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4 Conclusions

As indicated earlier in this paper, we are interested primarily in answering two questions: Did the expansion in college enrollment since 1900 lead to a decline in the average mental ability of college students? Did it lead to a reduction in the loss of talent? A summary of our results follows.

For the first question, we consider the changes over time in the average ability of students who enter college ($\bar{A}_c$) and in the average ability of those high school graduates who do not enter college ($\bar{A}_{nc}$).[1] We have calculated $\bar{A}_c$ and $\bar{A}_{nc}$ for most of the samples described below.[2] These results for males and females combined are presented in Table 1 in both adjusted and unadjusted form, but only the adjusted values are plotted in Figure 1. The adjustments are made to take into account the difference between the percent of students entering college in each sample and in the country as a whole. A detailed description of this adjustment method is presented in appendix C. In the following discussion we use the adjusted estimates. The $\bar{A}_c$ data suggest a mean IQ of about the 53-63rd percentile for those who enter college. The highest $\bar{A}_c$ is .63 in the Phearman and Talent studies, the lowest is .53 in the O'Brien study.

The general pattern of $\bar{A}_c$ is as follows:[3] During the 1920's $\bar{A}_c$ was at its lowest value—approximately 55 percent. During the 1930's it rose to about 58 percent, and reached a peak of 63 percent in 1946. It

[1] We define $\bar{A}_c = \Sigma A_i N_i / \Sigma N_i$ and $\bar{A}_{nc} = \Sigma A_i (1-N_i)/(1-N_i)$. N_i is the fraction of high school graduates in the ith class who entered college times the *population* of high school graduates in the ith class.

[2] For this question the Proctor study is omitted because of its small size, the Yerkes study is omitted because the results are sensitive to the bias correction procedures, and the Wolfle and Smith data are omitted because of the rate of response problem noted below.

[3] One qualification of these results is, as discussed below, that they are drawn from studies involving different states. To the extent that there are differences between states in the college-going behavior of the students, the results may be misleading, although our adjustment method attempts to take this into account.

TABLE 1 **Average mental-ability level of high school graduates who entered, and did not enter, college, in various samples**

Sample	*Date*	$\bar{A}_c$	$\bar{A}_{nc}$	$\bar{A}_c - \bar{A}_{nc}$
O'Brien	1925	.54	.47	.07
		.53	.47	.06
Benson	1929	.57	.46	.11
		.56	.45	.11
Barker	1934	.64	.44	.20
		.58	.43	.15
Phearman	1946	.68	.44	.24
		.63	.43	.20
Berdie	1950	.62	.42	.20
		.61	.42	.19
Little	1957	.68	.43	.25
		.62	.40	.22
Talent	1960	.65	.37	.28
		.63	.35	.28
Berdie and Hood	1961	.65	.39	.26
		.62	.36	.26

Note: The first line for each entry is the value calculated from the sample; the second line is this value adjusted to the United States population as a whole. A detailed discussion of the adjustment method appears in appendix C.

remained at approximately this level through 1961, although there may have been a slight dip in the early 1950s. (The dip is more pronounced in the unadjusted data.) While $\bar{A}_c$ was changing, there were also shifts in the fraction of high school graduates entering college. In particular, during the 1930s a smaller fraction of high school graduates attended college than in the 1920s, while during the 1950s and 1960s a larger fraction of graduates entered college than in either of these earlier periods. Thus the reduction in college enrollment in the 1930s resulted in an increase in the average quality of college students. However, the postwar boom in higher education resulted in still higher quality students than in the 1930s, and substantially higher quality than in the 1920s. This result for the 1950s and 1960s is substantiated in Darley (1962), in which the records of college freshmen in specified colleges have been examined.

The data suggest a mean IQ of about the 40th percentile for those not entering college. There is a significant downward trend in $\bar{A}_{nc}$ over the period.[4] The value of $\bar{A}_c - \bar{A}_{nc}$, which describes how much more

[4] $\bar{A}_c$ and $\bar{A}_{nc}$ need not move in opposite directions because of differences in their weights.

TABLE 2 **Fraction of high school graduates entering college at selected ability levels for various samples**

Sample	*Year*	*Percentile (A)*			
		.25	*.50*	*.75*	*.90*
O'Brien	1925	.27	.36	.45	.51
		.36	.45	.54	.60
Benson	1929	.25	.36	.48	.54
		.34	.45	.57	.63
Barker	1934	.11	.23	.38	.46
		.26	.38	.53	.61
Phearman	1946	.12	.28	.46	.57
		.23	.39	.57	.68
*Berdie**	1950	.24	.37	.54	.66
		.25	.38	.55	.67
*Little**	1957	.14	.26	.44	.58
		.33	.45	.63	.76
*Talent**	1960	.24	.41	.65	.83
		.31	.48	.72	.90
*Berdie and Hood**	1961	.21	.37	.59	.74
		.34	.50	.72	.87

Note: The first line for each entry is the value calculated from the regression equation; the second line is this value adjusted to the United States population as a whole. A detailed discussion of the adjustment method appears in Appendix C.

*The nonlinear form of the regression equation was used for these samples; the linear form was used for the others. All equations are presented in the detailed discussion of the samples.

able the college students were, shows a very pronounced upward trend.

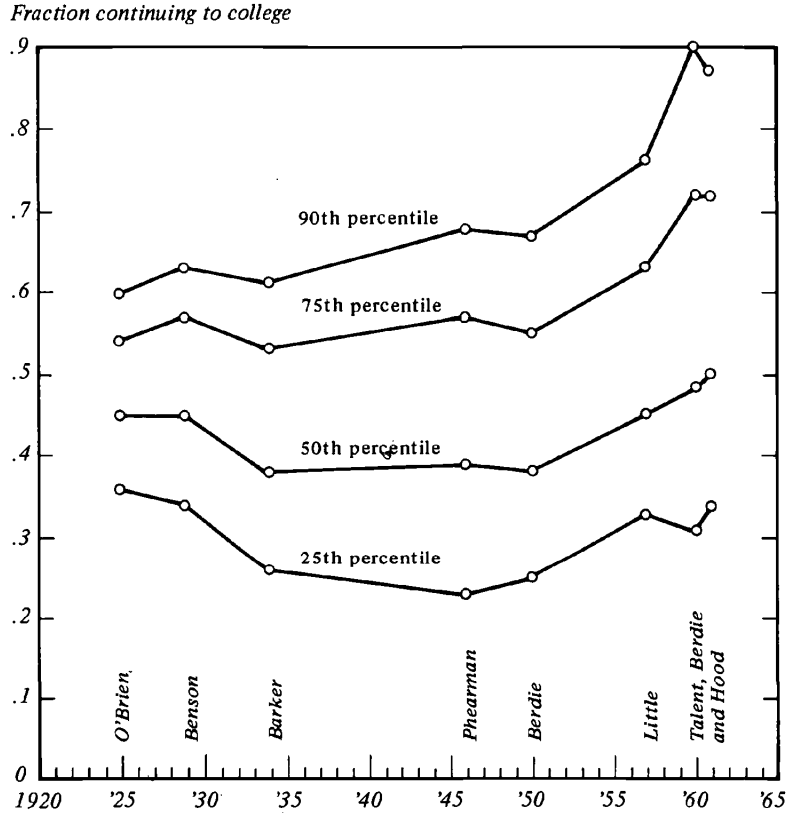
On the basis of these data it is apparent that the quality of college students has not declined. In fact, throughout this period of 40 years, during which a substantially greater percentage of high school graduates entered college, it has even noticeably increased. The basic explanation of this phenomenon is analyzed in the loss-of-talent discussion given below, but it can be summarized as follows. In the 1920s only about 60 percent of the most able high school graduates entered college, whereas by the 1960s the corresponding figure was about 90 percent.

To understand how $\bar{A}_c$ has shifted and to study the loss of talent in various time periods, we evaluate the equations presented below to determine the fraction of high school graduates entering college (E_{12}) at selected ability levels (A).[5] The selected values of A are .25, .50, .75,

[5]We have estimated both linear and nonlinear equations and have used the latter in our calculations when nonlinearities are significant. However, nearly identical results are obtained from the linear equations. Moreover, for the linear equations the results are almost the same whether education or ability is used as the dependent variable.

and .90. The last point should certainly include those people who are talented, while .75 lies well above the mean IQ percentile of college entrants. The value of .50 is the median of the distribution, though less than $\bar{A}_c$, while .25 is certainly indicative of the less able students. In Table 2 we present the results for various samples in both adjusted and unadjusted form, but in Figure 2 we present only the adjusted estimates.[6]

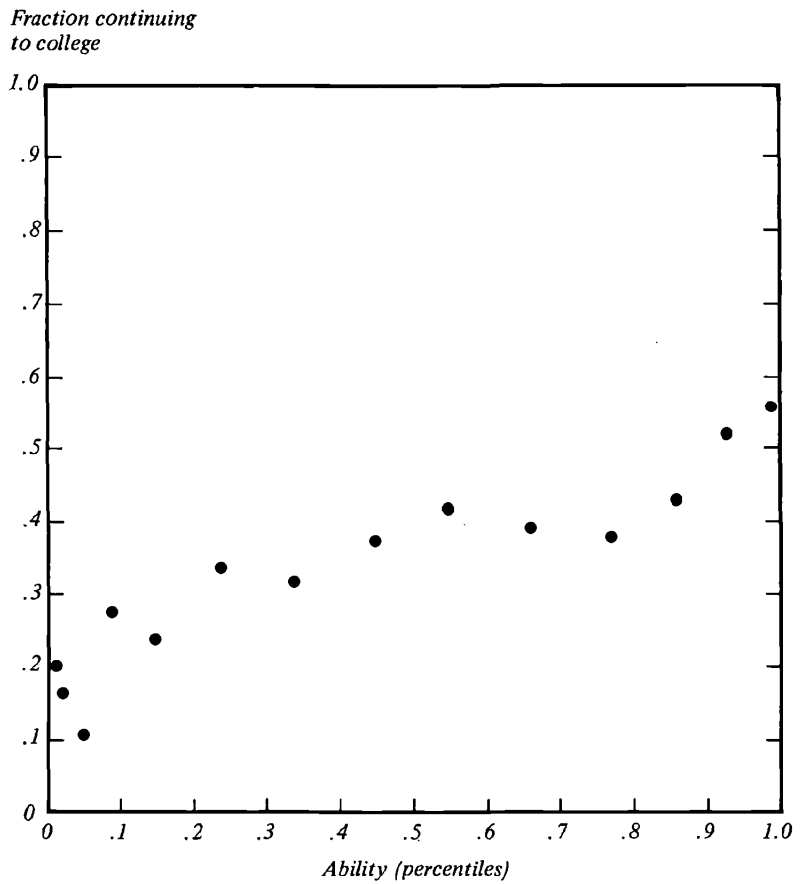
FIGURE 2 **Fraction of high school graduates continuing to college at selected percentiles, adjusted**



These results suggest the following general pattern. At the 90th and 75th percentiles, the percentage entering college has increased substantially over time. At the 50th percentile, the 1960 values are slightly

[6]This adjustment, as in the case of average ability levels, is intended to take into account differences in the percentage continuing in the sample and in the population.

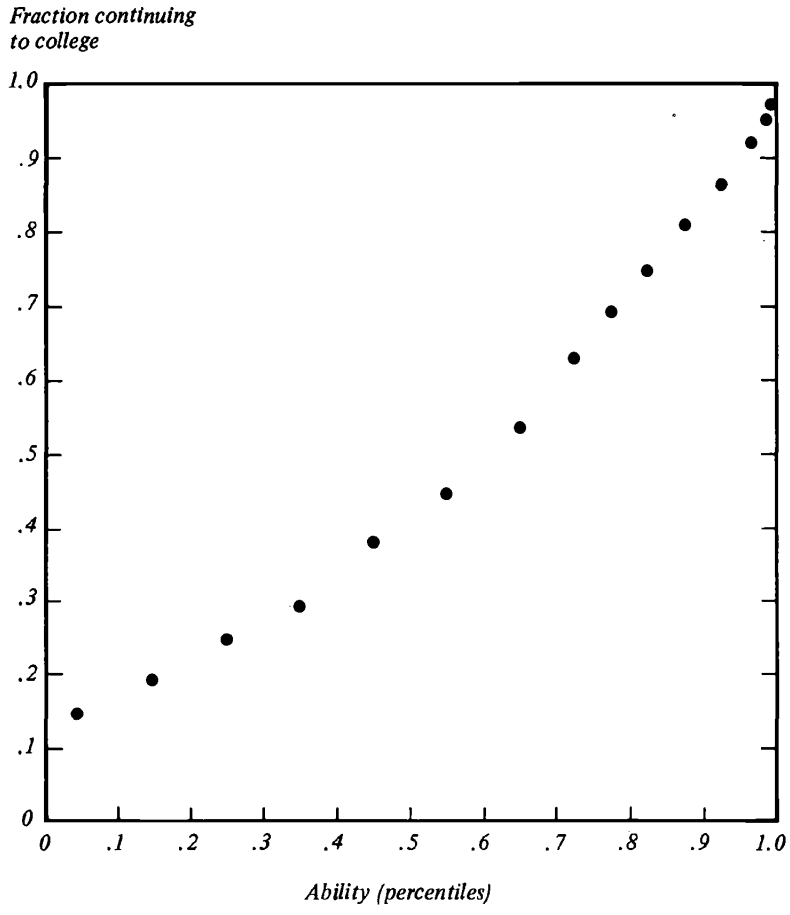
FIGURE 3 **Data points from O'Brien sample, 1925**



higher than those for the 1920s and the values for the 1930s and 1940s are substantially lower. At the 25th percentile, the fraction of high school graduates entering college appears to have fallen during the 1930s and 1940s, but by the 1960s is back to the 1920 level. We do not have exactly comparable data for the pre-World War I era, but the information on men in Yerkes (1921) indicates that the loss in talent (at the various percentiles) for high school graduates was about the same as in the late 1950s. Since less than 10 percent of the population graduated from high school, the loss of talent occurred at earlier educational levels.

As noted above, we estimated both linear and nonlinear equations. In explaining the loss of talent, we find no evidence that the coefficient on the nonlinear term (A^2) is significant in the samples for the period

FIGURE 4 Data points from Project Talent sample, 1960



1920-1940. After the Second World War, however, the coefficient on this variable, which is always positive, is highly significant. To illustrate the difference between the prewar and postwar periods, we plot in Figures 3 and 4 (the O'Brien and Talent studies) the actual data points of two representative samples. The nonlinearity in the postwar sample is clearly evident.

Based on the percentage who enter college at various IQ levels, it is evident that in the 1950s and 1960s there was less loss of talent than in the 1920s and 1930s. It is interesting to speculate why less talent is lost now than earlier and why the average IQ level of college entrants has risen. To this end we have examined various histories of higher education in the United States, but except for certain comments in Jencks and Riesman (1968), none of these is very explicit on the sub-

ject.[7] We suggest that much of the shift occurred because of the changing financial constraints applicable to high school graduates over time. Before World War I very few people completed high school and very few parents could afford a college education, especially since depressions occurred frequently. In addition the available data indicate that (for males) college education differed sharply by ability level. The middle to late 1920s was a period of prosperity in which the high school population and the middle and upper classes grew rapidly. Partly because their income permitted it and partly for social reasons, there was a tendency for the children of these groups to attend college.[8] But since the correlation between bright students and wealthy parents was not that high, the distribution of college entrants by IQ was reasonably flat (a low selectivity coefficient). In addition, Jencks and Riesman (1968) argue that in the 1920s colleges as a whole were willing to take any person who applied.

The 1930s generated a whole new set of pressures as income fell, unemployment became rampant, and the high school population continued to expand faster than the population. In the post-World War II era, the percentages of students continuing to college in the upper IQ brackets rose sharply while those at the bottom rose only slightly. Some possible explanations for this development are that many more middle-class families could both afford to send their above-average children to school and wanted to send them because they believed schooling to be the road for advancement. In addition, the capital markets may have become more perfect with the advent of federal scholarships and loans. Finally, Jenks and Riesman suggest that, starting in the late 1940s, colleges that did not have enough facilities to accommodate the surging demand for space tried to select only the brightest students.[9]

Finally, separate results for males and females are available for some of the samples. The same general pattern over time holds for males and females separately and for the combined sample. The average ability levels of those continuing to college are approximately the same for males and females. As far as the loss of talent is concerned, the fraction

[7]However, the histories indicate that there was a growing trend over time in the amount of undergraduate training required by the traditional professional schools. In addition, many other occupations began to require a formal education as a prerequisite to entrance.

[8]See Goetsch (1940) for a discussion of college-going patterns by parental income.

[9]Jencks and Riesman (1968) argue that the colleges initially assumed the increase in demand to be a temporary phenomenon connected with the GI Bill.

of males continuing exceeds that of females at the selected percentiles discussed above, with the absolute differences becoming larger the higher the percentile.

For the period prior to the 1930s, we also estimated our equations—with data from Benson (1940) and Yerkes (1921)—for each grade after the sixth. There is a sharp drop in the slope coefficient after the completion of the eighth and twelfth grades. Although average ability increases with educational development, most of the gain occurs from the seventh through the twelfth grade.