Dysgenesis and IQ

What Evidence Is Relevant?

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W. M. Williams and S. J. Ceci (1997, this issue) argue against the presence of dysgenic trends for IQ in the United States on the basis of absence of change in the differences between various groups. It is noted here that such differences say little about dysgenesis: This is illustrated by an example of the numbers of children born to Black and White women at different educational levels. Some overall effects, mechanisms, and implications of dysgenesis for IQ are discussed.

Williams and Ceci (1997, this issue) set out to examine dysgenic trends in the United States:

> American students' test scores have been slowly but steadily declining for the past half century. Some recent explanations for this decline have focused on dysgenic trends resulting from low-IQ parents outbreeding high-IQ parents. . . . [We] examined the evidence for dysgenic trends by considering race-, class-, and ability-related changes in intelligence test scores over time. . . . [We] found no evidence supporting the dysgenic hypothesis. (p. 1226)

Dysgenesis refers to a downward shift in the level of a trait in a population due to the carriers of genes relatively unfavorable to the trait transmitting those genes more successfully to future generations than the carriers of genes relatively favorable to the trait. In the context of intelligence, which is where Williams and Ceci (1997), and most other recent writers, discuss it, dysgenesis refers to lower IQ individuals contributing relatively more heavily to the next generation than do higher IQ individuals, and thus producing a greater frequency of genes favoring low IQ in subsequent generations.

Dysgenic consequences may ensue either from low-IQ individuals having more children or from low-IQ individuals having the same number but having them earlier. For the present discussion, this distinction is not very important. (If one were proposing policy remedies it could, of course, matter a good deal.) Mostly, I discuss numbers of children, although it should be understood that both mechanisms are relevant.

One more very important and often misunderstood point is that the "gene" in *dysgenesis* is not crucial. So long as parents tend to have children like themselves—whether because of the genes they transmit to them, the examples they set for them, the prenatal care they provide them, or the habits they teach or fail to teach them—the consequences of unequal reproduction follow. Again, for policy recommendations it can make a difference which of these mechanisms is involved, but for the basic phenomenon it does not. Of course, one might well elect to use some term other than dysgenesis if the between-generational transmission was known to be entirely environmental, but low-IQ parents outreproducing high-IQ parents would reduce the population IQ mean across generations in any case. Only when genetic children are reared by other than their birth parents, as in adoptions, would the mechanism of transmission make a decisive difference.

In their article, Williams and Ceci (1997) talk a little bit about overall trends in intelligence, which are relevant to the issue of dysgenesis, but mostly they discuss trends in differences in intelligence (between races, between social classes, between high and low test scorers). These, at most, bear only tangentially on whether dysgenesis is or is not occurring in the U.S. population, as is discussed below.

On the issue of overall trends, the authors are equivocal. They begin their article with a claim that U.S. children are declining in academic performance relative to their peers in other countries. This is apparently not just intended as a hook to catch the reader's attention, as one of the authors has recently discussed this evidence in some detail elsewhere (Ceci, 1996). The authors end the article reporting on data from the Preliminary Scholastic Assessment Test (PSAT) that suggest either no trend up or down in U.S. intellectual performance over the last three decades or a slight increase. Oddly, nowhere in their article do they mention the so-called Flynn effect despite citing no less than eight articles from a forthcoming edited book on the topic (Neisser, in press) and quoting Flynn in other contexts. The Flynn effect represents a third outcome—a large upward trend in intelligence test performance in the United States and around the world during this century, as documented by New Zealand political scientist James R. Flynn (1984, 1987, 1996). In any case, as it stands, Williams and Ceci present ambiguous overall data relevant to the hypothesis of dysgenic trends and make no effort to resolve them.

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As noted, Williams and Ceci's (1997) main focus is on trends in differences in intelligence among various U.S. groups: Blacks and Whites, individuals of high and low socioeconomic status (SES), and high and low test scorers. The authors report interesting and informative data on these trends over the past few decades. For Black–White differences, they find a substantial decrease. For SES, they find a slight decrease. For high and low scorers, they find little change. These trends are interesting and informative with respect to one hypothesis raised by Herrnstein and Murray in *The Bell Curve: Intelligence and Class Structure in American Life* (1994), namely, that of divergence between the top and bottom ends of the distribution of cognitive skills in the United States. However, they have little or no bearing on the hypothesis of dysgenesis, also discussed by Herrnstein and Murray and in recent writings by Lynn (1996, in press).

To be relevant to dysgenesis, such trends must involve differential dysgenesis in the two groups involved. If, for example, the reproduction of U.S. Whites was characterized by a pattern of more births to high-IQ women, and U.S. Blacks by a pattern of more births to low-IQ women, then a dysgenesis hypothesis would indeed predict a divergence in IQ between the groups. But (as a matter of fact) reproduction in both of these groups shows a rather similar (and somewhat dysgenic) relationship to educational level, so that no change in the difference between the groups would be expected, just a downward drift in both. Herrnstein and Murray presented a graph (1994, p. 353) showing a very similar relationship for Blacks, Whites, and Latinos between the number of children ever born to women who were aged 35–44 in 1992 and their levels of educational attainment. The chief difference between groups is not how women at a given educational level behave reproductively, it is the number of women at different educational levels in the different groups.

Table 1 explores part of these data in more detail. The first two columns in the top section of the table show figures for U.S. White women, aged 35–44, from the 1992 Current Population Survey of the U.S. Census Bureau (Bachu, 1993). They show the number of women (in thousands) by highest level of educational attainment and the average number of children born to each. In the rightmost column in the table, these two numbers are simply multiplied to estimate the actual numbers of children born to mothers at each level of education.

The middle two columns represent average IQs, which I have rather loosely projected from Matarazzo's (1972) estimates of the typical IQs of persons at various educational levels. Herrnstein and Murray (1994, p. 152) reported that these correspond quite closely to the levels they observed in their data for Whites from the National Longitudinal Study of Youth (NLSY). The average IQs of children were derived from the mothers' IQs by

Table 1
Childbearing of White and Black U.S. Women Aged 35–44 of Various Educational Levels, and Estimate of Dysgenic Effect

Educational attainment	No. of women	Children of each	Average IQ of mothers	Average IQ of children	No. of children
			White women		
<HS graduate	1,810	2.621	85	96.4	4,744
HS graduate	5,947	1.963	105	106.4	11,674
Some college, no degree	3,235	1.842	110	108.9	5,959
Associate degree	1,433	1.797	110	108.9	2,575
Bachelors degree	2,829	1.657	115	111.4	4,688
Grad. or prof. degree	1,527	1.352	125	116.4	2,065
Average IQ			107.74	106.94	
Dysgenic effect				.80	
			Black women		
<HS graduate	433	2.760	75	85.1	1,195
HS graduate	899	2.174	95	95.1	1,954
Some college, no degree	537	2.394	100	97.6	1,286
Associate degree	164	2.071	100	97.6	340
Bachelors degree	280	1.814	105	100.1	508
Grad. or prof. degree	140	1.266	115	105.1	177
Average IQ			95.18	94.44	
Dysgenic effect				.75	

Note. HS = high school; grad. = graduate; prof. = professional. Numbers are in thousands. Numbers of women and children ever born per woman are data from the U.S. Bureau of the Census 1992 Current Population Reports (Bachu, 1993). Average IQs are rough estimates for illustrative purposes.

allowing for some regression to the mean. Fathers' genes matter, and fathers' IQs, although correlated with mothers', are by no mean perfectly so. The same is true of environmental factors affecting IQ. The amount of regression assumed is based on a mother–child correlation of .5. The median empirical values cited for this correlation in Bouchard and McGue's (1981) tabulation were around .4; these would be biased downward somewhat by the restriction of range in individual studies.

The numbers of children and their mean IQs imply the generational difference shown in the table: a dysgenic effect for Whites of about eight tenths of an IQ point per generation. Given that the Flynn effect is estimated as about 10 IQ points per generation upward for the United States, this may seem fairly small potatoes. But it is worse—the concern is with differential effects. How large might these be?

To illustrate, comparable figures for Black women are given in the bottom half of the table. The numbers of such women at each level of educational attainment and the numbers of children per mother are again data from the 1992 Current Population Survey, and they imply the numbers of children shown in the rightmost column. In presenting average IQs for the Black women, I've arbitrarily knocked 10 points off the White women's averages at every educational level. This is just for the sake of plausibility. Because we are dealing with relative figures, the estimate of dysgenesis would be exactly the same if I had left them all at the White women's values, or discounted them the 13 points suggested by the NLSY data (Herrnstein & Murray, 1994, p. 356). The rest of the calculations are carried out as for the White women, and the upshot is at the bottom of the table: a dysgenic effect of .75 of an IQ point per generation, essentially the same as for Whites—if anything, a shade less dysgenic, but well within the range of uncertainty involved in the assumptions. A moderate amount of dysgenesis, about the same in both groups, predicts little or no change over time in the difference between the groups—just a modest downward shift for both.

I do not want to claim that this exhausts the question of possible racial differences in dysgenic effects: Table 1 does not deal with possible group differences in the average age of reproduction, not all women in the age group 34–55 have completed their families (or their education, for that matter), Herrnstein and Murray (1994) reported some direct evidence of racial differentials in NLSY cross-generational data (p. 356), and so on. But I do want to claim that the likelihood of differential dysgenic effects having any perceptible impact on U.S. Black–White differences in achievement test performance in the two or three decades covered by Williams and Ceci's (1997) evidence is virtually nil.

If this is so for race, it would seem even more difficult to make a case for differential dysgenesis within groups of high and low SES or high and low test scores over a similar period. Dysgenesis occurs by means of effects at both ends of the scale—less and later reproduction at the top, more and earlier reproduction at the bottom. Restriction of range in the selected groups should attenuate both effects. One can invent scenarios in which this works out a bit differently at the high and low ends of the scale, but the probability of these creating a noticeable difference in the groups over a few decades seems remarkably slim.

In short, the likelihood of differential dysgenesis having any bearing at all on the trends in group differences that Williams and Ceci (1997) discuss is so slight, and their discussion of the overall trends is so cursory, that one wonders at their conclusion that "in sum, we found no compelling evidence supporting the hypothesis that a dysgenic trend is at work, undermining Americans' intellectual capital" (p. 1234). If you look where the evidence is not likely to be, should you say that there isn't any, because you did not find it?

Williams and Ceci (1997) apart, the question of the effect of dysgenics on IQ in the United States is a complicated one. According to Flynn (1984), overall IQs are rising. As we have seen, this rise (of perhaps 10 IQ points per generation) dwarfs any drop we might expect from current dysgenic reproductive patterns. Herrnstein and Murray (1994) compared dysgenesis to a headwind—there is progress in improving cognitive performance, but there would be even more progress without this headwind. A slightly more alarming nautical metaphor (Loehlin, in press) would be leaky boats on a rising tide. Their net progress is upward for a while, but then they sink and the rising tide doesn't help any more. This may come a bit closer to Lynn's view. I think that the headwind metaphor captures the IQ situation better than the leaky boats metaphor does, but one cannot be absolutely sure.

Fortunately, the phenomenon works slowly. There should be time to learn much more about dysgenic effects and their mechanisms before it is time to worry about policy recommendations. In planning research, one should keep in mind that the dysgenic effect of reproductive patterns can involve anything that makes children resemble their parents, not just the genes. For IQ, the genes are probably the most important single factor, but genes never work in an environmental vacuum. It is perfectly possible that eventual policy recommendations would primarily involve the manipulation of the social environmental variables favored by Williams and Ceci (1997). However, given the relative rates of advances in genetics and sociology these days, this can hardly be a confident prediction.

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