THE ECONOMIC STANDING OF PARENTS AND THE INTELLIGENCE OF THEIR CHILDREN

ARTHUR W. KORNHAUSER

University of Pittsburgh

I. PURPOSE

While the vanguard of the students of heredity and of educational psychology have gone forward with their inquiries into the relative importance of nature and nurture in determining the mental life of children, a very considerable body of social workers, teachers, and students, have failed to acknowledge the fundamental premise of these studies and hence, even at the present time, the problem persists as to whether more intelligent and wealthier parents do have, in the long run, more intelligent children. Some who maintain the affirmative have ascribed the superior intelligence of the offspring to heredity; some have believed early environment all-powerful; but a third group, less clearly recognized, has tended to view dubiously the entire proposition that children do vary with the standing of their parents. This group has emphasized the instances wherein great leadership or genius has apparently arisen from obscure parentage amidst abject poverty; they discredit family trees on the one hand and discount the effect of economic surroundings on the other hand.

The purpose of the following inquiry was simply to attempt, by a brief survey, to find whether any clear indication would appear of a correlation between intelligence of children, measured crudely by school advancement, and the economic standing of the parents, measured still more crudely. It was not proposed to make a comparative study of the influence of heredity and environment, but to ascertain what light might be thrown upon the position held by the third group mentioned above—the position, namely, that the economic attainment of parents (and hence also their degree of intelligence) is not definitely associated with the "brightness" of their children. Our question then is: Do poorer parents on the whole have less advanced children; do wealthier parents have more advanced children?

*A study made in connection with a research course under Prof. Roswell H. Johnson at the University of Pittsburgh.

II. METHOD

As an index for the measurement of the intelligence of children their school advancement was employed, an index well justified by the close association which has been repeatedly demonstrated between it and a ranking based on individual mental tests. Only three class divisions were used which we shall call Retarded, Normal, and Advanced. Normal was used to signify that the individual's actual school grade (to the half year) is the same as, or within one half year of, his theoretically normal school grade; Retarded to signify his actual grade to be one year or more under the theoretically normal; and Advanced one year or more above the theoretically normal. That is:

Retarded:	(Age to nearest ½ year—6) ± ½ > Actual School Grade
Normal:	(Age to nearest ½ year—6) ± ½ = Actual School Grade
Advanced:	(Age to nearest ½ year—6) ± ½ < Actual School Grade

In reckoning actual school grade, grade 1A = 1 year, grade 1B = ½ year, etc. For example, if X was born in January 1906 and his grade consulted in March 1917 was found to be 6B (equal to 5½), then $(11-6) \pm \frac{1}{2} = 5\frac{1}{2}$. Hence X is Normal.

It was found that this method of ranking gave a more nearly normal distribution than any other tried and it also seemed most frequently justified in individual cases as actually indicating whether the child had failed of promotion at least once, in the case of Retarded, or had succeeded in advancing by double promotion, in the case of Advancement.

As an index for the measurement of economic standing it was desired to find a means of roughly dividing the parents into two groups—more wealthy and less wealthy. The possession of telephones was hit upon as a simple, readily accessible, and withal fairly trustworthy, indication of economic and social status. Both theoretically and empirically it was found that the possession of a telephone is rather reliable evidence that the parents have succeeded in attaining considerable economic independence and hence also that they are of comparatively high grade natural ability. Similarly absence of telephones points to a much less advanced social position and hence presumably to a comparatively lower grade of heredity constitution. In those numerous cases where the economic margin of surplus is such that telephones might or might not be had, in most instances, it would seem, the determining factor for such possession would be cultural attainment or comparative im-

portance of work, thus bringing these marginal cases into their proper significance in our inquiry. The use of this index is further justified by the actual results obtained as to the distribution of telephones, as will appear under our results.

The material to which our standards were now applied was a group of one thousand school children of Pittsburgh, distributed in five public schools. The five schools were chosen to be as representative as possible of different social settings: Grant and Ralston are in very poor districts with many laborers, day workers, street venders, etc; Bellefield and Shakespeare are in districts considerably more prosperous though by no means wealthy, populated to a considerable extent by artisans, small shop-keepers, boarding-house proprietors, etc.; Linden is one of the most wealthy districts of the city, drawing mainly from families in very comfortable circumstances or better. The significance of these differences both as to advancement of children and possession of telephones will be evident below.

The necessary data were obtained from the Permanent Record Cards of the pupils in each school together with reference in each case to the two city telephone directories. No children whose parents' present address was not definitely ascertainable were taken; all pupils entering in the current year as well as all kindergarten pupils were omitted; and in general precautions were observed to make the results as trustworthy as possible.

III. Results

TABLE I.

Distribution of 1000 School Children as Retarded, Normal, and Advanced

	Individuals				Per Cent.		
School	Retarded	Normal	Advanced	Total	Retarded	Normal	Advanced
Grant	47	49	8	104	45 2%	47 1%	7 7%
Ralston	25	38	5	68	36.7	55 9	7.4
Bellefield	122	209	84	415	29 4	50.4	20 2
Shakespeare	78	140	53	271	28 8	51 7	19 6
Linden	18	89	35	142	12 7	62 7	24 6
Totals	290	525	185	1000	29 0	52 5	18 5

In Table I are presented the general class distributions of the different schools and the totals both by count of individuals and by per cents. The percentage distribution in the schools is in striking agreement with what might be expected from the economic con-

dition of the respective districts. Grant and Ralston show a very large proportion of Retarded with an almost negligible number of Advanced; Bellefield and Shakespeare have the most nearly normal distribution of Retarded and Advanced; Linden shows the opposite tendency from the first two schools, a very small proportion of Retarded and with a comparatively large percentage of Advanced pupils; Linden shows the opposite tendency from the first two schools, a very small proportion of Retarded with a comparatively large percentage of Advanced pupils. This data in itself gives some indication of the marked association between economic status and school advancement and undoubtedly would be much more striking if the different schools had a system of uniform grading, for there can be no question that there is a tendency for the general lower ability in the poor school to be compensated by a general lower standard of grading and vice versa in the wealthier school.

TABLE II.

Distribution of Telephones among the Same 1000 Children

School	Number of each class having telephones				Per cent of each class having telephones			
	Retarded	Normal	Advanced	Total	Retarded	Normal	Advanced	Total
Grant	3	3	3	9	6 3%	6 1%	37 5%	8 6%
Ralston	3	2	1	6	12.0	5 3	20 0	8 8
Bellefield	28	64	38	130	22 9	30 6	45.2	31.3
Shakespeare	12	42	23	77	15 4	30 0	43.4	28 4
Linden	10	57	27	94	55.5	64 0	77 1	66 2
Totals	56	168	92	316				

Table II presents the distribution of telephones among the 1000 individual studied, again according to school and also according to the class (Retarded, Normal, Advanced) of the pupils. The total percentages of telephones show how definitely the districts are typified by this index, the range being from 8 per cent. to 9 per cent. in Grant and Ralston to 66.2 per cent. in Linden, with the other two schools set well off in the interval at about 30 per cent. The general tendency in the distribution of telephones among the classes is also clear, the last three schools presenting marked differences between each two classes. In the case of Grant and Ralston the difference

between the percentages of Advanced and Retarded having telephones is equally definite. The slight discrepancy in these schools between the proportions of Retarded and Normal possessing telephones is readily explainable by reason of the very few cases here involved (the fewest occurring throughout the tables).

TABLE III.

Per Cent of Class Totals Having Telephones

Retarded	Normal	Advanced	Totals
19 3%	32 0%	49.7%	31 6%

In Table III are summed up the few most significant percentages of the foregoing data. It is found that in the entire 1000 cases telephones are possessed by 31.6 per cent.; in the entire class of pupils in their Normal grade 32.0 per cent. have telephones, a percentage almost identical with that of the totals. In contrast to this similarity is the variation shown in the per cent. of Retarded children having telephones, 19.3 per cent., and of Advanced children having telephones, 49.7 per cent. Evidently a real association does exist in this case between Retarded Grade and Absence of Telephones and between Advanced Grade and Presence of Telephones.

In order to combine this association into a single approximate coefficient the four classes Advanced and Telephones, Advanced and Not Telephones, Retarded and Telephones, Retarded and Not Telephones, were utilized in the simple association formula of Yule, resulting as seen in Table IV in a positive association coefficient of .61.

TABLE IV.

Coefficient of Association of School Standing and Possession of Telephones=+.61

$$\text{Formula, } Q=\frac{N.\,\delta.}{(AB)\,(ab)+(Ab)\,(aB)}$$

(Cf. Yule: "Introduction to the Theory of Statistics", p. 38)

IV. Conclusions

In a few words we may summarize these results:

1. The proportion of families possessing telephones is markedly greater as the district studied is wealthier.

2. The proportion of school children who are advanced is markedly greater as the district studied is wealthier (despite the compensatory tendency of the grading).

3. In every district studied the tendency is for the percentage of Advanced pupils having telephones to be greater than that for the Normal and still greater than that for the Retarded.

4. The percentages of the respective class totals having telephones are approximately 19 per cent. of the Retarded, 32 per cent. of the Normal, 50 per cent. of the Advanced.

5. The coefficient of association between advanced grade and telephones and retarded grade and not telephones is +.61.

If, now, we can accept the indices used to actually represent parental attainment and intelligence of offspring respectively, and there appears ample justification for doing so in a general way, we may indicate the following few conclusions and comments:

6. The percentage of Advanced children coming from homes better stiuated economically is clearly very considerably greater than the percentage coming from homes that are poorer, and this applies as between the rich and middle class as well as between the extremes. The converse is of course true of Retarded children.

The predominant cause of these relations may be hereditary or environmental or both, that is,—

7. Parents having telephones are inherently of good enough stock to have succeeded and hence naturally their offspring are also of superior native ability.

8. Parents having telephones presumably also have homes in which the physical and educational environment are favorable to the children's mental life and school success.

9. The most reasonable view would seem that both the preceding factors are involved in varying proportions together with numerous minor causes. Whatever be the ultimate explanation, however, the data point to a very real association between parental standing and intelligence of offspring, worthy of much more careful analysis and evidently of no inconsiderable social significance.