277
Automobiles Allowed	-	5.687	-.246
<u>Local Course and Curriculum Studies (R = .534)</u>			
Endowment (market) Per Student	+	16.118	.366
Automobiles Allowed	-	10.122	-.290
% Baccalaureates on Staff	-	4.883	-.183
Number of Periodicals in the Library	+	4.231	.186
<u>Instructional Scientific Equipment (R = .444)</u>			
Endowment (market) Per Student	+	6.367	.310
Automobiles Allowed	-	5.080	-.256
% of Full-Time Enrollment Awarded Scholarships	+	4.797	.306
<u>Undergraduate Student Activities (R = .388)</u>			
Endowment (book) Per Student	+	8.341	.308
Unusual or Unknown Calendar Plans	+	5.922	.269
<u>Other Activities (R = .318)</u>			
Endowment (market) Per Student	+	10.328	.318

APPENDIX A

The Sample of COSIP-Eligible Institutions

The Sample of COSIP-Eligible Institutions

Adrian College
Alabama A & M College
Allegheny College
Amherst College *
Aquinas College
Augsburg College
Austin College
Bates College
Beloit College *
Berea College *
Bowdoin College
Bradley University
California State College - Fullerton
Carleton College *
Carroll College
Chatham College
Colby College
College of Mount Saint Vincent
College of New Rochelle
Connecticut College
Dartmouth College
Davis & Elkins College *
Delaware Valley College of Science and Agriculture
Depauw University
Dickinson College *
Earlham College *
Emory & Henry College *
Fairmount State College
Fisk University *
Franklin & Marshall College *
General Motors Institute
Gettysburg College *
Grinnell College *
Guilford College
Hamline University
Harding College - Main Campus
Harvey Mudd College *
Hollins College *
Johnson C. Smith University
Lake Forest College
Lebanon Valley College
Louisiana Polytechnic Institute*
Loyola University - Los Angeles - Main Campus
MacMurray College*
Marietta College
Mary Baldwin College
Miami University - Oxford Campus *
Middlebury College *
Mills College
Monmouth College*
Montana State University
Morehouse College *
Morris Harvey College
Mount Holyoke College *

Nazareth College of Rochester
Newark College of Engineering
Newton College of the Sacred Heart
Northland College
Oberlin College *
Occidental College *
Parsons College
Pratt Institute
Rollins College - Main Campus (Fla.)
Saint John Fisher College Inc. (N.Y.)
Saint Joseph College - Main Campus (Ind.)
Saint Norbert College (Wisc.)
Springfield College (Mass.)
Spring Hill College
SUNY - Cortland
SUNY - Osewego
SUNY - Potsdam
SUNY - Stony Brook
Swarthmore College
Sweet Briar College
Talladega College (Ala.)
Texas Christian University
Trinity College (D.C.)
University of Detroit
University of the Redlands *
University of South Carolina - Main Campus
University of Vermont & State Agriculture College*
Valparaiso University
Vassar College
Virginia Military Institute
Virginia Union University
Washington & Lee University *
Wellesley College
Wesleyan College
Western Illinois University
Wheaton College *
Whitman College
Williams College *
Wittenberg University *
Wofford College

* COSIP Grant Recipients

APPENDIX B

Institution Characteristics Used in the Analyses

NAME OF STUDY Research Institutional File DATE November 1, 1969
REEL NO. A189* LABEL None NO. OF CASES 2,319
TAPE CHARACTERISTICS Unblocked, 556 bpi. BCD Tape (564 Characters)
DATA Selected Institutional Data in Form for Research Use

1		51	4-year college 2/1
2		52	2-year college 2/1
3	1968 ACE#	53	Male 2/1
4		54	Female 2/1
5		55	Coed. 2/1
6	1967 ACE#	56	Northeast
7		57	Midwest 2/1
8		58	Southeast
9		59	West & Southwest
10		60	Liberal Arts
11		61	Teachers
12	1966 ACE#	62	Independent Technical
13		63	Religious
14		64	Independent Professional 2/1
15	USOE State Code	65	Jr. College
16		66	2-year Technical
17		67	2-year Semiprofessional
18	USOE Institution # Within State	68	Arts & Music School
19		69	Public Control
20		70	Private-Nonsectarian 2/1
21	Stratification Cell	71	Roman Catholic
22		72	Other Sectarian
23		73	1966 Enrollment Code
24		74	
25		75	
26		76	Generated Total Enrollment 1967
27		77	
28		78	
29		79	
30		80	1967 Enrollment Code
31	Name of Institution	81	
32		82	
33		83	Total Full-Time Enrollment, 1967
34		84	
35		85	
36		86	
37		87	
38		88	
39		89	Total Resident Enrollment
40		90	
41		91	
42		92	
43		93	% Full-Time of Total 99 = 99-100
44		94	Enrollment
45		95	% Male of Total 99 = 99-100
46	USOE Control Code	96	Enrollment
47		97	% Resident of Total 99 = 99-100
48	Race (Negro = 2, White = 1)	98	Enrollment
49	Control (private = 2, public = 1)	99	% First-Time, Full-Time 99 = 99-100
50	University = 2, 1 = otherwise	100	of Total Enrollment

* Stratification cell means supplied in tape A189 for missing data in fields indicated.
Tape A151 is the same except blanks for missing data.

Office of Research

TAPE LAYOUT SHEET

101		151		
102	% Freshmen of Total Enrollment	152	Percent Associates on Staff	**
103		153		
104	% Full-Time Male of Total Enrollment	154		
105		155	Annual Tuition (Out-of-State)	**
106	% Male of Full-Time Enrollment	156		
107		157	% of Full-Time Enrollment Awarded	
108	% Resident of Full-Time Enrollment	158	Scholarships	**
109		159	% of Full-Time Enrollment Given	
110	% Freshmen of Full-Time Enrollment	160	Loans	**
111		161	% of Full-Time Enrollment Given Jobs	**
112	% Full-Time of Resident Enrollment	162		
113		163	% of Full-Time Enrollment Given Aid	**
114	% Male of Resident Enrollment	164		
115		165	% Foreign Students of Full-Time	**
116	% Undergraduate of Resident Enrollment	166	Enrollment	
117	% Post-baccalaureates of Resident	167	% of Full-Time Enrollment - Residence	**
118	Enrollment	168	Hall Capacity	
119	Selectivity Level U = 0	169	Autos Allowed 2/1	
120		170		
121	ACT Score (1-35) U = 19	171		
122		172	No. Volumes in Library $\div 100$	**
123	NMSQT Composite (1-165) U = 88	173		
124		174		
125		175		
126		176		
127	SAT V + M (400-1600) U = 850	177	No. of Periodicals in Library	**
128		178		
129	Semester	179		
130	Trimester	180		
131	Quarter Calendar Plans	181		
132	Other or unknown 2/1	182	Student Fees $\div 100$	**
133	SAT known to be required	183		
134	CEEB known to be required	184		
135	ACT known to be required 2/1	185		
136	B average or better in high school	186		
137	Chapel attendance known to be required	187		
138		188	Government Appropriations $\div 100$	**
139	Generated Staff Total	189		
140	(sum of 5 staff degree fields)	190		
141		191		
142		192		
143		193		
144	Percent Ph.D. on Staff	194	Sponsored Research $\div 1000$	**
145		195		
146	Percent Master's Degree on Staff	196		
147		197		
148	Percent Baccalaureates on Staff	198		
149		199	Student Aid $\div 1000$	**
150	Percent Professional Degree on Staff	200		

** Stratification cell means supplied for missing data.

American Council on Education
One Dupont Circle
Washington, D.C. 20036

-37-

REEL NO. A189

LABEL _____

Office of Research

TAPE LAYOUT SHEET

201	Student aid (continued)	251	
202		252	
203		253	Endowment (Market) per Student
204		254	
205	Total Revenues \div 1000	255	
206		256	Book Value of Physical Plant
207		257	per Student
208		258	
209		259	Affluence Code
210		260	
211	Book Value of Endowment \div 1000	261	Total Federal Support per
212		262	Student 1966
213		263	
214		264	
215		265	
216	Market Value of Endowment \div 1000	266	Academic Science Support per
217		267	Student 1966
218		268	
219		269	
220		270	
221		271	
222	Book Value of Buildings and	272	R&D per Student 1966
223	Equipment \div 1000	273	
224		274	
225		275	
226		276	
227		277	R&D Plant per Student 1966
228	Fees per Student	278	
229		279	
230		280	
231		281	
232	Appropriations per Student	282	Total Federal Support per Student
233		283	
234		284	
235		285	
236	Research Funds per Student	286	
237		287	Academic Science per Student 1963
238		288	
239		289	
240		290	
241	Aid per Student	291	
242		292	R&D per Student 1963
243		293	
244	(Total Revenues per Student) \div 10	294	
245	(affluence)	295	
246		296	
247		297	R&D Plant per Student 1963
248	Endowment (Book) per Student	298	
249		299	
250		300	Beginning of Degree Fields; Group 01

APPENDIX C

1966 Student Information Form

513216

YOUR NAME (please print) _____
First Middle or Maiden Last

HOME STREET ADDRESS _____

CITY STATE ZIP CODE (if known)

0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9	9

Note: The information in this report is being collected through the American Council on Education as part of a study of this year's entering class. Please complete all items. Your name and address has been requested in order to facilitate mail follow-up studies. Your responses will be used only in group summaries for research purposes, and will not be identified with you individually.

Social Security Number
(if known)

--	--	--	--	--	--	--	--	--	--	--	--

If you recently took any of the national achievement tests and happen to remember your score, fill in the appropriate information:

SAT Verbal

Score

ACT Composite

Score

Date of Birth _____
Month Day YearSAT Math

--

NMSC Selection Score

--

DIRECTIONS: Your responses will be read by an automatic scanning device. Your careful observance of these few simple rules will be most appreciated.

Use only black lead pencil (No. 2½ or softer). Make heavy black marks that fill the circle. Erase cleanly any answer you wish to change. Make no stray markings of any kind.

Yes No

Example: Will marks made with ball pen or fountain pen be properly read? ☐ ☒1. Your Sex: Male ☐ Female ☐

2. From what kind of secondary school did you graduate? (Mark one)

Public ☐
 Private (denominational) ☐
 Private (nondenominational) ☐
 Other ☐

3. What was your average grade in secondary school? (Mark one)

A or A+ ☐ B- ☐
 A- ☐ C+ ☐
 B+ ☐ C ☐
 B ☐ D ☐

4. What is the highest academic degree that you intend to obtain? (Mark one)

None ☐
 Associate (or equivalent) ☐
 Bachelor's degree (B.A., B.S., etc.) ☐
 Master's degree (M.A., M.S., etc.) ☐
 Ph.D. or Ed.D. ☐
 M.D., D.D.S., or D.V.M. ☐
 LL.B. or J.D. ☐
 B.D. ☐
 Other ☐

5. The following questions deal with accomplishments that might possibly apply to your high school years. Do not be discouraged by this list; it covers many areas of interest and few students will be able to say "yes" to many items.

(Mark all that apply)

Was elected president of one or more student organizations (recognized by the school) ☐
 Received a high rating (Good, Excellent) in a state or regional music contest ☐
 Participated in a state or regional speech or debate contest ☐
 Had a major part in a play ☐
 Won a varsity letter (sports) ☐
 Won a prize or award in an art competition ☐
 Edited the school paper, yearbook, or literary magazine ☐
 Had poems, stories, essays, or articles published ☐
 Participated in a National Science Foundation summer program ☐
 Placed (first, second, or third) in a state or regional science contest ☐
 Was a member of a scholastic honor society ☐
 Won a Certificate of Merit or Letter of Commendation in the National Merit Program ☐

6. Do you have any concern about your ability to finance your college education? (Mark one)

- None (I am confident that I will have sufficient funds)..... ☐
- Some concern (but I will probably have enough funds)..... ☐
- Major concern (not sure I will be able to complete college)..... ☐

7. Through what source do you intend to finance the first year of your undergraduate education?

(Mark one for each item)

- | | Major Source | Minor Source | Not a Source |
|--|-----------------------|-----------------------|-----------------------|
| Employment during college..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Employment during summer..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Scholarship..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| G. I. Bill..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Personal savings..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Tuition deferment loan from college..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Parental aid..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Federal government..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Commercial loan..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

8. What is your racial background? (Mark one)

- Caucasian..... ☐
- Negro..... ☐
- American Indian..... ☐
- Oriental..... ☐
- Other..... ☐

9. What is the highest level of formal education obtained by your parents? (Mark one in each column)

- | | Father | Mother |
|---|-----------------------|-----------------------|
| Grammar school or less .. <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Some high school..... <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| High school graduate.... <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Some college..... <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| College degree..... <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Postgraduate degree <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

10. What is your best estimate of the total income last year of your parental family (not your own family if you are married)? Consider annual income from all sources before taxes.

- | | |
|--|--|
| Less than \$4,000... <input type="radio"/> | \$15,000-\$19,999... <input type="radio"/> |
| \$4,000-\$5,999... <input type="radio"/> | \$20,000-\$24,999... <input type="radio"/> |
| \$6,000-\$7,999... <input type="radio"/> | \$25,000-\$29,999... <input type="radio"/> |
| \$8,000-\$9,999... <input type="radio"/> | \$30,000 or more... <input type="radio"/> |
| \$10,000-\$14,999... <input type="radio"/> | |

11. Mark one in each column below:

- | | Religion in Which You Were Reared | Your Present Religious Preference |
|---|-----------------------------------|-----------------------------------|
| Protestant..... <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Roman Catholic..... <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jewish..... <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other..... <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| None..... <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

12. In deciding where to go to college, through what source did this college first come to your attention?

(Mark one)

- Relative..... ☐
- Friend..... ☐
- High school counselor or teacher... ☐
- Professional counseling or college placement service..... ☐
- This college or a representative from this college..... ☐
- Other source..... ☐
- I cannot recall..... ☐

13. To what extent do you think each of the following describes the psychological climate or atmosphere at this college?

(Mark one answer for each item)

- | | Very Descriptive | In Between | Not at all Descriptive |
|--------------------|-----------------------|-----------------------|------------------------|
| Intellectual..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Snobbish..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Social..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Victorian..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Practical-minded.. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Warm..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Realistic..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Liberal..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

14. Answer each of the following as you think it applies to this college:

- | | Yes | No |
|---|-----------------------|-----------------------|
| The students are under a great deal of pressure to get high grades..... | <input type="radio"/> | <input type="radio"/> |
| The student body is apathetic and has little "school spirit"..... | <input type="radio"/> | <input type="radio"/> |
| Most of the students are of a very high calibre academically..... | <input type="radio"/> | <input type="radio"/> |
| There is a keen competition among most of the students for high grades .. | <input type="radio"/> | <input type="radio"/> |
| Freshmen have to take orders from upperclassmen for a period of time ... | <input type="radio"/> | <input type="radio"/> |
| There isn't much to do except to go to class and study..... | <input type="radio"/> | <input type="radio"/> |
| I felt "lost" when I first came to the campus..... | <input type="radio"/> | <input type="radio"/> |
| Being in this college builds poise and maturity..... | <input type="radio"/> | <input type="radio"/> |
| Athletics are overemphasized..... | <input type="radio"/> | <input type="radio"/> |
| The classes are usually run in a very informal manner..... | <input type="radio"/> | <input type="radio"/> |
| Most students are more like "numbers in a book"..... | <input type="radio"/> | <input type="radio"/> |

15. Are you:

- An only child (Mark and skip to number 20) ☐
- The first-born (but not an only child) ☐
- The second-born..... ☐
- The third-born..... ☐
- Fourth (or later) born..... ☐

16. How many brothers and sisters now living do you have? (Mark one)

- None (Mark and skip to number 20)..... ☐
- 1 2 3 4 5 6 7 8 or more
- ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

17. Mark one circle for each of your brothers and sisters between the ages of 13 and 23

- | | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Brothers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sisters | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

18. Are you a twin? (Mark one)

- No, (Mark and skip to number 20).. ☐
- Yes, identical..... ☐
- Yes, fraternal same sex..... ☐
- Yes, fraternal opposite sex..... ☐

19. Is your twin attending college?

- No..... ☐
- Yes, the same college..... ☐
- Yes, a different college ... ☐

20.

Mark one in each column:

	Your current home state	Your birthplace	Your father's birthplace	Your mother's birthplace
Alabama.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alaska.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Arizona.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Arkansas.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
California.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Colorado.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Connecticut.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Delaware.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D. C.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Florida.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Georgia.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hawaii.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Idaho.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Illinois.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Indiana.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Iowa.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kansas.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kentucky.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Louisiana.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maine.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maryland.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Massachusetts.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Michigan.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Minnesota.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mississippi.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Missouri.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Montana.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nebraska.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nevada.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New Hampshire.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New Jersey.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New Mexico.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New York.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
North Carolina.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
North Dakota.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ohio.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oklahoma.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oregon.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pennsylvania.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rhode Island.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
South Carolina.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
South Dakota.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tennessee.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Texas.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Utah.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vermont.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Virginia.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Washington.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
West Virginia.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wisconsin.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wyoming.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Latin America.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Europe.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Africa.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asia.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Below is a list of 66 different undergraduate major fields grouped into general categories.

Mark only three of the 66 fields as follows:

- ① First choice (your probable major field of study).
 ② Second choice.
 L The field of study which is least appealing to you.

Arts and Humanities

- Architecture..... ① ② L
 English (literature)..... ① ② L
 Fine arts..... ① ② L
 History..... ① ② L
 Journalism (writing)..... ① ② L
 Language (modern)..... ① ② L
 Language (other)..... ① ② L
 Music..... ① ② L
 Philosophy..... ① ② L
 Speech and drama..... ① ② L
 Theology..... ① ② L
 Other..... ① ② L

Biological Science

- Biology (general)..... ① ② L
 Biochemistry..... ① ② L
 Biophysics..... ① ② L
 Botany..... ① ② L
 Zoology..... ① ② L
 Other..... ① ② L

Business

- Accounting..... ① ② L
 Business admin..... ① ② L
 Electronic data processing..... ① ② L
 Secretarial studies..... ① ② L
 Other..... ① ② L

Engineering

- Aeronautical..... ① ② L
 Civil..... ① ② L
 Chemical..... ① ② L
 Electrical..... ① ② L
 Industrial..... ① ② L
 Mechanical..... ① ② L
 Other..... ① ② L

Physical Science

- Chemistry..... ① ② L
 Earth science..... ① ② L
 Mathematics..... ① ② L
 Physics..... ① ② L
 Statistics..... ① ② L
 Other..... ① ② L

Professional

- Health Technology (medical, dental, laboratory)..... ① ② L
 Nursing..... ① ② L
 Pharmacy..... ① ② L
 Pre dentistry..... ① ② L
 Prelaw..... ① ② L
 Premedical..... ① ② L
 Preveterinary..... ① ② L
 Therapy (occupat., physical, speech)..... ① ② L
 Other..... ① ② L

Social Science

- Anthropology..... ① ② L
 Economics..... ① ② L
 Education..... ① ② L
 History..... ① ② L
 Political science (government, int. relations)..... ① ② L
 Psychology..... ① ② L
 Social work..... ① ② L
 Sociology..... ① ② L
 Other..... ① ② L

Other Fields

- Agriculture..... ① ② L
 Communications (radio, T. V., etc.)..... ① ② L
 Electronics (technology)..... ① ② L
 Forestry..... ① ② L
 Home economics..... ① ② L
 Industrial arts..... ① ② L
 Library science..... ① ② L
 Military science..... ① ② L
 Physical education and recreation..... ① ② L
 Other (technical)..... ① ② L
 Other (nontechnical)..... ① ② L
 Undecided..... ① ② L

22. Probable Career Occupation

Note:

Make only three responses, one in each column { ① First Choice
 ② Second Choice
 L Least Appealing

- Accountant or actuary..... ① ② L
 Actor or entertainer..... ① ② L
 Architect..... ① ② L
 Artist..... ① ② L
 Business (clerical)..... ① ② L
 Business executive (management, administrator)..... ① ② L
 Business owner or proprietor..... ① ② L
 Business salesman or buyer..... ① ② L
 Clergyman (minister, priest)..... ① ② L
 Clergy (other religious)..... ① ② L
 Clinical psychologist..... ① ② L
 College teacher..... ① ② L
 Computer programmer..... ① ② L
 Conservationist or forester..... ① ② L
 Dentist (including orthodontist)..... ① ② L
 Dietitian or home economist..... ① ② L
 Engineer..... ① ② L
 Farmer or rancher..... ① ② L
 Foreign service worker (including diplomat)..... ① ② L
 Housewife..... ① ② L
 Interior decorator (including designer)..... ① ② L
 Interpreter (translator)..... ① ② L
 Lab technician or hygienist..... ① ② L
 Law enforcement officer..... ① ② L
 Lawyer (attorney)..... ① ② L
 Military service (career)..... ① ② L
 Musician (performer, composer)..... ① ② L
 Nurse..... ① ② L
 Optometrist..... ① ② L
 Pharmacist..... ① ② L
 Physician..... ① ② L
 School counselor..... ① ② L
 School principal or superintendent..... ① ② L
 Scientific researcher..... ① ② L
 Social worker..... ① ② L
 Statistician..... ① ② L
 Therapist (physical, occupational, speech)..... ① ② L
 Teacher (elementary)..... ① ② L
 Teacher (secondary)..... ① ② L
 Veterinarian..... ① ② L
 Writer or journalist..... ① ② L
 Skilled trades..... ① ② L
 Other..... ① ② L
 Undecided..... ① ② L

Please be sure that only three circles have been marked in the above list.

23. Below is a general list of things that students sometimes do. Indicate which of these things you did during the past year in school. If you engaged in an activity frequently, Mark "f." If you engaged in an activity one or more times, but not frequently, Mark "o"(occasionally). Mark "n"(not at all) if you have not performed the activity during the past year. (Mark one for each item)

Frequently
Occasionally
Not at all

- Voted in a student election F O N
Came late to class F O N
Listened to New Orleans's (Dixieland) jazz F O N
Gambled with cards or dice F O N
Played a musical instrument F O N
Took a nap or rest during the day F O N
Drove a car F O N
Stayed up all night F O N
Studied in the library F O N
Attended a ballet performance F O N
Participated on the speech or debate team F O N
Acted in plays F O N
Sang in a choir or glee club F O N
Argued with other students F O N
Called a teacher by his or her first name F O N
Wrote an article for the school paper or literary magazine F O N
Had a blind date F O N
Wrote a short story or poem (not for a class) F O N
Played in a school band F O N
Played in a school orchestra F O N
Smoked cigarettes F O N
Attended Sunday school F O N
Checked out a book or journal from the school library F O N
Went to the movies F O N
Discussed how to make money with other students F O N
Said grace before meals F O N
Prayed (not including grace before meals) F O N
Listened to folk music F O N
Attended a public recital or concert F O N
Made wisecracks in class F O N
Arranged a date for another student F O N
Went to an over-night or week-end party F O N
Took weight-reducing or dietary formula F O N
Drank beer F O N
Overslept and missed a class or appointment F O N
Typed a homework assignment F O N
Participated in an informal group sing F O N
Drank wine F O N
Cribbed on an examination F O N
Turned in a paper or theme late F O N
Tried on clothes in a store without buying anything F O N
Asked questions in class F O N
Attended church F O N
Participated in organized demonstrations F O N

24. Indicate the importance to you personally of each of the following: (Mark one for each item)

Essential
Very Important
Somewhat Important
Not Important

- Becoming accomplished in one of the performing arts (acting, dancing, etc.) E V S N
Becoming an authority on a special subject in my subject field E V S N
Obtaining recognition from my colleagues for contributions in my special field E V S N
Becoming an accomplished musician (performer or composer) E V S N
Becoming an expert in finance and commerce E V S N
Having administrative responsibility for the work of others E V S N
Being very well-off financially E V S N
Helping others who are in difficulty E V S N
Participating in an organization like the Peace Corps or Vista E V S N
Becoming an outstanding athlete E V S N
Becoming a community leader E V S N
Making a theoretical contribution to science E V S N
Writing original works (poems, novels, short stories, etc.) E V S N
Never being obligated to people E V S N
Creating artistic work (painting, sculpture, decorating, etc.) E V S N
Keeping up to date with political affairs E V S N
Being successful in a business of my own E V S N

25. Rate yourself on each of the following traits as you really think you are when compared with the average student of your own age. We want the most accurate estimate of how you see yourself. (Mark one for each item)

Trait	Highest 10 Percent	Above Average	Average	Below Average	Lowest 10 Percent
Academic ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Athletic ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cheerfulness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defensiveness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drive to achieve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leadership ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mathematical ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Originality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political conservatism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political liberalism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Popularity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Popularity with the opposite sex	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public speaking ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self-confidence (intellectual)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self-confidence (social)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sensitivity to criticism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stubbornness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understanding of others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. How old will you be on December 31 of this year?

(Mark one)

- 16 or younger ☐ 20 ☐
17 ☐ 21 ☐
18 ☐ Older than 21 ☐
19 ☐

27. (If you are married, omit the following question)

What is your best guess as to the chances that you will marry

- | | While in College? | Within a Year after College? |
|--------------------|-----------------------|------------------------------|
| Very good chance | <input type="radio"/> | <input type="radio"/> |
| Some chance | <input type="radio"/> | <input type="radio"/> |
| Very little chance | <input type="radio"/> | <input type="radio"/> |
| No chance | <input type="radio"/> | <input type="radio"/> |