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Reprinted from "The Journal of Genetic Psychology," 1937, 50, 427-439.

THE MENTAL DEVELOPMENT OF CHILDREN FROM UNDERPRIVILEGED HOMES*†

State University of Iowa

Harold M. Skeels and Eva A. Fillmore

Problem

Familiarity with the pattern of IQ's of children in the same family when admitted to an orphanage suggested the present study. Scanning of family records made it seem pertinent to investigate whether there was really an unusual, consistent downward trend of IQ's among the older members of a family; whether the length of stay in the type of home represented might be related to mental status as measured by the Stanford-Binet examination.

Subjects

As part of the research program of the Iowa Child Welfare Research Station in cooperation with the Iowa State Board of Control, children are given mental examinations as soon as possible after entrance to the state orphanages. The examiners are staff members who have had long experience in mental testing and dealing with children in varied situations. For this study records were used from one orphanage since its children provided an age range satisfactorily wide for the purpose. There were 132 families, each having two or more children who had been tested within a short time after entrance. The large number in residence at its beginning were lost to this study, since only those tested promptly after entrance could be considered. As a rule the tests were made within a few days or at the latest a few weeks after entrance. These families provided 407 children ranging in age from one to 14 years. The largest family had eight children with the mean number per family, three.

*Received in the Editorial Office on December 18, 1936.

†The writers wish to express their appreciation to the Iowa Board of Control of State Institutions which at all times cooperated in making possible research studies of state wards; to Mr. Syl McCauley, Superintendent of the Iowa Soldiers' Orphans' Home, at which institution the children in this study were examined; and to Dr. George D. Stoddard, Director of the Iowa Child Welfare Research Station, who has made possible this study.

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Family Background

A necessary part of this research was the investigation of the background in which these children had been reared. Whatever might be shown about their intelligence must be interpreted in relation to the home situation. Material about the family and home was found in the family histories sometimes submitted as part of the official procedure of entering a child in the institution. Such records contained a certain amount of factual data about the parents as well as descriptive accounts of an impressionistic nature. These records were in some cases very fragmentary, but there were enough facts available for the group to give a picture considered adequate for the purposes of the study.

Status of Parents.

Occupations. For 71 families the occupation of the father was given in the history. These were rated according to the classification of occupations of employed males in the United States from the report of the "Fourteenth Census of the United States," Volume 4, 1920 [cited by Goodenough (2, Appendix, pp. 501-502)], as shown in Table 1.

Table 1

Group	Number	Total	Per Cent
1	0		
2	0	0	
3	6		
4	2		
5	15	23	32.4
6	12		
7	36	48	67.6

Judged by this standard, 67.6 per cent of the fathers were employed as day laborers, slightly skilled workmen, or in occupations requiring little training or ability. The remainder were in semiskilled or skilled occupations, clerical positions, business, and farming. None were in the ranks of professional occupations. The 67.6 per cent in the lower ranking occupations may be contrasted with the 32.2 per cent of such workers in the nation as a whole. On the basis of occupational level, it might be assumed that constructive

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opportunities for the children had probably been limited. Such an assumption appears valid when facts enumerated later are also considered. Although the occupational status was given for only a part of the group, these families seemed to have enough characteristics in common with the others to make them a typical sample of the 132 families.

Education. The educational status of the parents is shown in Table 2.

Table 2

School Grade Reached	Both Parents		One Parent
	Mothers	Fathers	Mothers
2	2	0	2
3	1	2	3
4	1	3	1
5	2	0	2
6	4	3	7
7	3	4	3
8	15	16	20
9	3	0	4
10	5	5	6
11	1	0	1
12	1	4	2
Some college	0	1	0
Total	38	38	51
Mean	7.5	8.0	7.5
Median	8.0	8.0	8.0

For 38 families records of both parents were given. The grade range of the mothers was two to 12, with a mean grade of 7.5. The fathers' range was three to 12, with one having an unstated amount of college training; their mean was grade eight. The median for each group of 38 parents was grade eight.

When the record for mothers as a group were considered there were 51. The mean was again grade 7.5 and the median again grade eight.

Residence in Institutions. In these 132 families, of the 111 mothers living at the time the children entered the orphanage, 18 or 16.2 per cent were residents of state or county institutions. Eight were in insane hospitals, five in the reformatory, two in homes for feeble-minded, and three in county homes for the in-

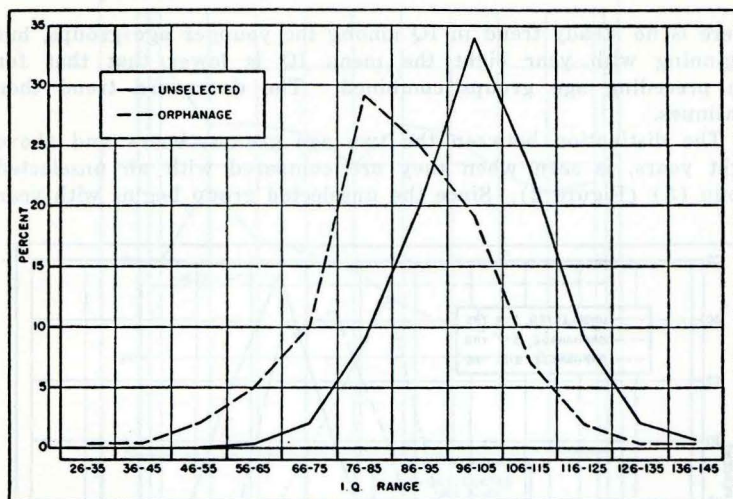


Figure 1
 Distribution of IQ's of 330 Orphanage Entrants and 905
 Unselected Children, Ages Five to 14 Years
 [Fig. 2, p. 66 (3)]

Table 3

Chrono-logical age, years	Num-ber	Mean IQ*
1	8	108.4
2	27	93.3
3	22	87.7
4	20	92.6
5	42	89.7
6	24	98.0
7	37	92.2
8	35	90.7
9	51	88.7
10	34	85.4
11	37	83.3
12	35	81.6
13	17	79.6
14	18	79.9

*Children under 3.5 years of age were given the Kuhlmann Revision of the Binet. Children over 3.5 years of age received the 1916 revision of the Binet.

There is no steady trend in IQ among the younger age groups, but beginning with year eight the mean IQ is lower than that for the preceding age groups combined. The downward trend then continues.

The distinction between the two age groups, below and above eight years, is seen when they are compared with an unselected group (3) (Figure 2). Since the unselected group begins with year

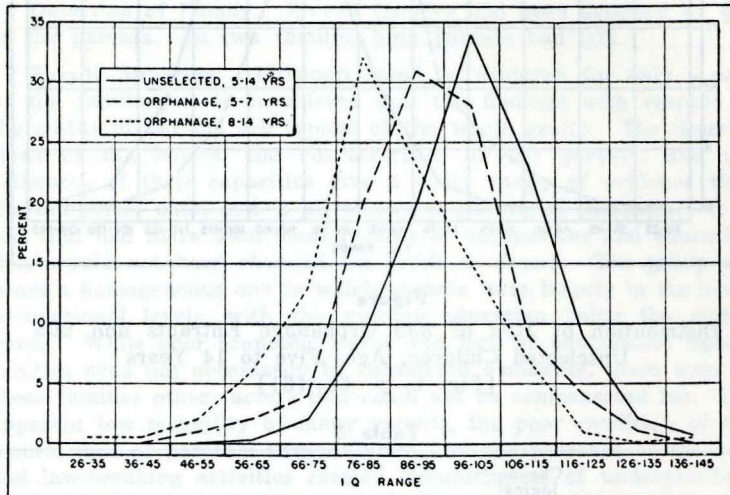


Figure 2

Distribution of IQ's by Age of Orphanage and Unselected Children [Fig. 2, p. 66 (3)]

five, for this comparison the orphanage group is begun at this point likewise. While both orphanage groups show a decided swing downward from the normal pattern, with higher percentages of lower IQ's, the deviation is much more marked for the older group.

Since a slight decrease in IQ for successive age groups has quite commonly been found, it remains to be seen how the decrease for the orphanage group compares with that for unselected children. For comparison the IQ's by age of Terman's 905 unselected children are used (1). While they show a slight fluctuation below their mean of 102.0 beginning with year 12, the orphanage group shows a greater one below their mean of 87.5, beginning with year 10 (Figure 3).

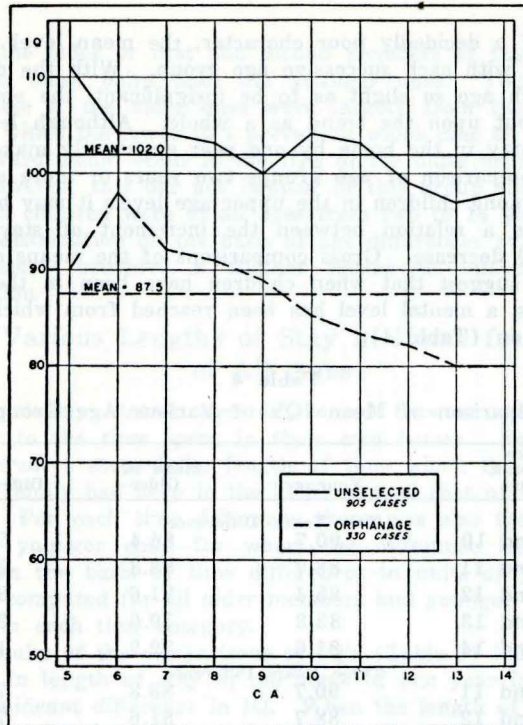


Figure 3
Mean IQ by Age of 330 Orphanage Entrants and 905 Unselected Children [From table in 27th Yearbook (1)]

IQ and Length of Stay in Underprivileged Home. Since the age of the children as used in the preceding summaries was taken as of the time of entrance to the orphanage, age therefore corresponds to the length of time spent in the child's own home. Homogeneous as this group has been shown to be in respect to family background, it is considered that the findings for age groups are one indication of the relation of IQ to length of time in the home. While it is known that the younger children in these homes have not been in stimulating surroundings, the effect of this is a matter of time as these results suggest. Although there are fluctuations by age among the mean IQ's of the younger children, on the whole they maintain a higher level than do the older ones. However, after seven years

in homes of a decidedly poor character, the mean level of intelligence drops with each successive age group. With the differences between each age so slight as to be insignificant, the emphasis is, of course, put upon the trend as a whole. Although lengthening the child's stay in the home by one year apparently makes no difference, a comparison of age groups two years or more apart suggests that among children in the upper age levels it may be possible to determine a relation between the increment of stay and the extent of IQ decrease. Gross comparisons of the means of various age groups suggest that when children have been in these homes for 11 years, a mental level has been reached from which there is little deviation (Table 4).

Table 4
Comparison of Mean IQ's of Various Age Groups

Age Groups, Years	Younger	Mean IQ Older	Difference
	Two Years Difference		
8 and 10	90.7	85.4	5.3
9 and 11	88.7	83.3	5.4
10 and 12	85.4	81.6	3.8
11 and 13	83.3	79.6	3.7
12 and 14	81.6	79.9	1.7
	Three Years Difference		
8 and 11	90.7	83.3	7.4
9 and 12	88.7	81.6	7.1
10 and 13	85.4	79.6	5.8
11 and 14	83.3	79.9	3.4
	Four Years Difference		
8 and 12	90.7	81.6	9.1
9 and 13	88.7	79.6	9.1
10 and 14	85.4	79.9	5.5

Mental Status of Siblings as Related to Length of Stay in Home

Method of Comparison. To investigate further the relationship between length of time in the child's own home and IQ, children in the same families were paired with each other. Each child was compared with every other one in his family, record being made of difference in age or length of time in the home and the IQ's of the older and younger members of each pair. Since the family backgrounds were homogeneous, all the data provided by these pairs of siblings were used in the various classifications. This method re-

sulted in the older or first and second members of the family appearing in more pairs than the younger ones. This would be objectionable if the older ones were largely from the upper age groups in which the lower IQ's prevail, in which case an overweighting downward would occur in the IQ's of the older members of the pairs. However, this did not happen in this group since the first and second children were of all ages from two to 14 years. Moreover, the distribution on the basis of age differences (various duration of stay) provided a further means of offsetting unfair concentration.

IQ and Various Lengths of Stay in Home for Children of All Ages

As previously stated, age differences between siblings were equivalent to the time spent in their own homes. For the pairs these differences showed the length of time which the older members of a family had been in the home beyond that of the younger members. For each time difference there was also the IQ of the older and younger child for whom the difference had been obtained. On the basis of time differences in units of years, mean IQ's were computed for all older members and younger members of the pairs in each time category.

The results of the comparisons of IQ's (Table 5) indicate that a difference in length of stay in the home of one year is not joined with a significant difference in IQ. When the length of stay is two years longer for the older members, then the IQ's are lower to an extent very near to complete reliability. However, when the difference is extended to three years, it is then reliably established that the children who have been in the home that much longer than their siblings actually have lower IQ's. With wider intervals of years' stay this difference between the older and younger children is sustained, although with not quite as high a certainty of significance, perhaps due to the fewer individuals represented.

IQ and Length of Stay in the Home for Selected Age Groups

Further analysis of the relation of IQ to the length of time children stayed in their homes was made by comparing groups of siblings of specific ages. Since small differences in IQ were found for children under eight years of age, it was considered of interest to determine how they might differ from siblings of the following ages: eight and nine years, 10 and 11 years, and 12 and 13 years

Table 5

Differences Between Mean IQ's of Children Whose Stay in the Home Is Separated by Various Lengths of Time

Length of time in Home, Year	Pairs	Mean IQ		Standard Deviation of Distribution of		Standard Deviation of Mean		Standard Deviation of Difference	Difference in Mean of Older and Younger Pairs	Ratio of Difference to Standard Deviation of Difference
		Older Pairs	Younger Pairs	Older Pairs	Younger Pairs	Older Pairs	Younger Pairs			
1*	66	84.15	86.82	12.50	12.90	1.54	1.59	2.21	2.67	1.21
2	140	86.26	90.10	15.40	14.70	1.30	1.24	1.80	3.84	2.13
3	80	85.69	93.01	12.65	17.05	1.42	1.91	2.38	7.32	3.10
4	93	82.51	88.74	13.70	12.80	1.42	1.33	1.95	6.23	3.19
5	66	84.83	92.35	14.75	16.55	1.82	2.04	2.73	7.52	2.75
6	34	85.08	93.82	13.88	18.50	2.38	3.17	3.96	8.74	2.21
7	34	81.55	89.82	13.00	14.95	2.23	2.56	3.39	8.27	2.44
8	24	82.83	94.62	16.00	18.20	3.26	3.71	4.94	11.79	2.39
9	16	81.37	96.12	15.35	16.00	3.84	4.00	5.54	14.75	2.66

*In the category one year, children remaining in the home from six months, zero days to one year, five months, twenty-nine days are included.

Table 6
Differences between Mean IQ's of Siblings of Selected Ages

Age Groups, Years	Number	Mean Chronological Age	Mean IQ	Standard Deviation of Distribution	Standard Deviation of Mean	Standard Deviation of Difference	Ratio of Difference to Standard Deviation of Difference
1 to 7	99	5.0	96.0	16.5	1.67		
8 and 9	63	8.5	89.9	13.4	1.70	2.38	2.56
1 to 7	74	5.3	93.1	15.4	1.79		
10 and 11	51	10.5	84.2	12.9	1.81	2.55	3.49
1 to 7	45	5.3	92.6	15.0	2.23		
12 and 13	26	12.4	78.9	12.7	2.48	3.33	4.09

respectively. The results for these selected groups follow the same tendencies noted for the children as a whole (Table 6). While the groups below eight years shift, inclusion in them depending upon having siblings of the prescribed higher age range, the mean IQ does not vary much. Those in the same families who have been longer in the home show a decreasing mean IQ. The differences in IQ between younger and older children are seen to increase with the lengthening of the age difference or the time which the older group has been in the home in excess of the younger group. Time differences of 3.5 years, 5.2 years, and 7.1 years likewise correspond to increasingly significant differences between younger and older children in respect to mean IQ. Thus it may be inferred that in the type of home represented older children are definitely and increasingly inferior to those siblings under eight years of age.

Summary

A group of 407 orphanage entrants belonging to family groups have been studied with reference to home background and the development of intelligence in relation to the type of homes represented. The findings are as follows:

1. These children came from uniformly poor backgrounds, as indicated by low economic status, limited education of parents, and conflict with law.
2. The level of intelligence of the children, one to 14 years of age, is shown by a mean IQ of 88.5.
3. Children under eight years of age are of a higher mental level than those older.
4. The IQ's of the older children decrease with age to a greater extent than is found for unselected children, suggesting the retarding effect of poor homes on mental development.
5. For siblings of all ages a difference of three years' stay in the home corresponds to a significant difference between the IQ's of pairs separated by that difference.
6. As the length of the stay in the home increases, the mean IQ's of groups likewise decrease in a significant degree.

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Iowa Child Welfare Research Station
State University of Iowa
Iowa City, Iowa