

a definite routine; and their purpose will be to serve as the "eyes and ears" of the university throughout the community, constantly alert to the changing social and economic needs, and continuously interpreting these needs to the university.

I am proud to be the head of a government that has sought to make a substantial contribution to the cause of education, even in a period of economic distress. Through the various agencies the government is helping educational institutions to add to their present equipment. Since 1933 the government has made, through the various governmental agencies of the administration, allotments to local communities for schools, colleges and library buildings amounting to more than \$400,000,000.

We are also providing through the Works Progress Administration educational courses for thousands of groups of adults wherever there are competent unemployed teachers, and through the National Youth Administration funds for part-time employment to help deserving young people to earn their way through accredited colleges and universities in all parts of the United States. We have rightly taken the position that, in spite of the fact that economic adversity through these years might impose upon the youth of the country distressing and unavoidable burdens, the government owed it to the future of the nation to see that these burdens should not include the denial of educational opportunities for those who were willing and ready to use them to advantage.

Educational progress in the past generation has given to this country a population more literate, more cultured, in the best sense of the word and more aware of the complexities of modern civilized life than ever before in our history. And while the methods of spreading education are new, the lessons of education are

eternal. The books may be new but the truth is old.

The qualities of a true education remain what they were when Washington insisted upon its importance.

First among these qualities is a sense of fair play among men.

As education grows men come to recognize their essential dependence one upon the other. There is revealed to them the true nature of society and of government which, in a large measure, culminates in the art of human cooperation.

The second great attribute of education is peculiarly appropriate to a great democracy. It is a sense of equality among men when they are dealing with the things of the mind. Inequality may linger in the world of material things but great music, great literature and the wonders of science are and should be open to all.

Finally, a true education depends upon freedom in the pursuit of truth. No group and no government can properly prescribe precisely what should constitute the body of knowledge with which true education is concerned. The truth is found when men are free to pursue it. Genuine education is present only when the springs from which knowledge comes are pure. It is this belief in the freedom of the mind, written into our fundamental law and observed in our everyday dealings with the problems of life, that distinguishes us as a nation.

In our ability to keep pure the sources of knowledge—in our mind's freedom to winnow the chaff from the good grain—in the even temper and in the calmness of our everyday relationships—in our willingness to face the details of fact and the needs of temporary emergencies—in all of these lie our future and our children's future. "On your own heads, in your own hands, the sin and the saving lies!"

EDUCATIONAL RESEARCH AND STATISTICS

INTELLIGENCE TEST SCORES AND SCHOOL MARKS OF HIGH SCHOOL SENIORS IN 1929 AND 1933¹

THE more rapid increase in high-school enrolment than in population would lead one to expect

¹ This study was conducted while at the University of Minnesota, Institute of Child Welfare. The

that the intelligence level of high-school pupils would show a decline due to the presence of more individuals of lower intelligence. Such an assumption seems current in educational

original data were made available through the courtesy of Dr. Edmund G. Williamson, director of the University Testing Bureau.

thinking and would seem to have been partially confirmed by Portenier,² who found a slight decline in the intelligence quotients of high-school freshmen for Lincoln, Nebraska, and other cities. It would seem that economic stress would enhance such a tendency, since, being unable to secure work, more individuals would remain through high school.

In the light of recent evidence such assumptions do not appear to be justified; at least the findings for certain localities do not bear them out. Roesell,³ comparing the intelligence level of grades 7 to 12 of three Minnesota towns near Minneapolis in 1920 and 1934, found an increase in I.Q. for all grades. The Miller Mental Ability Test, form A, was used on both occasions. While the population increased 31.3 per cent. and the high-school enrolment 78.7 per cent., the I.Q. level also increased. For grade 12 it increased from 113 to 125 for one town, 117 to 120 for the second, 119 to 122 for the third, and for all three combined from 118 to 122. In addition, the pupils in each grade tended to be younger in 1934.

Data bearing on this problem for Minneapolis were collected with the initial purpose of determining whether during the years of recent economic stress the intelligence of graduating seniors has changed. Scores on the Minnesota College Aptitude Test were obtained for the years 1929 and 1933. Williamson⁴ utilized the same years for a comparison of college freshmen. He describes the test as follows: "In this study Forms A M C N (recognition vocabulary items) Minnesota College Aptitude Test was used in 1929 and Form A M in 1933. The latter form consisted of one half the former, the two being equated on 1,198 freshmen enrolling in the College of Science, Literature and the Arts in September, 1929. . . . In this study comparison of 1933 with 1929 freshmen is made by applying 1929 percentile norms to the 1933 group." Williamson found no change in the

intelligence level of college freshmen as a whole, although certain colleges within the university showed marked shifts, presumably owing to changes in admission policies.

Since the University of Minnesota carries on a state-wide testing program for high-school seniors similar data were available for them as well as for those who actually attended the University of Minnesota. The Minneapolis high-school seniors were selected for comparison in the two years 1929 and 1933. Seniors in all the Minneapolis public high schools (except vocational, which provides vocational training) were tested.

The first problem to consider is whether the sampling of high-school seniors in the two years is sufficient to warrant making dependable comparisons. Table 1 indicates that such is the

TABLE 1
COMPLETENESS OF SAMPLING OF MINNEAPOLIS HIGH SCHOOL SENIORS FOR 1929 AND 1933

School	1929	1933	School	1929	1933
1	94.08	96.01	6	60.37	52.17
2	98.18	99.09	7	98.31	98.61
3	64.00	62.87	8	96.63	97.92
4	64.92	38.32	9	87.77	90.44
5	91.76	97.42			

case, the sampling being close to or better than 90 per cent. for both years for six of the nine schools. The three schools with smaller percentages of sampling followed the policy of testing only those who were intending to go to college.

Table 2 gives the distributions, the medians and semi-interquartile ranges of college aptitude percentiles for the two years. It may be seen that the number of graduating seniors has increased from 1929 to 1933. There is clear evidence of an increase in college aptitude score. There is a greater proportion of high-school seniors in the upper three and a smaller proportion in the lower three deciles in 1933 than in 1929. The median for men increases from 32.62 in 1929 to 43.83 in 1933; for women, from 34.78 to 40.88. No pronounced change in variability is noticeable. The 1933 medians for Minneapolis seniors are practically the same as those found by Williamson for all University of Minnesota college freshmen (42.07 in 1929 and 43.68 in 1933). Not only does there appear to be an increase in the proportion of brighter and a

² Lillian G. Portenier, Teachers College, Columbia University, Contributions to Education, No. 568, 1933.

³ Fred P. Roesell, "A Comparative Study of the Mental Level in Grades Seven through Twelve in Three Minnesota Towns in 1920 and 1934." Unpublished Master's Thesis, University of Minnesota Library.

⁴ E. G. Williamson, SCHOOL AND SOCIETY, 42: 1086, 547-551.

TABLE 2
PERCENTILE DISTRIBUTIONS OF COLLEGE APTITUDE
SCORE FOR MINNEAPOLIS HIGH
SCHOOL SENIORS

College aptitude percentiles*	Men			
	1929		1933	
	No.	Per- centage	No.	Per- centage
71-100	140	18.77	241	24.72
31- 70	244	32.71	384	39.38
1- 30	362	48.53	350	35.89
Total	746	100.01	975	99.99
Median		32.62		43.83
Semi-interquar- tile range ...		23.44		25.33
Women				
71-100	135	19.71	377	24.51
31- 70	304	42.49	421	40.81
1- 30	374	37.80	195	34.67
Total	813	100.00	993	99.99
Median		34.78		40.88
Semi-interquar- tile range ...		22.41		22.41

* Percentiles for both years are in terms of the 1929 norms, based on freshmen of the Science, Literature and the Arts College.

decrease in the proportion of duller, but the absolute numbers follow the same trend.

In order to be sure that those schools for which the sampling is less adequate have not unduly influenced the results for Minneapolis college aptitude percentile medians are presented by school in Table 3. The schools are numbered as

TABLE 3
PERCENTILE MEDIANS OF COLLEGE APTITUDE SCORE OF
MINNEAPOLIS HIGH SCHOOL SENIORS BY SCHOOL

School	Median			
	Men		Women	
	1929	1933	1929	1933
1	30.00	43.27	29.82	42.05
2	27.92	41.50	33.73	28.94
3	64.75	64.00	47.11	62.43
4	27.79	39.75	35.74	38.23
5	19.75	38.50	21.45	31.60
6	23.50	32.79	23.50	39.33
7	48.50	66.00	58.00	62.67
8	51.62	55.09	47.50	41.71
9	46.71	48.50	38.67	47.90

in Table 1. The tendency for college aptitude scores of Minneapolis high-school seniors to be higher in 1933 than in 1929 is quite clear and seems not to be affected markedly by schools 3, 4 and 6, for which the sampling is not large.

Considering the short time interval involved, the increase in test score on the part of the 1933 class is astonishing. Many questions are raised which the present data can not possibly settle. If the data concerned but one or two high schools

of the system, they could be accounted for on the basis of population shifts from district to district within the city. The extent of the sampling renders such an explanation highly improbable. Selective migration from and into the city could be responsible, but the short time interval renders this explanation unlikely.

Since the present results concern only high-school seniors, it may be argued that more dull children actually attend high school but are eliminated before the senior year. While this may be the case, Roesell's findings show the need for caution in making such an inference; for he found an increase in I.Q. in grades 7 through 12.

There are other factors which may have influenced the results and which can not be evaluated from the present data. Among these are the possibilities that students in recent years have become "test wise" and hence make better scores or that brighter students who formerly attended private schools are now enrolling in public schools. Neither one of these explanations appears plausible. Roesell finds the increase in schools which had had no intelligence test for three years before his survey. While the second factor may be playing a part, it does not seem likely that it could account for the marked change noted in the present study.

Unless, however, the operation of some such factor as those mentioned can be demonstrated, Roesell's and the present data are not consistent with the contentions that a greater proportion of dull than bright students have in the past been eliminated from the upper school grades and that more dull students are attending school now. The influence of selection in the upper grades on the basis of intelligence may have been overestimated. While many dull individuals have been dropping out of school, an even greater number of bright individuals may also have been leaving the schools, probably because of economic reasons. If it were not selective, an increase in enrolment greater than the increase in population would then tend to increase the level of intelligence of the school population. Economic stress would tend to guard against the possibility of such an increase in enrolment being selective. Jobs have existed for few, regardless of their intelligence level.

Whatever be the explanation, the populations

involved in this and in Roesell's study do make higher scores on intelligence tests in more recent years. It becomes of interest to inquire whether there have been adjustments in the grading system of the schools involved in this study. The actual honor point averages for the high-school years was obtained for the four schools with the largest enrolments and the most adequate samplings in the two years. The medians, the percentages having an honor point average of 2.00 or better and the percentages having an average below 1.00 are given in Table 4. In

TABLE 4
COMPARISON OF HONOR POINT AVERAGES OF 1929 AND
1933 GRADUATING SENIORS

School	Median			
	Men		Women	
	1929	1933	1929	1933
1	1.23	1.00	1.53	1.53
2	1.05	.97	1.51	1.21
8	1.35	1.01	1.46	1.24
9	1.20	1.18	1.51	1.45
Percentage of honor point average 2.00 or better				
1	13.04	13.55	25.50	29.15
2	12.72	8.93	26.44	15.74
8	13.33	14.55	22.33	19.71
9	10.12	15.30	26.54	26.89
Percentage of honor point average below 1.00				
1	31.16	50.28	17.44	27.64
2	46.16	52.68	14.94	39.81
8	20.00	49.51	19.41	37.96
9	34.81	38.77	16.77	25.47

this honor point average an A receives a weight of 3; B, 2; C, 1; and D and F, 0. The usual finding that girls receive higher marks is evident in this table. In 1933, the year for which the test indicates that the general level of intelligence is higher, the median honor point averages tend to be lower, particularly for men. Inspection of the remainder of the table will show that this is due largely to the giving of a greater proportion of low marks (below C). There is no exception for either sex for a greater percentage of pupils in 1933 to have honor point averages below 1.00.

While it might be argued that these changes in grading represent real differences in achievement, the knowledge of the subjective basis on which grades are usually assigned makes this interpretation untenable until objective measures of achievement are presented.

Whatever else these results may mean, they do show the need for systematic appraisal by school administrators of the nature of their stu-

dent population. This is particularly necessary in times of social and economic stress.

In summary, results of the Minnesota college aptitude test suggest that there has been an increase in the intelligence level of Minneapolis high-school seniors between the years 1929 and 1933. While the reasons for this can not be stated with certainty, a plausible hypothesis is that the effects of school selection on the basis of intelligence has been over-estimated. It seems that more bright students than has been generally realized have been leaving school when it was possible to obtain work. While the intelligence level of Minneapolis seniors has increased grading has not shifted in the same direction. For all the schools considered there is a definite tendency to grade more severely, despite the fact that the intelligence level of the population dealt with has increased. The data illustrate clearly the need for systematic surveys of the student population in any particular district or school system. The conclusions reached here apply only to the schools studied.

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