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A Study of the Change in Intelligence Distribution¹

WILLIAM H. DREIER AND BEVERLY S. YOUNG²

Abstract: A statistical study was conducted which indicates that significant changes in mean and variance of IQ scores for an Iowa farm group have changed significantly over a twenty year period. Factors accounting for this change are suggested.

The problems involved in the study were:

- (1) Had the mean or distribution of IQ scores of the group engaged in farming changed significantly since 1941?
- (2) If so, was it sufficient to involve a change in the whole community?
- (3) Lastly, if change had occurred, had selective migration been an active factor?

The area under observation was a commercial farming district of 186 square miles in Central Iowa. The school population numbered over 1000. There were no large towns within the area.

Comparisons were made between the ninth grade students of 1941-1943 and the ninth graders of 1961-1963. The groups were also subdivided on a farm-nonfarm basis and by sex. The findings were:

- (1) The mean IQ of the community had risen about 6 points, the modal IQ 10 points during the twenty-years period.
- (2) The mean IQ score of the farm group had risen significantly, the nonfarm group's had not.
- (3) The farm group had a significantly smaller percentage scoring below 90 than did the nonfarm group.
- (4) The farm group of 1961-1963 had a smaller percentage scoring below 90 (only 1.8 percent) than did the farm group of 1941-1943.
- (5) The nonfarm group had a significantly larger percentage

¹ Based on M.A. Thesis, "A Study of the Change in Intelligence Distribution Over a Twenty Year Period in Central Iowa," by Beverly S. Young, State College of Iowa, Cedar Falls, January, 1964.

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scoring below 90 (21.2 percent) than did that group in 1941-1943.

(6) The farm group had 65.5 percent and the community, as a whole, had 59.8 percent of its members scoring above 110, which was significantly higher for both groups than in 1941-1943.

(7) In nearly every comparison the girls scored higher than did the boys.

The basic comparisons were then repeated, with the size of the sample increased from a two year period to a five year period. The findings of the first study were all verified.

To investigate the effects of emigration, all students who had been enrolled in ninth grade in the area during the years 1941 through 1953 were traced to their place of residence and occupation as of 1963. They were placed in one of six categories and the mean IQs compared. About 72 percent of the students left the community. The highest scoring group moved to farms within the community. The lowest remained in a nonfarm occupation within the community.

To study the effects of immigration on the community, all the children enrolled in the district in grades three through ten were categorized as to whether their parents had attended school in this same area or had moved to a farm or nonfarm occupation within the community after adulthood. The children of parents immigrating to farms scored higher than did the children of those immigrating to nonfarm occupations. The IQ score of the resident children exceeded that of the parent group by about 7 points.

To establish whether children were scoring higher than their own parents, from among 1,976 individuals, 26 families were isolated in which there was a complete set of records of father, mother, and all their children of school age. The mean of each family of children exceeded the mean of their own parents in 86 percent of the cases. The mean of the offspring group exceeded that of the parent group by 5.4 points. The mean of the farm offspring exceeded the mean of the farm parents by 19 points, while the mean of the nonfarm group of offspring exceeded the mean of their parents by only 4.8 points.

Conclusions were that both the mean and distribution of IQ scores of the farm group had changed significantly and had involved the community as a whole. Selective migration was shown to be an active factor, though not the only factor involved in the change.