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ABSTRACT

The cumulative deficit hypothesis with respect to age decrement in IQ was investigated in large samples of white and black school children in rural Georgia between the ages of 5 and 18. The cumulative deficits hypothesis suggests that the increasing decrement in mental test scores, relative to population norms, is a function of age in groups considered environmentally deprived. According to the hypothesis, the decrement is a result of the cumulative effects of environmental disadvantages on mental development. About 1,300 school children, approximately 49% white and 51% black, were tested. Subjects were tested on the California Test of Mental Maturity, a standardized test of general intelligence, which yields IQ's for verbal and nonverbal abilities from kindergarten through grade 12. Age decrement in verbal and nonverbal IQ is measured in this study by the average IQ difference between younger and older siblings. It was found that blacks, but not whites showed significant and substantial decrements in both verbal and nonverbal IQ's as a lineal function of age in the range from about 5 to 16 years of age. The results of this study on Georgia blacks seem to favor an environmental interpretation of the progressive IQ decrement in view of the comparative lack of such a decrement in a parallel study of California blacks whose environmental circumstances are markedly better than those of the black sample from rural Georgia. (Author/AM)

Cumulative Deficit in IQ of Blacks in the Rural South

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Running head: Cumulative Deficit in IQ

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ABSTRACT

The cumulative deficit hypothesis with respect to age decrement in IQ between ages 5 and 18 was investigated in large samples of white and black school children in rural Georgia. Age decrement in verbal and nonverbal IQ was measured by the average IQ difference between younger and older siblings. It was found that blacks (but not whites) showed significant and substantial decrements in both verbal and nonverbal IQs as a linear function of age in the range from about 5 to 16 years of age. An environmental interpretation of the age decrement in IQ seems reasonable in view of the comparative lack of such a decrement in a parallel study of California blacks whose environmental circumstances are markedly better than those of the black sample from rural Georgia.

Cumulative Deficit in IQ of Blacks in the Rural South

The cumulative deficit hypothesis is intended to explain the increasing decrement in mental test scores, relative to population norms, as a function of age in groups considered environmentally deprived. According to the hypothesis, the decrement is a result of the cumulative effects of environmental disadvantages on mental development.

The history of the cumulative deficit hypothesis and its theoretical and methodological problems have been reviewed by Jensen (1974a). It was concluded that most of the studies of the phenomenon are seriously flawed by methodological deficiencies. The majority of studies have found no evidence of an age-related IQ decrement in blacks.

Jensen (1974) proposed investigating IQ decrement by the sibling method, that is, using the difference in standardized test scores between younger and older siblings within the same family as an indicant of IQ decrement. If there is a true IQ decrement, older siblings should obtain lower test scores than their younger siblings, and there should be a positive correlation between sibling age difference and IQ difference. Jensen applied the sibling method to large samples of whites and blacks of ages 5 to 12 in a California school district and found a slight but significant age decrement in verbal IQ in the black sample, but no evidence whatever of a decrement in nonverbal IQ, although the black sample scored equally far below (about one standard deviation) the white sample in nonverbal as in verbal IQ.

Jensen suggested, however, that the sibling method might reveal an age

decrement in the IQ of blacks in other regions of the country where blacks have experienced greater environmental disadvantages. Age decrement in verbal and scholastic abilities in Southern blacks was suggested in the Coleman report, but is not proven by the cross-sectional IQ × age data which could reflect selective migration of abler pupils out of the rural South, causing an increasing accumulation of poorer students in the higher grades in school (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966, p. 274).

Although the cumulative deficit hypothesis applies to scholastic achievement as well as to IQ, it is clear from the literature on this topic that the core hypothesis concerns measured intelligence (Jensen, 1974a). The writer has argued elsewhere that standardized IQ tests measure essentially the same general factor of mental ability equally well in both whites and blacks. Although IQ tests are culturally loaded in varying degrees, there is virtually no evidence, in terms of a number of statistical and psychometric criteria (e.g. predictive validity, reliability, item analysis, race × items interaction, factor structure, etc.) that the tests are culture biased with respect to the present white and black populations in the United States (Jensen, 1974b, 1976). The black IQ deficit, whatever its causes, appears to be a quite general cognitive deficit rather than narrowly culture specific.

If a cumulative deficit in mental development as indexed by IQ actually exists at all in any segment of the United States population, it should probably be expected most in blacks of the rural South. Their environmental circumstances would seem much more likely to contribute to the cumulative deficit effect than would the relatively good environmental conditions of the California school sample involved in Jensen's first sibling study. The aim of the present study, therefore, is to apply the sibling method to the investigation of IQ

decrement in samples of whites and blacks in the rural South. The sampled populations, particularly the black group, are not intended to be representative of the total white and black populations in the United States. Blacks in the locality under study are probably as severely disadvantaged, educationally and economically, as can be found anywhere in the United States today. If an age decrement does not exist in this group, it would seem most doubtful that it could be found in any subpopulation within our borders. Unlike the California study, in which children from kindergarten through sixth grade were used, the present study includes children from kindergarten through twelfth grade, thereby increasing the chances of detecting IQ decrement by the method of differences between younger and older siblings.

Method

Subjects

The subjects in this study were all of the white and black children enrolled in the public schools of a small rural town in the southeastern part of Georgia.[2/] The population is mostly rural-agricultural, with a very low median family income compared to the national average. The black group as a whole would be classified as very low socioeconomic status on any index of SES. The white population is predominantly low and lower-middle SES. Some 1,300 school children, approximately 49% whites and 51% blacks, were tested.

Tests

Subjects were tested on the California Test of Mental Maturity (1963 Revision), a standardized test of general intelligence, which yields deviation IQs for verbal and nonverbal abilities at every grade level from kindergarten

through Grade 12 (see Buros, 1972, pp. 631-636). The CTMM is factorially very comparable to other standardized group tests of verbal and nonverbal IQ such as the Lorge-Thorndike Intelligence Tests, which Jensen (1974a) used in the California study. (The CTMM was used instead of the Lorge-Thorndike in the Georgia study, since the testing was done as part of the school's state-mandated testing program, which required the CTMM.) The CTMM IQs are standardized scores ($\bar{X}$ = 100, SD = 15) based on large samples of school children from 49 states.

Results and Discussion

Sample Statistics on Age and IQ

The total white sample (N = 653) has a mean age of 12 yrs. 4 mos., SD = 3 yrs. 7 mos. The mean age of the total black sample (N = 826) is 11 yrs, 8 mos., SD = 3 yrs. 3 mos. The white mean total IQ is 102, SD = 16.7; the black mean total IQ is 71, SD = 15.1.

Sibling Analyses

All of the analyses are based on siblings from families with two or more children. (The mean number of children per family with two or more children is: white = 2.42, black = 3.29.)

An age decrement in IQ should be indicated by a positive difference between younger and older siblings (i.e., Y-O).

Test of IQ as an Interval Scale. The sibling method must assume an interval scale of the measurements in question. This becomes an especially important consideration in comparing sibling differences across white and black

groups whose IQs are predominantly distributed in different ranges of the IQ scale. Are IQ differences in the lower and upper parts of the scale really equivalent?

The most appropriate method of determining this for the purpose of the present study is to find out if there is any systematic relation between absolute sibling IQ differences and the mean IQ of sibling pairs. If there is no significant correlation between absolute differences and means of sibling IQs, it could not be argued that the results of the sibling method used to determine IQ decrement (based on the IQ difference between younger and older sibs) are a scale artifact. There is no theoretical basis for expecting that sibling absolute differences in IQ should differ as a function of their general location on the IQ scale. The finding of a significant correlation between absolute differences and means, therefore, would suggest that the full range of IQs in the two racial samples do not fall on an interval scale.

To insure that possible nonlinear as well as the linear components of the correlation between IQ differences and means could be detected, a multiple regression analysis was used and the squared multiple correlation ($\underline{R}^2$) was tested for significance. First, powers of the sibling pair absolute difference ($|\underline{d}|$, $|\underline{d}|^2$, $|\underline{d}|^3$, $|\underline{d}|^4$, $|\underline{d}|^5$) in IQ were used as the predictor variables, with sibling pair mean IQ as the dependent variable. Second, the first five powers of the sibling mean IQ were used as predictors, with the sibling pair absolute differences as the dependent variable. This was done separately for whites and blacks, as well as for the two racial groups combined. All possible paired comparisons of siblings were used in these analyses (white = 364 pairs; black = 1004 pairs).

The results: in every analysis $\underline{R}^2$ was negligible ($.002 < \underline{R}^2 < .005$) and nonsignificant ($.17 < \underline{p} < .74$) for whites and blacks separately and combined, for verbal, nonverbal, and total IQ. In short, there is no correlation between absolute differences and mean IQs of sibling pairs. Therefore, any signed sibling mean differences, such as $\bar{Y}-\bar{O}$, cannot be interpreted as an artifact of the IQ having different scale properties in various parts of the full range.

Younger-Older Sibling IQ Difference. If IQ declines with age, there should be a positive mean difference between the IQs of younger minus older siblings (i.e., Y-O). Table 1 shows the mean Y-O sibling IQ differences for

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Insert Table 1 about here

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all sib pairs of the same birth order within each family of a given size. This method thus does not confound the mean sibling difference with family size as would be the case if we simply averaged all possible sibling differences within each family. Doing the latter tends to exaggerate the magnitude of Y-O sibling differences, should they exist, in whichever group (in this case the black) that has the larger number of siblings per family. Families with more than five siblings were excluded from the analysis, since the Ns are too small to permit reliable statistical treatment.

Positive Y-O sibling differences which are significantly greater than

Table 1

Mean IQ and Age Differences of Siblings as a Function of Family Size and Birth Order

Family Size	Sibling Pair[a]	Total IQ Difference (Y-O)							Verbal IQ Difference (Y-O)					Nonverbal IQ Difference (Y-O)					Age (months) Difference (O-Y)				
		Black			White			B-W Diff.	Black		White		B-W Diff.	Black		White		B-W Diff.	Black		White		B-W Diff.
		M	SD	N[b]	M	SD	N[b]	t	M	SD	M	SD	t	M	SD	M	SD	t	M	SD	M	SD	t[c]
2	A,B	3.08	16.86	73	0.74	17.48	121	<1	2.99	15.94	1.53	17.59	<1	3.89*	19.16	0.57	17.20	1.21	36.91	26.18	46.48	30.35	2.32*
3	A,B	3.46*	13.23	61	2.64	13.90	44	<1	3.89*	13.90	2.18	12.74	<1	2.61	14.66	2.64	17.58	<1	31.29	16.74	38.02	18.35	1.92
3	B,C	3.58	17.78	62	-3.25	16.22	48	2.10*	3.50*	15.75	-1.58	16.84	1.61	3.85	20.57	-3.94	18.80	2.07*	29.46	16.81	31.02	16.30	<1
4	A,B	0.28	11.90	39	4.33	15.05	9	<1	0.08	12.76	2.44	15.35	<1	-0.15	15.30	-4.11	35.42	<1	27.52	16.09	37.33	19.92	1.38
4	B,C	8.13**	16.63	38	-3.30	19.06	10	1.73*	6.97*	15.76	-3.20	19.17	1.55	9.13**	17.71	-2.60	17.28	1.90*	28.42	15.60	35.10	19.43	1.01
4	C,D	2.36	16.38	39	-3.33	23.86	9	<1	2.72	15.45	-5.78	24.86	<1	3.49	18.74	0.33	20.61	<1	29.52	16.40	27.00	8.68	<1
5	A,B	2.25	20.93	20	-6.33	3.40	3	1.69	0.05	19.96	-7.33	15.28	<1	3.50	19.00	-4.33	19.19	<1	22.85	10.42	33.25	8.58	1.90
5	B,C	-1.11	16.20	19	13.75	17.56	4	-1.56	0.47	14.21	18.25	21.16	-1.61	-1.58	19.93	5.00	15.95	<1	22.26	11.34	25.50	7.92	<1
5	C,D	9.95*	17.55	20	1.50	9.50	2	1.09	9.40**	14.14	-6.00	9.00	2.17*	9.60*	23.07	11.00	10.00	<1	25.50	11.49	27.50	2.50	<1
5	D,E	-0.33	16.61	18	-8.50	18.50	4	<1	-1.83	15.29	-8.25	14.82	<1	3.17	18.97	-6.25	20.69	<1	24.20	11.17	25.25	4.92	<1

[a] Birth order goes from Oldest sib (labeled A) to Youngest (B, C, or etc.)

[b] Number of sibling pairs is the same for Total IQ, Verbal IQ, Nonverbal IQ, and Age comparisons

[c] Two-tailed test, * $p < .05$, ** $p < .01$.

* $p < .05$, one-tailed test for positive difference.

** $p < .01$, one-tailed test for positive difference.

zero are indicated by asterisks. One-tailed t tests are used since only positive Y-O sibling differences are indicative of an age decrement in IQ. (Negative differences could, of course, also be significant and interesting in their own right, but they would not indicate an age decrement in IQ and so would not be relevant to testing the present hypothesis.)

It is clear from Table 1 that there are larger and more significant Y-O sibling IQ differences for blacks than for whites. This holds to about the same degree for both verbal and nonverbal IQ. In contrast, the direction and magnitude of the sibling differences in the white sample are inconsistent and small. This finding is made more impressive by the fact that the white sibling pairs show a significantly ($p < .05$) greater age separation than do the black siblings.

Thus, overall there is a significant age decrement in verbal and nonverbal IQ in the black not not in the white sample.

Age Difference and IQ Difference

Table 2 shows the size of the IQ decrement as a function of age separation in the black sample. There is a highly significant linear increase in

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Insert Table 2 about here

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Y-O sibling difference from 1 year apart through 7 years apart. At 8 years apart, the linear trend clearly breaks down, but since the sample size in this group is quite small ($N = 20$) one cannot give much importance to this

Table 2: Mean Difference in Verbal (V), and Nonverbal (NV), and Total (T) IQ Between Younger and Older Black Siblings as a Function of Age and Age Difference, With F Test of Linear Trend in Each Column.

1 Year Apart				2 Years Apart				3 Years Apart				4 Years Apart			
	Y-O IQ Difference				Y-O IQ Difference				Y-O IQ Difference				Y-O IQ Difference		
Ages	V	NV	T	Ages	V	NV	T	Ages	V	NV	T	Ages	V	NV	T
6-7	-3.2	1.4	-1.1	6-8	5.3	-2.0	-3.3	6-9	5.7	12.0	10.4	6-10	10.3	7.3	11.1
7-8	-3.4	2.5	0.1	7-9	-4.0	-0.5	-1.3	7-10	10.2	8.1	11.4	7-11	3.3	5.4	3.9
8-9	-5.1	6.3	-0.3	8-10	5.6	0.9	3.9	8-11	7.2	3.4	4.3	8-12	2.4	1.5	0.9
9-10	-2.8	-8.2	-5.6	9-11	6.3	-3.3	1.2	9-12	7.6	-0.4	4.6	9-13	8.1	12.2	9.7
10-11	6.1	8.8	6.1	10-12	0.1	1.8	0.3	10-13	5.7	11.0	7.5	10-14	5.5	1.7	2.7
11-12	-4.6	1.9	-1.1	11-13	5.4	7.5	7.0	11-14	-0.6	6.6	2.6	11-15	2.3	0.9	1.1
12-13	9.4	10.5	10.3	12-14	3.2	3.5	2.3	12-15	0.5	0.1	-1.0	12-16	10.7	12.1	10.6
13-14	-6.6	-7.9	-8.6	13-15	-2.3	-6.7	-5.6	13-16	-2.2	-3.8	-4.0				
14-15	7.5	10.6	9.6	14-16	4.2	8.3	6.4								
15-16	10.2	11.0	11.5												
Mean[a]	-0.03	3.13	1.33		2.23	1.60	1.74		4.35	4.77	4.53		6.26	6.36	5.97
F[b]	6.02	0.87	3.43		1.57	1.54	0.83		7.16	4.16	9.43		0.24	0.27	0.01
df[c]	116	116	116		186	186	186		144	144	144		114	114	114
p <	.02	.35	.07		.21	.22	.36		.01	.05	.01		.63	.60	.90

5 Years Apart				6 Years Apart				7 Years Apart				8 Years Apart			
	Y-O IQ Difference				Y-O IQ Difference				Y-O IQ Difference				Y-O IQ Difference		
Ages	V	NV	T	Ages	V	NV	T	Ages	V	NV	T	Ages	V	NV	T
6-11	8.2	9.2	9.5	6-12	3.6	4.5	4.8	6-13	10.3	9.4	10.8	6-14	6.9	2.1	5.6
7-12	3.7	4.5	4.9	7-13	9.3	22.8	17.1	7-14	2.8	4.3	2.6	7-15	4.0	13.8	8.4
8-13	11.0	7.4	9.4	8-14	14.2	6.3	9.5	8-15	11.3	13.2	11.4	8-16	3.3	2.7	0.7
9-14	7.1	2.4	3.8	9-15	6.3	0.2	2.4	9-16	15.7	9.3	12.3				
10-15	0.1	9.3	2.3	10-16	7.5	3.5	5.5								
11-16	6.9	9.1	8.3												
Mean	6.58	6.76	6.45		8.30	7.64	7.97		10.29	9.52	9.75		4.74	5.27	4.34
F	0.39	0.08	0.25		0.05	2.73[d]	1.34[e]		1.53	0.12	0.24		0.29	0.00	0.27
df	90	90	90		55	55	55		55	55	55		17	17	17
p <	.53	.78	.62		.81	.10	.25		.22	.73	.63		.59	.99	.61

[a] Each value was weighted by N in obtaining the mean of the Y-O differences.

[b] F for linear trend only. Other trend components (quadratic, cubic, quartic), if significant beyond $p < .04$ are indicated in footnotes.

[c] Degrees of freedom for the denominator; the numerator always has df = 1.

[d] Cubic trend, $F = 6.85$, $p < .02$.

[e] Cubic trend, $F = 4.91$, $p < .03$.

sharp break in the trend. Over the range of 1 to 7 years apart, the regression coefficient of sibling IQ difference on age differences is 1.62 for verbal IQ, 1.19 for nonverbal IQ, and 1.42 for total IQ. That is to say, for every year's difference in age, over the age range from 6 to 16, verbal IQ decreases on the average 1.62 points per year, nonverbal IQ decreases 1.19 points per year, and total IQ decreases 1.42 points per year. This rate of decline could account for a total cumulative decrement of some 14 to 16 IQ points between the ages of 6 and 16 years.

The ages at which the gradual decrement in IQ begins and ends cannot be determined from the present data, which include only subjects ranging in age from 6 to 16 years. It would be important to know if Y-O sibling IQ differences persist beyond the age where the younger sib is 18. Since mental growth stabilizes at about age 18, one should expect from the cumulative deficit hypothesis that by age 18 the average deficit of the younger sib should become equal to that of the older, so that the younger-older sib IQ difference should disappear after age 18 or so. Information regarding this prediction would seem to be crucial for the viability of the cumulative deficit hypothesis.

The F ratios in Table 2 are a test of the linear trend in each column. The differences among the values in each column were also subjected to tests for quadratic, cubic, and quartic components. None of the linear trends is significant, with the exception of the siblings who are 3 years apart. They show a significantly decreasing IQ difference going from the younger to the older part of the age scale. This result is so markedly out of line with the results for 2 years apart and 4 years apart as to be regarded as anomalous and theoretically uninterpretable within the present set of data. No other trends in sibling IQ differences as a function of absolute age even approach significance.

(The significant cubic component for 6 years apart, noted in footnotes d and e of Table 2, can only be regarded as flukes within the overall context of these results.)

In general, the trend analysis indicates that the magnitude of the Y-O sibling IQ difference, for any given age difference, is not significantly a function of absolute ages of the siblings in the range of ages sampled in this analysis, viz. ages 6 to 16 years, with 1 to 8 years differences in siblings' ages.

Multiple Regression Analysis of Family Size, Age Spacing, and Birth Order Effects on IQ Decrement

Zajonc and Markus (1975) have presented evidence that IQ is related to family size, birth order, and spacing (i.e., age difference between siblings adjacent in birth order). To what extent is the IQ age decrement in blacks related to the above variables? And what proportion of the variance in Y-O sibling differences is associated with the racial classification (black vs. white) independently of the above variables?

To find out, multiple regression analyses were done. The dependent variable is every possible Y-O sibling difference (N = 1031) in IQ (verbal, nonverbal, and total IQ separately). The five independent variables are: (1) race (white or black), (2) sibling age difference (O-Y in months), (3) birth order, (1, 2, 3, etc.) of the younger sib, (4) Y-O difference in birth order, and (5) family size (1 to 5).

Stepwise regressions were done, with a predetermined order of entering the independent variables so that one can determine the independent contribution of the racial classification after the four other sources of variance

have all been accounted for. Table 3 shows the results in terms of the squared multiple correlation ($\underline{R}^2$), which is the cumulative proportion of the total variance in the Y-O sibling differences associated with each additional independent variable.

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Insert Table 3 about here

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Also shown is the simple correlation (zero order $\underline{r}$) between the Y-O sibling IQ differences and each of the independent variables.

The analyses in Table 3 indicate that the first four independent variables account for some 2 to 3 percent of the variance in Y-O sibling differences, which is significant beyond the .001 level. The race variable independently contributes an additional 2.1 percent of the variance of sibling differences on the verbal, nonverbal, and total IQ. For each test the independent contribution of race is significant beyond the .001 level. This fact clearly establishes the significance of the race difference in age decrement in IQ as indicated by the Y-O sibling difference.

Multiple Regression Analysis Within Racial Groups. To determine the contribution of each of the independent variables (except race) listed in Table 3 to the sibling differences within each racial group, stepwise multiple regression analyses were performed on the white and black samples separately. The results are shown in Table 4. None of the values of $\underline{R}^2$ is significant in the white sample. The fact that birth order and age difference jointly do not show a

Table 3: Multiple Regression Analysis with Y-O Sibling IQ Difference[a] as the Dependent Variable, (N = 1031) and Simple r Between Silbing Difference and Independent Variables.

Independent Variable[b]	Verbal IQ R^2	Verbal IQ r[c]	Nonverbal IQ R^2	Nonverbal IQ r[c]	Total IQ R^2	Total IQ r[c]
Family Size	.001	.040	.007**	.085	.005*	.071
Birth Order of Y Sib	.003	-.019	.008*	.021	.007*	-.013
Y-O Difference in Birth Order	.008*	.092	.017***	.124	.014**	.117
O-Y Age Difference	.035***	.181	.023***	.121	.028***	.155
Race	.056***	.131	.044***	.157	.049***	.146

[a] The overall mean Y-O sibling IQ difference is: Verbal IQ = 3.39, SD = 16.68; Nonverbal IQ = 3.79, SD = 20.12; Total IQ = 3.54, SD = 17.36.

[b] Variables listed in the forced order of entering the stepwise regression.

[c] With 1030 df, r greater than .026 is significant at the .05 level; r greater than .081 is significant at the .01 level.

*$p < .05$

**$p < .01$

***$p < .001$

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Insert Table 4 about here

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significant $\underline{R}^2$ means there is no evidence for an age decrement in IQ in the white sample.

In the black sample, however, both birth order and age difference each independently contributes a significant ($\underline{p} < .001$) increment to the variance of sibling IQ differences, for verbal, nonverbal, and total IQ. This fact clearly establishes a significant age decrement in IQ in the black sample.

Summary and Conclusions

These sibling comparisons for poor black children in rural Georgia clearly show a significant and substantial decrement in verbal and nonverbal IQ between kindergarten and Grade 12. The IQ decrement is a fairly linear function of age within this range. The phenomenon predicted by the cumulative deficit hypothesis is thus demonstrated at a high level of significance.

According to the cumulative deficit hypotheis, the age decrement in IQ is a result of the cumulative effects of environmental disadvangages in factors related to mental development. A counter hypothesis would be that there are genetic differences in the form of the mental growth curves of blacks and whites, with blacks having a more negatively accelerated growth curve, which would result in younger-older sibling differences in black IQ when the IQs are normed on a predominantly white sample.

The existing data do not permit a definitive rejection of one or the

Table 4: Multiple Regression Analysis with Y-O Sibling IQ Difference[a] as the Dependent Variable, and Simple r Between Sibling Difference and Independent Variable, Separately by Race

Independent Variable[b]	White (N = 349 Sib Pairs)						Black (N = 682 Sib Pairs)					
	Verbal IQ		Nonverbal IQ		Total IQ		Verbal IQ		Nonverbal IQ		Total IQ	
	R^2	r[c]	R^2	r[c]	R^2	r[c]	R^2	r[d]	R^2[d]	r[d]	R^2	r[d]
Family Size	.005	-.069	.001	-.027	.001	-.028	.001	.026	.004	.060	.002	.044
Birth Order of Y Sib	.014	-.119	.002	-.040	.013	-.108	.001	-.006	.004	.012	.033	-.008
Y-O Difference in Birth Order	.019	-.044	.003	-.024	.017	-.017	.018**	.124	.028***	.153	.022***	.140
O-Y Age Difference	.025	.073	.007	.050	.021	.061	.079***	.265	.039***	.181	.053***	.226

[a] The overall mean Y-O sibling IQ difference for whites is: Verbal IQ = 0.33, SD = 17.53; Nonverbal IQ = -0.64, SD = 20.27; Total IQ = -0.01, SD = 17.23. For blacks: Verbal IQ = 4.96, SD = 16.01; Nonverbal IQ = 6.05, SD = 19.68; Total IQ = 5.35, SD = 17.16.

[b] Variables listed in the forced order of entering the stepwise regression.

[c] With 300 df, r greater than .113 is significant beyond the .05 level; r greater than .148 is significant beyond the .01 level.

[d] With 700 df, r greater than .088 is significant beyond the .05 level; r greater than .115 is significant beyond the .01 level.

* $p < .05$.

** $p < .01$

*** $p < .001$

other of these alternative hypotheses. Moreover, these two hypotheses are not mutally exclusive; both genetic and environmental factors could be involved in the progressive decrement phenomenon. However, the present results on Georgia blacks, when viewed in connection with the contrasting results for California blacks, would seem to favor an environmental interpretation of the progressive IQ decrement. If the progressive IQ decrement were a genetic racial effect per se, it should have shown up in the California blacks as well as in the Georgia blacks, even if one granted that California blacks have a somewhat larger admixture of Caucasian ancestry than do blacks in Georgia (Reed, 1969). But the Georgia blacks showed a slight though significant decrement only in verbal IQ, which one might expect to be more susceptible to environmental or cultural effects than nonverbal IQ. The blacks of rural Georgia whose environmental disadvantages are markedly greater than in the California sample, show considerable decrements in both verbal and nonverbal IQ, but again the decrement is larger for verbal IQ. (Despite this fact, the verbal IQ still remains slightly higher than nonverbal IQ for the Georgia blacks.) Thus it appears that a cumulative deficit due to poor environment has contributed, at least in part, to the relatively low average IQ in the present sample of blacks in rural Georgia.

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Footnotes

[1]Requests for reprints should be sent to Arthur R. Jensen, Institute of Human Learning, University of California, Berkeley, California 94720.

[2]I am indebted to R. T. Osborne for securing these data.