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**TRENDS IN THE
ACADEMIC PERFORMANCE
OF HIGH SCHOOL
AND COLLEGE STUDENTS**

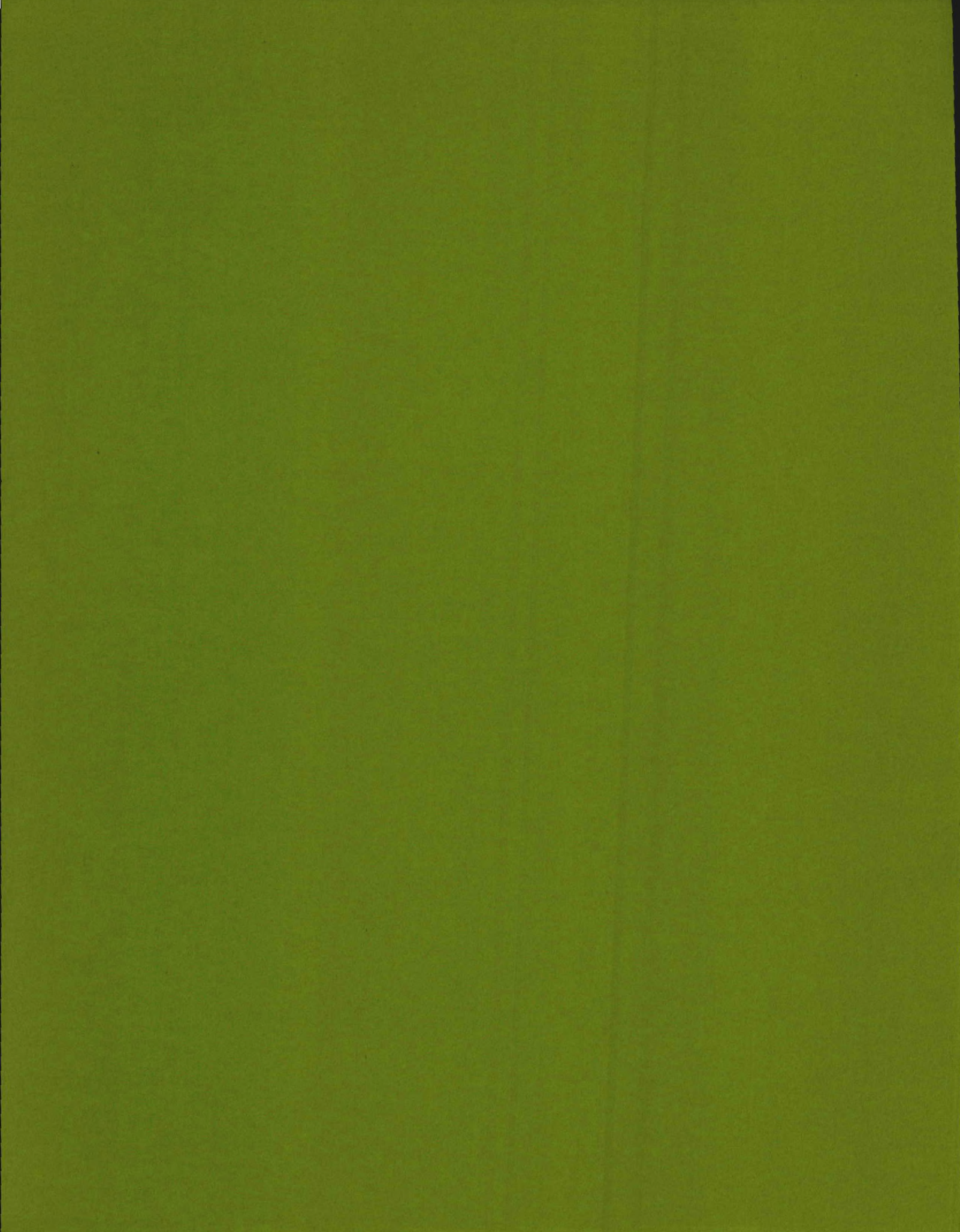
*R. L. Ferguson
E. J. Maxey*

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ABSTRACT

This paper presents longitudinal data drawn from ACT history files of student and institutional data, and includes summary data on all college-bound students who completed the ACT Assessment over the past decade as well as group data on students who took the ACT and also enrolled in college. Specifically, trends in students' high school averages, their test scores on the ACT, and their first semester college grade point averages are examined. The overall trend shows a significant increase in the grades awarded by high school and college faculty and at the same time, a significant decline in ACT test scores.

Data based on a representative sample of students who enrolled at ACT-participating institutions over a 6-year period beginning in 1966-67 reveal an increase in high school average of .2 on a 4-point scale. The high school average is based on four self-reported grades (in English, mathematics, social studies, and natural sciences) reported by students when they wrote the ACT Assessment. The findings from the data suggest that trends toward higher high school grades were not confined to any specific discipline, but occurred across all four content areas.

The first semester college grade point averages of students enrolled as freshmen at ACT-participating institutions over the same 6-year period for which trends in high school grades are reported shows an increase of .37 on a 4-point scale. As with high school averages, trends toward higher college grades were observed across all four content areas.

Trends in ACT test scores are reported for two groups—college-bound students and enrolled students. Over the past decade, mean ACT Composite scores of college-bound students declined approximately 1 standard score. The decline is evidenced in each of the four content areas measured by the ACT Assessment except the natural sciences, where the mean scores have remained essentially constant. English scores have declined by about 1 standard score while mathematics scores have declined by about 1½ standard scores. The greatest decline was in social studies, where mean scores have declined by about 2½ standard scores. Further examination of the data shows the same downward trend for subgroups of males and females, though the magnitude of decline observed for females in most cases exceeds that observed for males. Also of interest is the trend toward an increase in standard deviations of the score distributions, which suggests a growth in the diversity of academic ability of students seeking admission to college.

As expected, the mean ACT scores of enrolled students are significantly higher than those of college-bound students. However, the trend persists: declining mean test scores in each content area except natural sciences, leading to a net decline in the mean Composite score of approximately 1 standard score. Likewise, the magnitude of decline for females is generally larger than that observed for males. As was true for the college-bound students, the standard deviations of the score distributions of enrolled students have increased concurrently with the decline in test scores.

TRENDS IN THE ACADEMIC PERFORMANCE OF HIGH SCHOOL AND COLLEGE STUDENTS

Richard L. Ferguson
E. James Maxey

Introduction

The one certainty of life, and therefore of education, is change. In both, knowledge of the patterns and trends which describe that change is crucial to rational planning. In recent years, as a result of increased emphasis on the quality of the outcomes of formal education, such knowledge has become especially important to educators.

This paper focuses on one small but significant segment of educational change—trends in the

academic performance of high school and college students. Specifically, data are reported which reflect trends in students' high school grades, their first semester college grade point averages, and their test scores on the ACT Assessment. Each of these indicators of academic performance is considered separately and the significance of the overall findings for educational planning is discussed.

The Data

The trends reported in this paper are based on information retrieved from ACT history files of student and institutional data. Those files contain information on all of the students who have participated in the ACT Assessment Program since its

inception in 1959. They also include summary data on the national population of students who have written the ACT over the past decade as well as group data by colleges on students who have applied to and enrolled in specific institutions.

Trends in High School Average

Each year, approximately 400 colleges and universities participate in the Standard Research Service, one of two predictive research services provided to institutions that use the ACT Assessment Program. To participate in the Standard Research Service, colleges provide to ACT first semester (or first year) grades for all enrolled students. ACT uses these data along with ACT test scores and high school grades to compute averages and to develop regression equations for predicting students' academic performance in college.

Table 1 shows trends in high school grades of students enrolled in colleges that have participated in the Standard Research Service throughout the past 10 years. The mean grades reported in the table

are based on four self-reported high school grades recorded by students when they wrote the ACT Assessment. Students report the latest semester grades prior to the senior year of high school for courses in each of four curriculum areas: English, mathematics, social studies, and natural sciences. The High School Average (HSA) is the arithmetic mean of the four self-reported grades.

The data in Table 1 reveal an increase in HSA of approximately .2, on a 4-point scale, over the 6-year period for which grades are reported. Those trends toward higher grades were not confined to any specific discipline, but occurred across all four content areas.

TABLE 1

Mean High School Grades for Enrolled Students at Colleges Using the ACT Assessment Program

Year	Number of Colleges	English	Mathematics	Social Studies	Natural Sciences	High School Average
1966-67	440	2.70 (0.85)	2.37 (0.97)	2.79 (0.87)	2.50 (0.90)	2.59 (0.67)
1969-70	425	2.72 (0.83)	2.36 (0.96)	2.80 (0.85)	2.53 (0.87)	2.65 (0.68)
1972-73	395	2.94 (0.82)	2.50 (0.98)	2.99 (0.84)	2.71 (0.88)	2.79 (0.68)

Note. Main entries are means. Entries in parentheses are standard deviations.

Data on which the table is based are drawn from colleges that participated in the Standard Research Service during a 3-year period ending with the year indicated in the first column. The means and standard deviations for 1966-67, for example, are based on data from colleges that used the Standard Research Service during one of the years 1964-65, 1965-66, or 1966-67. If a college participated in more than one of the three years, only data from the most recent year were used.

Trends in First Semester College GPA

Data from the ACT Standard Research Service also provide insights into trends in students' first semester college grade point average (GPA). The college grade point averages of students who attended the several hundred colleges that used the Standard Research Service over the 7-year period from 1966-67 through 1973-74 are reported in Table 2. A dramatic rise in first semester college grades, .37 on a 4-point scale, occurred during this time.

These findings are compatible with those reported in a study by Juola (1974), who suggested that the recent rise in college GPA may possibly be a readjustment from the rather harsh grading standards adopted during the "post-sputnik period." He further indicated that the rise in grades parallels the period of active student demonstrations when faculty may have been more conscious of students' views and concerns. Even though no explanation applies to every college, the trend toward higher grade point averages is clear.

TABLE 2

Mean College GPA for Students Completing the First Semester of College

Year	Number of Colleges	Mean	S.D.
1966-67	437	2.09	0.82
1969-70	419	2.20	0.84
1973-74	393	2.46	0.84

Note. Data are based on colleges that participated in the Standard Research Service during a 3-year period ending with the year indicated in the first column. The means and standard deviations for 1966-67, for example, are based on data from colleges that used the Standard Research Service during one of the years 1964-65, 1965-66, or 1966-67. If a college participated in more than one of the three years, only data from the most recent year were used.

Trends in ACT Test Scores

ACT maintains test score data both on college-bound students (those who take the ACT Assessment) and on enrolled students (those who take the ACT Assessment *and* also enroll in college). Since the two groups are quite different in their makeup

(one is a subset of the other), trends for each group are considered separately. Trends for each of the two groups are reported both by sex and by total group.

Trends in the ACT Test Scores of College-Bound Students

Each year, nearly one million college-bound students take the ACT Assessment on one of the five national test dates. After each test date, test scores are included among the elements of student data stored on magnetic tape and added to the ACT data base. It is this data base which is used to document trends in the ACT test scores of college-bound students. Table 3, derived from that data base, reports the means and standard deviations for college-bound students who took the ACT tests in each of the last 10 years. The table includes statistics for each of the ACT subtests and for the Composite score.

Mean ACT Composite scores have declined by approximately 1 standard score, or about $\frac{1}{5}$ of a standard deviation, over the past decade. English scores have declined by about 1 standard score, mathematics scores have declined by about $1\frac{1}{2}$ standard scores, social studies scores have declined by about $2\frac{1}{2}$ standard scores, and natural sciences scores have remained essentially constant. Because of the large number of students tested each year, the observed trends are clearly not the result of random fluctuations in test scores but rather of actual changes.

The decline in scores on college admissions tests is not unique to the ACT Assessment Program. The College Entrance Examination Board has noted the same phenomenon for students taking the Scho-

lastic Aptitude Test (SAT) (Maeroff, 1973). The observed decline in test scores has elicited a variety of explanations. One explanation, which attributes the decreases in ACT scores to changes in the pool of college-bound students, seems especially appealing. In particular, it suggests that more students in the lower division of their high school class are attending college now than 10 years ago (Cross, 1971; Rever & Kojaku, 1975). This hypothesis is supported by the trend in the standard deviations of test scores of college-bound students reported in Table 3. During the time mean test scores were declining, the corresponding standard deviations were on the increase. This finding suggests a growth in the diversity of academic ability of students seeking admission to college. Although other factors no doubt are contributing to the declining test score phenomenon, it seems likely that increased student diversity is an important factor in the decline.

Trends in ACT Test Scores of College-Bound Students as a Function of Sex

Table 4 reports means and standard deviations for the female and male college-bound students who completed the ACT tests in the 10-year period from 1964-65 through 1973-74. As with Table 3, the data used to assemble Table 4 include all males and females tested by ACT on the national test dates each year. Thus, the means are based on samples of several hundred thousand students of each sex.

For both the female and male groups, the mean ACT Composite scores of college-bound students

TABLE 3
Means and Standard Deviations for College-Bound Students
Taking the ACT Tests in Successive Years since 1964-65

Year	N	English		Mathematics		Social Studies		Natural Sciences		Composite	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
1964-65	613,807	18.7	5.1	19.6	6.6	20.6	6.4	20.4	6.1	19.9	5.2
1965-66	746,160	19.1	5.1	19.5	6.7	20.5	6.4	20.5	6.1	20.0	5.2
1966-67	785,871	18.5	5.3	18.7	7.0	19.6	6.6	20.1	6.3	19.4	5.4
1967-68	883,429	18.1	5.3	18.3	7.3	19.4	6.7	19.8	6.5	19.0	5.5
1968-69	884,076	18.4	5.2	19.2	6.9	19.4	6.7	20.0	6.4	19.4	5.3
1969-70	906,980	18.1	5.3	19.5	6.7	19.3	6.8	20.5	6.1	19.5	5.3
1970-71	921,291	17.7	5.6	18.7	7.2	18.3	7.2	20.2	6.4	18.9	5.6
1971-72	896,071	17.6	5.6	18.6	7.3	18.4	7.3	20.3	6.5	18.8	5.7
1972-73	830,071	17.8	5.4	18.8	7.2	18.1	7.5	20.5	6.5	18.9	5.8
1973-74	845,861	17.6	5.4	18.1	7.5	17.9	7.6	20.6	6.5	18.7	5.8

TABLE 4
Means and Standard Deviations for College-Bound Females
and Males Taking the ACT Tests in Successive Years

School Year	N	English		Mathematics		Social Studies		Natural Sciences		Composite	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
<i>Males</i>											
1964-65	336,198	17.7	5.1	20.9	6.5	20.6	6.4	21.0	6.2	20.2	5.3
1965-66	403,892	18.1	5.2	20.7	6.6	20.7	6.5	21.3	6.1	20.3	5.3
1966-67	424,431	17.5	5.3	19.7	6.9	19.7	6.7	20.9	6.5	19.6	5.5
1967-68	476,794	17.0	5.3	19.3	7.3	19.6	6.7	20.6	6.7	19.2	5.6
1968-69	470,588	17.4	5.3	19.9	7.0	19.9	6.7	20.9	6.5	19.7	5.5
1969-70	472,796	17.2	5.4	20.4	6.8	19.9	6.8	21.1	6.3	19.8	5.4
1970-71	470,236	16.7	5.7	19.7	7.3	18.5	7.3	20.9	6.5	19.1	5.8
1971-72	446,718	16.6	5.7	19.6	7.3	18.8	7.3	21.2	6.7	19.2	5.8
1972-73	404,516	17.0	5.5	19.9	7.3	18.7	7.5	21.5	6.7	19.4	5.9
1973-74	405,226	16.8	5.4	19.4	7.5	18.7	7.7	21.9	6.6	19.3	5.9
<i>Females</i>											
1964-65	277,609	19.9	4.8	18.0	6.4	20.6	6.3	19.7	5.9	19.7	5.1
1965-66	342,268	20.3	4.8	18.1	6.6	20.3	6.4	19.6	5.9	19.7	5.1
1966-67	361,440	19.7	4.9	17.5	6.8	19.5	6.5	19.1	6.0	19.1	5.2
1967-68	406,635	19.5	5.0	17.2	7.1	19.1	6.6	18.8	6.1	18.8	5.3
1968-69	413,488	19.5	4.9	18.3	6.7	18.9	6.6	19.0	6.1	19.0	5.2
1969-70	434,184	19.2	5.1	18.5	6.5	18.6	6.7	19.7	5.8	19.1	5.1
1970-71	451,055	18.8	5.4	17.7	6.9	18.1	7.1	19.5	6.1	18.7	5.5
1971-72	449,353	18.5	5.4	17.6	7.1	18.0	7.3	19.4	6.3	18.5	5.6
1972-73	425,995	18.6	5.3	17.8	7.0	17.5	7.5	19.7	6.2	18.5	5.6
1973-74	440,635	18.4	5.2	16.9	7.2	17.1	7.5	19.4	6.1	18.1	5.6

exhibited the same downward trend observed for the combined groups. Over the 10-year period, a decline in the Composite score of approximately 1 standard score was observed for the males and a decline of approximately $1\frac{1}{2}$ standard scores was observed for the females. The declines in mean scores on both the English Usage test and the Social Studies Reading test were substantially larger for females than for males; the opposite was true for the Mathematics Usage test. Mean scores for the Natural Sciences Reading test rose by about 1 standard score for the male group, but remained constant for the females.

Based on these data, it appears safe to postulate that the trends toward declining ACT test scores apply to both males and females, though the magnitude of the decline for females in most cases exceeds that observed for males.

Trends in the ACT Test Scores of Enrolled Students

In this section, trends in ACT test scores are examined for enrolled students (those actually

admitted to college). This is necessary since the trend observed in the previous section of declining test scores for college-bound students does not automatically generalize to a decline in the test scores of enrolled students.

ACT has not systematically determined means and standard deviations of the scores of enrolled students over the 10-year period for which data on the college-bound students were reported. In fact, no such data are readily available for any year prior to 1970-71. However, data for 2 of the 5 years beginning in 1970-71 are available and are reported in Table 5. Those data are based on a 10% sample of the enrolled students attending colleges participating in the ACT Class Profile Service (approximately 1,200 colleges each year). The sample is thus representative of the population of enrolled college freshmen at ACT-participating colleges and universities. The sample is not entirely representative of American higher education at large, however, since ACT-participating colleges tend to be concentrated in states in the Midwest, Rocky Mountains and Plains, and the South. Students from states in the

TABLE 5
Means of ACT Test Scores for Students Enrolling in
ACT Participating Colleges in 1970-71, 1972-73, 1973-74, and 1974-75

Year	N	English		Mathematics		Social Studies		Natural Sciences		Composite						
		M	F	M	F	M	F	M	F	M	F					
1970-71	50,122	17.8 (5.2)	19.7 (4.9)	18.7 (5.1)	21.1 (6.6)	19.1 (6.4)	20.2 (6.6)	20.5 (6.5)	19.3 (6.5)	19.9 (6.6)	21.7 (6.2)	20.2 (5.8)	21.0 (6.1)	20.4 (5.3)	19.7 (5.0)	20.1 (5.2)
1972-73	49,297	17.1 (5.6)	19.2 (5.2)	18.1 (5.5)	20.2 (7.2)	18.3 (7.0)	19.3 (7.2)	19.5 (7.1)	18.8 (7.1)	19.2 (7.1)	21.7 (6.6)	20.0 (6.3)	20.9 (6.5)	19.8 (5.7)	19.2 (5.5)	19.5 (5.6)
1973-74	44,942	17.4 (5.4)	19.0 (5.2)	18.2 (5.3)	20.4 (7.2)	18.4 (7.0)	19.4 (7.1)	19.4 (7.3)	18.3 (7.3)	18.8 (7.3)	21.9 (6.5)	20.1 (6.2)	21.0 (6.4)	19.9 (5.7)	19.1 (5.5)	19.5 (5.6)
1974-75	45,272	17.3 (5.4)	19.0 (5.2)	18.2 (5.4)	20.2 (7.4)	17.8 (7.3)	18.9 (7.5)	19.5 (7.5)	17.9 (7.5)	18.7 (7.5)	22.3 (6.6)	20.0 (6.2)	21.1 (6.5)	19.9 (5.8)	18.8 (5.7)	19.4 (5.8)

Note. Main entries are means. Entries in parentheses are standard deviations.

Northeast and Middle Atlantic regions of the country tend to be underrepresented, as do students attending private colleges and universities.

Trends in the ACT test scores of enrolled students for the period from 1970-71 through 1974-75 are similar to those observed for college-bound students during the same time span. Test scores have declined in all areas except natural sciences. Concurrently the standard deviations of the score distributions have increased. As expected, the mean scores of enrolled students are significantly higher than those of college-bound students. This can probably be attributed to the selection criteria used at many institutions.

Trends in ACT Scores of Enrolled Students as a Function of Sex

Analysis of the available data by sex reveals trends similar to those observed for college-bound students. In general, declines in scores occur for both sexes for all tests except natural sciences, with the declines for females larger than those observed for males.

Summary

Collectively, the data indicate there has been a significant rise in the grades awarded by high school and college faculty, while at the same time ACT test scores have been on the decline. Although the data have established the direction and magnitude of trends in these indicators of academic performance of high school and collegestudents, they provide no firm and indisputable evidence of the causes for these trends.

In the opinion of the authors, the data suggest that the rise in grade point averages, both at the high school and college level, can be attributed to an increased leniency in the evaluation and rating of student performance—that is, to a relaxation of the academic standards, *arbitrary as they were*, of past years. The decline in ACT scores, on the other hand, is a complex phenomenon which probably cannot be attributed to any single factor. However, it seems likely to us that one major factor in the decline is a significant shift in the developed abilities of the population of ACT-tested students applying and being admitted to college.

Although we are confident that the data presented in this report truly reflect trends in students'

academic performance, we are less confident of the implications of these trends for shaping policies and practices in postsecondary institutions. On the surface, the decline in ACT test scores and the increased diversity of students taking the ACT tests suggest the need for colleges to review their educational offerings to determine their adequacy. The admission of students with lower levels of developed academic abilities, for example, might suggest the need for more courses specifically designed to help them acquire basic skills needed for successful learning in college.

The merit of such a recommendation would seem to rest, however, on whether the "new" students—that is, those with lower ACT test scores who might not have been admitted 5 or 10 years ago—are successfully completing college level work. We believe that important questions not answered by the data reported in this study are: How do students successfully completing college today compare with those who completed college several years ago? Are the "new" students still in college at the end of the first year or have they fallen victim to educational programs which do not satisfy their special needs?

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