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Abstract

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Full-Text

Genetics and IQ*

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SUMMARY: This article reviews a few of the issues surrounding the claim that IQ is genetically determined and shows how the IQ test was created, and continues to be used in some quarters, more as a tool of oppression than as a measure of 'intelligence'.

KEY WORDS: Intelligence, genetics, twin studies

In effect, then, Galton's aim, and that of his followers, became simply an attempt to reproduce an existing set of ranks (social class) in another, the test scores, and pretend that the latter is a measure of something else. This is, and remains, the fundamental strategy of the intelligence-testing movement.

Psychologist Ken Richardson (2000)

IQ tests were used by eugenicists and behaviour geneticists to demonstrate that 'intelligence' is determined largely through inheritance. Historically, IQ studies of twins and adoptees have been a central preoccupation of these fields. The issues of racial and class differences in IQ have been the subject of intense controversy for almost 100 years. Eugenically oriented psychologists' use (and creation) of IQ tests to be able to proclaim a 'scientific' basis for racism has been documented in several books, which include Gould's *The Mismeasure of Man* (1981), Kamin's *The Science and Politics of IQ* (1974), Chase's *The Legacy of Malthus* (1980), Tucker's *The Science and Politics of Racial Research* (1994), and Guthrie's *Even the Rat was White* (1976). Eugenic sterilization laws in the United States, Germany, Scandinavia and elsewhere targeted 'mental defectives'

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and the 'feble-minded.' A low IQ score for a German child in the late 1930s was sometimes a death sentence (Aly, 1994).

The claim that standardized IQ tests such as the Stanford-Binet and Wechsler scales measure innate intelligence (or general intelligence, represented as *g*) has been the subject of heated debate. I will list some of the most frequent objections to this claim (some of which have also been identified – though argued against – by Jensen (1980)):

- The psychometric emphasis on differences in abilities is only one of many approaches to the study of human intelligence.
- General intelligence is merely the product of a mathematical formula. It has no physical reality.
- There is no consensus definition of what 'intelligence' is.
- The tests measure school learning more than innate intelligence.
- IQ tests are biased against non-Caucasians and people of lower economic classes.
- The tests measure only narrow abilities, and ignore 'real world' intelligence.
- Standardized IQ tests have been normed on non-representative populations.
- Intelligence is not normally distributed (in a bell curve), as psychometrists assume.

A large body of literature has been devoted to the 'heritability of IQ' topic, with estimates ranging from 0% to 90%. Heritability estimates are not appropriate for estimating the magnitude of genetic influences on a trait, and this is particularly true for IQ. Thus, even the notion of 'the heritability of IQ' is invalid. Of course, one might legitimately ask whether (or how much) genes influence intelligence. This question, however, cannot be answered with a heritability coefficient.

The psychometric approach to human intelligence

As an American Psychological Association task force acknowledged in 1996, 'The psychometric approach [to cognitive ability] is the oldest and best established, but others also have much to contribute' (Neisser et al., p.80). It is self-evident that 'oldest and best established' does not equal 'most useful and valid.' One of the best critiques of the psychometric view of intelligence is found in Fischer and colleagues' 1996 *Inequality by Design*. The authors point out that the psychometric approach is only one of several ways that human intelligence can be looked at.

Another approach is information processing, which seeks to understand the way that *all* humans learn and process information. Psychometrics, on the other hand, is concerned with *differences* among people. Fischer and colleagues argued that psychometric IQ tests 'are refined to magnify differences' and that the famous bell-shaped curve is an invention of psychometrists who *assume* that intelligence is normally distributed (Fischer et al., 1996). In fact, the test data collected by Herrnstein and Murray for *The Bell Curve* did not resemble a bell curve at all! It was only after a 'good deal of statistical mashing and stretching,' (as Fischer et al. put it), that Herrnstein and Murray were able to create a bell-shaped distribution (Fischer et al., 1996, p.32). The Gaussian or bell-shaped curve, as Julian Simon observed, 'is seldom if ever observed in nature,' rather, it is the 'result of scientists gradually isolating and factoring out the large elements in any situation' (Simon, 1997, p.203). Even human height distribution, as Simon noted, is 'skewed toward little things like babies' (Simon, 1997, p.204).

Lewontin, Rose, and Kamin (1984) described the 'grand illusion of psychometry' in which scales are refined to produce desired results. The scale chosen 'depends on whether one wants to make differences of scale appear large or small, and these decisions are those that psychometry arbitrarily makes' (Lewontin et al., 1984, p.92). A classic example is a line graph. These days, people with retirement plans frequently log onto the Internet to check the day's stock market activity. A graph may give the initial impression that the market has fluctuated widely all day. That is, until the viewer notices that the range of the graph is only 50 points. The same events captured on a graph with a range of 1000 points would elicit a much different initial reaction from the viewer. I have in front of me a psychological assessment textbook by authors who support the psychometric position. Similar to the example I just gave, the authors present two graphs giving 'vastly different' impressions of the same data, under the title 'Consumer (of graphed data) Beware' (Cohen et al., 1992). Yet, one cannot truly say which scale is more appropriate. Psychometric scales create the impression of large differences between people and groups, whereas other scales (based on the same data) would show that humans have a great deal in common. The consumer of psychometric data, therefore, should be aware of its tendency to create the appearance of large differences.

Frequently cited evidence in support of the genetic

Genetic theories of IQ are based largely on the results of kinship correlations, which include family, twin, and adoption studies. These methods are flawed instruments for detecting genetic influences on psychological traits. On the other hand, factors that definitely invalidate genetic conclusions for psychiatric

disorders and behaviour are not as relevant when discussing abilities, cognitive or otherwise. For example, the identity confusion of identical twins would be much more likely to affect schizophrenia concordance rates than it would the distance twins could throw a javelin. Although in both cases important environmental similarities exist, the blurring of psychological boundaries would not be a major factor influencing javelin throwing, as it would a schizophrenia diagnosis.

Twin studies

Behaviour geneticists generally put the reared-apart identical twin (MZA) IQ correlation (omitting Burt's figures) at about .77. There are many reasons why these figures have little meaning. For reared-together twins, in 1981 Bouchard and McGue pooled the world literature and came up with an identical twin rate of .86, and a fraternal rate of .60. However, these figures are certainly inflated by the inclusion of many poorly performed and biased studies, as well as the problems found in meta-analyses in general. (For problems in meta-analytic research, see Begg, 1994; Joseph and Baldwin, 2000; Rosenthal, 1979; Simes, 1987). Still, like other traits, both environmentalists and hereditarians would expect to find a higher identical twin correlation which leads us back to the questions of the methods and assumptions of twin research in general.

Adoption studies

IQ adoption studies report two seemingly contradictory findings: although the IQs of adopted-away children tend to correlate more with their biological parents than with their adoptive parents, the typical IQ point rise for children of working class biological parents who are reared in middle- or upper-class adoptive homes is 12–14 points. In general, hereditarian interpreters of adoption studies focus on the IQ correlation of adoptees and their biological parents, while environmentalists emphasize the large gains made by working-class children adopted into middle-class families. There is reason to believe, however, that the correlations are an artefact of sampling, while the IQ score gain is the statistic of value.

In his 1981 debate with hereditarian Hans Eysenck in *The Intelligence Controversy* (published in the UK as *Intelligence: The Battle for the Mind*), Kamin discussed the 'restrictive variance' of adoptive families who are similar in socio-economic status and have been screened by adoption agencies. This means that most adoptive parents were above average in IQ and provided above-average environments. Thus, the 'necessary statistical consequence' of the restricted environmental variance of the adoptive families means that 'child IQ correlation in adoptive families cannot be very high' (Kamin, in Eysenck vs. Kamin, 1981, p.117). Kamin used boxing as an analogy. He pointed out that, if weight classifications

were not used, high correlations would be observed between boxers' weights and their won–loss records. 'To avoid such a correlation,' wrote Kamin,

definite weight divisions have been established by boxing authorities. Fights can only take place between boxers of reasonably similar weight, and the correlation between weight and boxing success is consequently very low. We are suggesting that in terms of the environments provided for their children almost all adoptive parents – unlike biological parents – are in the heavyweight division. That would account for the lower parent-child IQ correlation observed in adoptive families. The correlation would presumably be much higher if parents who would provide poor environments wanted to, and were allowed to, adopt more often. (Eysenck vs. Kamin, 1981, p.117)

Thus, one could erroneously conclude that the lack of a correlation between boxers' win–loss records and their weights means that increased weight would not improve a boxer's chance of winning, even if weight divisions were abolished. A recent article also pointed to the problems presented by range restriction in adoption studies (Stoolmiller, 1999).

Another aspect of the question of correlation versus mean difference in IQ adoption studies is that, as Schiff and Lewontin demonstrated, 'adopted children, even though they may correlate *individually* with their biological parents more than with their adoptive parents, are, in fact, more similar as *a group* to the adoptive parents than to their biological ones' (Schiff and Lewontin, 1986, p.179). Schiff and Lewontin presented a table of hypothetical IQ data to illustrate their point. The data showed that adoptees' IQs were perfectly correlated with those of their biological parents, and there was no correlation between adoptees and their adoptive parents. Yet, adoptees *as a group* had the same mean IQ as the group of adoptive parents, and differed from their biological parents' mean IQ by seven points. In assessing the meaning of these figures, we must keep in mind that correlation does not measure similarity, but only how traits vary together.

Recent IQ adoption investigations include a study carried out in France, and the Colorado Adoption Project (CAP), performed by leading behaviour geneticists. The French study of Schiff and colleagues found 32 adoptees separated near birth from their parent (who was an unskilled worker), and reared in the homes of families in the top 13% of the socio-professional scale. The IQs of these adoptees were compared to the scores of 20 biological half-sibling controls, who were reared in the homes of their lower-class parents. The investigators found that adoptees' IQ scores averaged 14 points higher than the control group, suggesting that being reared in a professional family as opposed to a family of unskilled workers could raise one's IQ almost one full standard deviation (Schiff et al., 1982).

The Colorado Adoption Project is an ongoing longitudinal adoption study that began in 1974, when the adoptees were infants. This study's design is far superior to the relatively crude schizophrenia adoption studies. In sharp contrast to genetic expectations, the investigators found no personality scale correlation between birth mothers and their 245 adopted-away biological offspring. The study created a control group of non-adopted children matched on several factors. For IQ, Plomin and colleagues concluded that genetic factors are important and that 'environmental factors correlated with parents' general cognitive ability have little effect on children's cognitive ability' (Plomin et al., 1997). However, their conclusions were based on correlations, not mean differences. It is not likely that the CAP biological and adoptive parent IQ scores would be dramatically different, since the socioeconomic status of both adoptive and biological parents were similar. As a commentator noted, 'There is an enormous degree of range restriction' in the CAP adoptive homes (Stoolmiller, 1999, p.395).

These problems, along with selective placement and researcher bias, cast doubt on the claim that family, twin, and adoption studies provide important information about possible genetic influence on intelligence as measured by IQ tests. More importantly, there is no standard definition of intelligence (which is what the tests purport to measure), and there are many reasons to reject the claim that 'intelligence' can be measured with IQ tests. Yet, several studies have shown that a superior environment can raise scores almost one standard deviation .

IQ and group differences

The claim that IQ score differences demonstrate the genetic inferiority of particular races and classes is almost as old as the tests themselves. In the 1910s and 1920s the view that races and classes differed in intelligence was axiomatic in American psychology. Jensen's 1969 article in the *Harvard Educational Review* began the modern revival of this position, which was continued by Herrnstein and Murray's incendiary *The Bell Curve*, published in 1994. These authors' arguments have been decisively refuted by numerous commentators (including Block and Dworkin, 1976; Ceci, 1996; Chase, 1980; Devlin et al., 1997; Fischer et al., 1996; Fish, 2002; Fraser, 1995; Gould, 1981; Jacoby and Glauber, 1995; Kamin, 1974; Lewontin et al., 1984). An argument put forward by a majority of the critics is that, while supposedly all sides acknowledge that American blacks score 12–15 points lower than American whites on standardized IQ tests, the difference is explainable by environmental factors such as poverty and racism. Although this argument is solid even if we accept that IQ tests are unbiased and actually measure intelligence, there is good reason not to accept this position.

Racial and class bias built into IQ tests

Intelligence testing has a long history of being used for reactionary social and political purposes. The testing method developed by Alfred Binet in France was brought to the United States and developed by eugenicists such as Lewis Terman for the purpose of quantifying what they saw as people's innate mental capacities. Indeed, in 1924 Terman would write that his fellow psychologists and their IQ tests were 'the beacon light of the eugenics movement' (Samelson, 1979, p.105).

The historical association of IQ testing with eugenics and racism, as described by several authors, does not mean that all of the early pioneers of mental testing were driven by these motivations or that most contemporary mental testing is performed for this purpose. Still, modern proponents of racial and class inferiority continue to use the results of genetic studies of IQ in support of their positions. It therefore becomes necessary to demonstrate that one of the original *purposes* of IQ tests was to prove that blacks and other minorities, southern European immigrants and Jews, and the working class were genetically inferior to upper-class whites of Northern European descent.

Related to this point, it is critically important to understand that IQ tests can produce any result their creator desires. For those who doubt this, I call on the most well-known American defender of IQ testing, Arthur Jensen. 'It is claimed,' wrote Jensen, 'that the psychometrist can make up a test that will yield any kind of score distribution he pleases. This is roughly true, but some types of distributions are much easier to obtain than others' (Jensen, 1980, p.71). Although Jensen is a leading proponent of the idea that racial differences in IQ scores are at least partly explained by genetics, he tacitly admits that psychometrists *could* create tests in which blacks and whites scored equally. Interestingly, most *choose* not to.

For the American pioneers of mental testing there was no doubt that blacks and the working class were genetically inferior to upper-class whites. In Terman's 1916 Stanford-Binet manual, he wrote that 'dullness' among blacks and latinos 'seems to be racial, or at least inherent in the family stocks from which they come' (p.91). Although Terman suggested that research was needed, he believed that 'when this is done there will be discovered enormously significant racial differences in general intelligence, differences which cannot be wiped out by any scheme of mental culture' (Terman, 1916, p.92). Psychologist Carl Brigham wrote in his influential 1923 book *A Study of American Intelligence*, which discussed the large scale testing of World War I army recruits, that 'These army data constitute the first really significant contribution to the study of race differences in mental traits. They give us a scientific basis for our conclusions' (Brigham, 1923, p.xx). This passage is illuminating, since Brigham admitted that he and his colleagues reached conclusions about racial differences before the 'scientific' evidence had

come in. Lacking a scientific basis, Brigham, who viewed ‘the importation of the negro’ as the ‘most sinister development in the history of this continent’ (ibid, p.xxi) was actually describing *prejudices*, not conclusions. Brigham wrote that ‘Our own data from the army tests indicate clearly the intellectual superiority of the Nordic race group’ (1923, p.207). Another pioneer of mental testing, Henry H. Goddard, lectured Princeton students in 1919 as follows:

Now the fact is, that a workman may have a ten year intelligence while you have a twenty. To demand for him such a home as you enjoy is as absurd as it would be to insist that every laborer should receive a graduate fellowship. How can there be such a thing as social equality with this wide range of mental capacity? (Quoted in Kamin, 1974).

My purpose is to document the beliefs of the people who created the tests. The results of their tests merely confirmed – and were a product of – their pre-existing views on racial and class inequality.

When psychometrists *do* assume equality, they simply create tests to reflect this assumption. Items on standardized IQ tests do not fall from the sky; they are carefully selected (out of a large pool of potential items) to produce results desired by the test creator. In Terman and Merrill’s 1937 revision of the Stanford-Binet test, the authors wrote that ‘A few tests in the trial batteries which yielded largest sex differences were early eliminated as probably unfair’ (p.34). Because they assumed that males and females are equal in intelligence, Terman and Merrill created a test whose results reflected this assumption. Apparently, for Terman and Merrill it was not at all ‘unfair’ if races and classes scored differently, or if people reached conclusions about genetic inferiority on the basis of their scores.

David Wechsler, who developed the most widely used IQ test, followed Terman in eliminating sex differences from his scales, although he had a “sneaking suspicion” that the female of the species is . . . more intelligent than the male’ (Wechsler, 1944, p.107). Wechsler described the problem of sex differences as follows:

In trying to arrive at an answer as to whether there are sex differences in intelligence much depends upon how one defines intelligence, and on the practical side, on the types of tests one uses in measuring it. The contemporary approach, contrary to the historical point of view, adopts a sort of null hypothesis. Unfortunately this procedure turns out to be a circular affair since the nature of the tests selected can prejudice or determine in advance what the findings will be. (Ibid, p.144)

As Wechsler acknowledged, the 'null hypothesis' for male–female differences in intelligence was that the sexes are equal. Like his predecessors, however, another implicit assumption of his tests was that *races and classes* are unequal (Wechsler, 1958). This reflects nothing more than the beliefs and prejudices of the test creators and their backers. According to Jensen, 'The practice of eliminating and counterbalancing items to minimize sex differences is based on the assumption that the sexes do not really differ in general intelligence' (Jensen, 1980, p.623). What Jensen failed to articulate is the assumption upon which racial and class differences are allowed to remain, which could be stated, '*The failure to remove and counterbalance items in order to eliminate racial and class differences is based on the assumption that races and classes really do differ in general intelligence.*' As Ken Richardson observed,

While 'preferring' to see sex differences as undesirable artefacts of test composition, other differences between groups or individuals, such as different social classes or, at various times, different 'races,' are seen as ones 'truly' existing in nature. Yet these too could be eliminated or exaggerated by exactly the same process of assumption and manipulation of test composition. (Richardson, 1998, p.114)

In other words, the belief that races and classes are genetically inferior is built into most standardized IQ tests (Mensch and Mensch, 1991). It is not simply a matter of whether individual test items are culturally biased; more important is the fact that psychometrists know that individual test items, regardless of how culturally biased they may appear, discriminate between various groups. As IQ critics Mensch and Mensch observed, 'there is no distinction between crassly biased IQ test items and those that appear to be non-biased' (ibid, p.51).

The fact that the sexes, but not races and classes, were assumed equal in 'native intelligence' reveals the racial and class bias of the tests. On what grounds, we might ask, did people like Terman and Wechsler anoint women with the same level of native intelligence as men? After all, during the time when they were creating their tests most women were apparently so innately deficient that they rarely worked outside of the home. Almost all of the captains of industry and most professionals, including college professors and psychologists, were men, as were most of history's great leaders, thinkers, poets, military commanders, and inventors. In fact, the innate cognitive impairment of women was so widely recognized that they were not given the right to vote in the United States until 1918! (Undoubtedly, granting this right was a demonstration of the male cognitive elite's goodwill.) By now the reader has realized that I have slipped into facetiousness – but only to make a point. Using the standards applied for

determining the relative worth and intelligence of races and classes, women should have been viewed by Terman, Goddard, Brigham and others as being innately inferior to men. But white upper-class women had two characteristics that set them apart from non-white races and the working class: they were of the same race and class as those for whom the tests were designed to find 'scientifically' superior! Could the test creators actually decide that their own mothers, wives, and daughters were hereditarily inferior? The pioneers of mental testing decided to create cognitive equality between men and women in order to eliminate a distraction from what they really wanted to show – that with regards to measured intelligence, blacks were inferior to whites, Southern Europeans and Jews were inferior to Northern Europeans, and the working class was inferior to the capitalist class.

I recall an undergraduate university lecture by a political science professor who, I later learned, was very interested in the question of racial differences in intelligence. He said that some people argued that blacks score lower than whites on IQ tests because they are treated as inferiors and are told they are stupid. As an answer to this position, he pointed out that women historically have received a similar message yet they score the same as men on standardized IQ tests. The implication, of course, was that a person's or group's position in society is not reflected by lower IQ scores. My professor either had no idea about how IQ tests are constructed, or he was consciously deceiving his students. Had I known anything about the subject in those years I would have answered that women score about the same as men because the tests are *designed* to produce this result, and that blacks score lower than whites for precisely the same reason.

Even if IQ tests were a valid measure of 'intelligence,' separate norms for groups experiencing vastly different social environments (such as blacks and whites in the Jim Crow South) could have been created. This was acknowledged by Wechsler in 1944, although he claimed that it was not 'possible to do this at present' (Wechsler, 1944, p.107). In fact, it was quite possible to create separate norms but it was undesirable from the standpoint of those who wanted to use the tests to provide scientific evidence for racial inequality. Had Wechsler decided to create separate norm groups he would have undermined one of the original purposes of American IQ tests, which was – literally – to demonstrate the genetic superiority of 'the Nordic race group.' That aspects of this 'original purpose' lives on is shown by the fact that contemporary IQ tests are seen as valid if they correlate well with the original Stanford-Binet. To his credit, Wechsler found it necessary to state that 'our norms cannot be used for the colored population of the United States' (ibid. p.107). Naturally, this did not prevent subsequent commentators from citing racial differences in Wechsler IQ scores as evidence of black people's genetic inferiority.

From the standpoint of the economically powerful classes, IQ tests helped justify the inequalities of capitalism. They could argue, as Goddard argued, that genetic differences between classes precluded the egalitarian society advocated by socialists. This position is embraced by most contemporary IQ hereditarians. 'The tests,' wrote Mensh and Mensh in *The IQ Mythology*, 'do what their construction dictates; they correlate a group's mental worth with its place in the social hierarchy' (Mensh and Mensh, 1991, p.30).

In response to Jensen's claim that the tests were not designed to discriminate between social groups, Mensh and Mensh responded, 'In reality – which is precisely the opposite of what Jensen claims it to be – test discrimination among individuals *within* any group is the incidental by-product of tests constructed to discriminate *between* groups' (ibid, p.73). This position requires qualification. The eugenics movement, which played a major role in promoting IQ testing, was interested in individual as well as group differences. Even among the American white population, the 'chronic pauper stocks' (such as the 'Jukes' and the 'Kallikaks') were targeted for eugenic intervention. Generally speaking, and allowing for considerable overlap, eugenicists supported IQ tests as an instrument for identifying individuals who should be prevented from reproducing; the ruling elite wanted to scientifically legitimize the class-stratified society it had created; racists and segregationists saw IQ tests as evidence supporting their causes; and psychologists such as Terman, Brigham, Goddard, and others wanted all of these things. And all the while the interests of the poor, blacks, immigrants, native Americans, and the working class were ignored. After all, they were powerless.

This is not to deny that others (then and now) use IQ tests for more benign purposes. Yet it is important to understand why the tests were created and how present-day tests are based on many of the assumptions of the original Stanford-Binet, published in 1916. In this respect there are parallels between twin research and the American brand of IQ testing. Both were used (some might say invented) in order to identify people in need of eugenic intervention, which sometimes included compulsory sterilization or worse. Yet in spite of contemporary society's rejection of the eugenic program, IQ testing and twin research remain with us.

The fate of castelike minorities

An international perspective is often helpful in demystifying narrow national debates. Anthropologist John Ogbu has documented the fate of castelike minority groups such as the Maoris in New Zealand and the Burakumin of Japan (Ogbu, 1978). He believed that the lower performance of minority children is the result of their status as members of a group relegated to the bottom of society, such as the case with blacks in the United States.

Expanding on this point, Fischer and colleagues documented the position of these and other groups. These include whites and aborigines in Australia, high caste and low caste in India, Jews and Arabs in Israel, English and Irish in Great Britain, and French and Flemish in Belgium. In each of these cases the latter group scores lower on standardized IQ tests. Another example is South Africa between 1950 and 1990, where Afrikaaners (Dutch origin) scored from one half to a full standard deviation lower on IQ tests than people of English descent. By the 1970s, however, the gap had disappeared: 'The convergence of Afrikaaner and English scores coincides with the rise of Afrikaaners to power in South Africa after generations of subordination to the English' (Fischer et al., 1996, p.193). Fischer and colleagues' thesis reads as follows: 'A racial or ethnic group's position in society determines its measured intelligence rather than vice versa' (ibid, p.173).

Another example discussed by Fischer and associates are Koreans in Japan, who occupy a position in Japanese society analogous to blacks in the United States or Carribeans in the UK. They also score lower than members of the dominant culture on IQ tests:

Koreans, who are of the same 'racial' stock as Japanese and who in the United States do about as well academically as Americans of Japanese origin (that is, above average), are distinctly 'dumb' in Japan. The explanation cannot be racial, nor even cultural in any simple way. The explanation is that Koreans, whose nation was a colony of Japan for about a half century, have formed a lower-caste group in Japan. (ibid, p.172)

Clearly, the United States is not the only country in which lower-caste groups score lower on standardized IQ tests.

Conclusion

The claims of behaviour geneticists and others in support of important genetic influences on intelligence derive from their acceptance of many implausible assumptions. Several critics, such as Taylor (1980) and Richardson (1998), have listed some of these assumptions. If we include the false assumptions underlying behaviour genetic methods such as twin and adoption studies, the case for important genetic influences on intelligence collapses completely. As Richardson commented,

I think it can be safely said that never before in any field of science have so many arbitrary assumptions been gathered together, *in full knowledge of their invalidity*, as the basis of substantive claims about the nature of people, with so many potentially dire consequences for them. (Richardson, 1998, p.135)

Given the racial and class bias *built into* the most widely used IQ tests, claims by the authors of *The Bell Curve* and others about the innate cognitive inferiority of ethnic minorities and the working class are preposterous, to say the least. ‘Nothing,’ wrote Lewontin, Rose and Kamin (1984, p.100) ‘demonstrates more clearly how scientific methodology and conclusions are shaped to fit ideological ends than the sorry story of the heritability of IQ.’

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