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Race differences in IQ: Hans Eysenck's contribution to the debate in the light of subsequent research

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ABSTRACT

Hans Eysenck was one of the earliest protagonists in the controversy over race and intelligence. He believed that the observed variability in IQ scores is genetically determined to a high degree (80% heritability) and that, in consequence, the Black–White IQ gap in the US is due predominantly to genetic factors. Subsequent investigations have confirmed that IQ is indeed heritable, though at a level substantially below 80%, and a deeper understanding of population genetics has shown that race differences in IQ could be determined entirely by environmental factors even if its heritability were as high as Eysenck believed it to be. Several lines of research, notably racial admixture studies, racial crossing studies involving interracial parenting or adoption, and especially investigations using more recent techniques of molecular genetics, have provided evidence suggesting that the Black–White IQ gap is not determined significantly by genetic factors.

Keywords: Black–White IQ gap; Genetics; Genome-wide association study; Heritability; H. J. Eysenck; Intelligence; Racial admixture; Racial crossing

1. Introduction

To many people, Hans Eysenck's name is principally associated with certain claims that he first published in 1971 about the heritability of intelligence and race differences in IQ scores. This article will begin with personal reminiscences and impressions of Eysenck the man, and it will then review and comment critically on his views on race and intelligence in the light of what we now know. Although there are aspects of IQ, heritability, and race differences that remain obscure, much has been learnt since the 1970s, and I believe that Eysenck's interpretation of these issues is hardly tenable today.

I met Eysenck for the first time in 1970, soon after arriving in the UK as an immigrant from South Africa. I was 26 years old and had managed to secure a lectureship at the University of Leicester in the English Midlands. The psychiatrist Griffith Edwards, a distinguished authority on alcohol and drug addiction, introduced me to Eysenck. Edwards had visited South Africa in 1966, where I met him at the home of my maternal uncle Harold Cooper, a consultant psychiatrist in Cape Town. I was intrigued to learn that Edwards worked at the Institute of Psychiatry in London, because I knew that Eysenck was based there. I had read many of Eysenck's journal articles and most of his early books, starting with *Sense and Nonsense in Psychology*, a book that I stumbled on while I was at school and that played a major part in my decision to study psychology at university. It turned out that Edwards knew Eysenck quite well, and he offered to introduce me to him if I ever found myself in London. As soon as I arrived in 1970, I got in touch with Edwards, and he made arrangements for me to visit the Institute in south London, where I had lunch with Eysenck and Mike Berger,

another young South African psychologist working there who went on to become a Professor of Psychology at Royal Holloway, University of London.

Although Eysenck was more than twice my age and already the most prominent psychologist in Europe—indeed, one of the most prominent in the world—and among the most highly cited researchers across all the social and behavioural sciences (Garfield, 1978; Rushton, 2001), he was polite and friendly, and he interacted with me without any trace of condescension. I found him much more down-to-earth and easy to talk to than I had expected. His surprisingly marked German accent seemed to add gravitas to everything he said. His most striking personal characteristic was the sureness of his opinions on all issues. I found his self-confidence inspiring and reassuring, but in retrospect, for reasons that will become clear, I believe that he was overconfident, at least on some topics. He was obviously highly intelligent and widely read, with many aesthetic preferences and tastes that I shared, and I warmed to him immediately. At that initial meeting, I even felt relaxed enough to raise the issue of the South African-born psychologist Arnold Lazarus, a relative of mine then working at Yale University who had recently been ejected from the editorial board of Eysenck's journal, *Behaviour Research and Therapy*, in spite of being one of the founders of behaviour therapy and the person who had introduced the term into the scientific literature (Lazarus, 1958). Without hesitation or the slightest hint of embarrassment, Eysenck replied that Lazarus was in the process of developing an entirely different approach (later to be called *multimodal therapy*), that he no longer subscribed to the mission statement of the journal, and that he ought really to have resigned without having to be asked.

One topic that did not come up during our first meeting was the debate over race and intelligence. The US psychologist Arthur Jensen (1969) had recently published an article partly on the subject, propounding a hereditarian interpretation. It had stirred up a hornet's nest of controversy, and I was in the process of writing a critical response to it. What I did not know was that Eysenck was simultaneously writing a book, *Race, Intelligence and Education* (Eysenck, 1971), defending Jensen's position. Jensen turned out to be a close friend of Eysenck's who had worked as a postdoctoral researcher at the Institute of Psychiatry in the 1950s. Eysenck's book presented the hereditarian interpretation in a more accessible and polemical style than Jensen's rather technical article. When my own article eventually appeared (Colman, 1972), it incorporated a critique of Eysenck's recently published book. He revisited the topic in later publications (Eysenck, 1991; Eysenck & Kamin 1981), and I updated and expanded my counter-arguments (Colman 1987, 1990).

Eysenck's characteristically well-written and persuasive book was published a few months after our first meeting. As soon as it appeared, Peter Broadhurst, the Head of the Psychology Department at the University of Birmingham, invited me to participate in a public debate with Eysenck. The debate took place at the university on 28 January 1972, preceded by a lunch at which Eysenck chatted openly and disarmingly about professional and personal matters, addressing his comments not only to his old friend and colleague Peter Broadhurst, but also to me and the two other academics with whom he was shortly to cross swords in debate, the Jamaican-born sociologist Stuart Hall and the geneticist David Jones, neither of whom he had met before. What was remarkable, in the circumstances, was his candour and openness—further evidence, I believe, of his self-confidence. I recall him mentioning that his son Michael, who had graduated with a degree in psychology several years earlier and had begun lecturing at Birkbeck College, had still not completed his PhD. "What can I do?" he asked us in despair. (Michael Eysenck completed his PhD soon after and went on to become a very successful research psychologist in his own right.)

In the debate itself, Eysenck presented his hereditarian point of view quietly, forcefully, and plausibly, while we three adversaries flailed about ineffectually, trying to refute his arguments. That was when I discovered that Eysenck was not only the most

engaging writer in psychology but also the most brilliant public speaker. It is fair to say that he won the debate hands down. The rest of us had brought voluminous notes with us, but Eysenck spoke from a handful of bullet points scribbled on a tiny scrap of paper—I could see, because I was sitting right next to him. He brushed our criticisms aside politely but firmly, quoting published and unpublished sources and research findings from memory, using arguments that seemed scientific and irrefutable. Nevertheless, I believed at the time that he was wrong, and having followed with interest subsequent scientific developments in the field, I have even stronger grounds for believing that now. At the risk of appearing to serve out the tennis match after the opponent has left the court, I shall try to explain how the hereditarian interpretation gradually collapsed under the weight of accumulating evidence and a deepening understanding of behaviour genetics, although a few researchers with entrenched hereditarian views continued to believe it (e.g., Lynn, 2006; Rushton & Jensen, 2005, 2006).

2. Eysenck's arguments and evidence

Black Americans score about 15 points (one standard deviation) lower, on average, than White Americans on cognitive ability or IQ tests (Cottrell, Newman, & Roisman, 2015; Neisser et al., 1996; Roth, Bevier, Bobko, Switzer, & Tyler, 2001), although this *Black–White IQ gap*, as it has come to be called, may be narrowing slightly since Eysenck wrote his book (Dickens & Flynn, 2006; Mackintosh, 2011; Nisbett, 2005; Nisbett et al. 2012). In interpreting the Black–White IQ gap, Eysenck (1971) followed Jensen's (1969) arguments quite closely, and his later writings on the subject (Eysenck, 1973; Eysenck & Kamin 1981) added no significant additions or modifications. In the paragraphs that follow, I discuss his arguments, quoting from his original book; I comment critically on them, drawing freely from my previous published evaluations (Colman, 1972, 1987, 1990); and I summarize some important evidence that has come to light more recently.

2.1. Disclaimers

Eysenck (1971, p. 8) began with a plea for scientific evidence over dogma: “I can only draw attention to what has been done, and warn against over-interpreting data that admit of different ways of looking at their implications.” He added that this approach: “is not likely to appeal to those who feel they already know the truth. The problems associated with race are difficult enough when viewed calmly and from the scientific point of view; they become completely impossible of solution when emotion is allowed to enter in.”

Realizing that he might be accused of racism, Eysenck (1971, pp. 9–10) declared his own social and political attitudes and beliefs:

“My recognition of the importance of the racial problem, and my own attitudes of opposition to any kind of racial segregation, and hatred for those who suppress any sector of the community on grounds of race (or sex, or religion) were determined in part by the fact that I grew up in Germany, at a time when Hitlerism was becoming the very widely held doctrine which finally prevailed and led to the death of several million Jews whose only crime was that they belonged to an imaginary ‘race.’ ”

However, he added (p. 11), we have to face up to the scientific facts:

“A benevolent attitude towards non-white races, coupled with admiration for their many outstanding qualities, and deep sympathy for their suffering, should not blind one towards such evidence as may exist to indicate that with respect to certain qualities there may be genetic differences favouring one race (or ethnic subgroup) as against another.”

In any case, he pointed out (p. 11), acknowledging the existence of race differences in IQ does not amount to racism:

“I am not a racist for believing it possible that negroes may have special innate gifts for certain athletic events, such as sprints, or for certain musical forms of expression. . . Nor am I a racist for seriously considering the possibility that the demonstrated inferiority of American negroes on tests of intelligence may, in part, be due to genetic causes.”

This last comment betrays a patronizing stereotype of African Americans as fleet-footed but dull-witted bongo drummers or spiritual singers. However, I believe that what inspired Eysenck to write his book was not any prejudice against Black people but rather a distinctive enjoyment of argument and controversy. Jensen’s (1969) article had whipped up a blizzard of controversy in the US: members of the American Psychological Association had petitioned (unsuccessfully) to expel him, students had disrupted his classes at the University of California, Berkeley, and a bodyguard had been hired to protect him. As he described in the preface to his book *Genetics and Education* (Jensen, 1972), he and his family received death threats, and he was accused of being a racist and a fascist. When Eysenck’s book was published, the reaction in the UK was almost as emotional though not as violent, as he described in his autobiography (Eysenck, 1990, pp. 216–220). He was also accused of being a racist and a fascist, but this could hardly have come as a surprise to him. In fact, he admitted decades later in his autobiography that it was precisely the reaction to Jensen’s article that had inspired him to write his book: “This book was written because of the considerable uproar caused by the publication, in 1969, of an invited article by Arthur Jensen” (p. 215). I am quite certain, having known Eysenck for many years, that his book, and more generally his views on race and intelligence, were not motivated by racism. He was neither a racist nor a fascist—his political views were liberal, and on some issues even left-wing. But there was nothing that he enjoyed more than acrimonious and heated debate, and he was always in his element when embroiled in controversy. It is worth noting that he came from a theatrical background: his parents were both thespians, and his grandmother who brought him up was an opera singer.

2.2. *Scientific consensus*

In a move that has become more familiar in recent debates on climate change, Eysenck (1971, p. 15) claimed that the vast majority of experts shared his views: “I would be prepared to assert that experts (real experts, that is) would agree with at least 90% of what I am going to say—probably the true figure would be a good deal higher, but there is no point in exaggerating.”

In fact, Eysenck was exaggerating wildly because, even in 1971, many real experts disagreed, and he knew this. Literally scores of criticisms of the hereditarian interpretation, many of them from leading researchers, had already been published by the time his book appeared, even in the same journal as Jensen’s article; in fact, Eysenck (1971) mentioned in his book “seven eminent authorities, critical of Jensen’s thesis” (p. 29) who had already commented in that journal. What is more, a few years earlier, in a prominent publication that Eysenck could hardly have overlooked, Pettigrew (1964) had reported that a survey of the literature had uncovered only three psychologists who had stated in print that genetic factors were significantly involved in the observed race differences in IQ. Pettigrew, undeniably a “real expert” himself, believed that the existing evidence pointed to “a non-genetic interpretation of the typically lower IQ test score averages of Negro groups” (pp. 104–105). My claim that Eysenck was exaggerating about the consensus of expert opinion is really an understatement.

2.3. *A priori assumption of a race difference in IQ*

Eysenck (1971, p. 20) next advanced a kind of a priori argument:

“Th[e] myth of racial equality, while more acceptable in principle to any liberal and well-meaning person than its opposite, is still a myth: there is no scientific evidence to support it. Indeed, as Jensen has pointed out, the a priori probability of such a belief is small: ‘The fact that different racial groups in this country have widely different geographic origins and have had quite different histories which have subjected them to different selective social and economic pressures makes it highly likely that their gene pools differ for some genetically conditioned behavioural characteristics, including intelligence or abstract reasoning ability. Nearly every anatomical, physiological, and biochemical system investigated shows racial differences. Why should the brain be an exception?’ ”

What is most seductive about this argument is that it appears to settle the issue without the bother of examining the empirical evidence. If it is obvious from first principles that there must be genetic race differences in IQ, then evidence seems hardly necessary. But, in fact, most anatomical, physiological, and biochemical systems, including human brains, do not show racial differences. When Eysenck wrote his book it was already known, as an authoritative review of research findings concluded, that “there is no acceptable evidence for . . . difference in the brains of these two racial groups [Black and White Americans], and certainly nothing which provides a satisfactory anatomical basis for explaining any differences in IQ or in other mental or performance tests, in temperament or in behaviour” (Tobias, 1970, p. 22). Later neuroimaging research (reviewed by McDaniel, 2005) suggests a small but consistent relationship between brain volume and intelligence, especially in frontal and parietal brain areas (Jung & Haier, 2007). Nevertheless, research using modern methods of molecular genetics, advanced brain imaging technology, and large sample sizes, has failed to detect any relation between genes, brain anatomy, and IQ, or between genes, brain anatomy, and race (Balaesque, Ballereau, & Jobling, 2007; Mekel-Bobrov et al., 2007; Richardson, 2011; Timpson, Heron, Smith, & Enard, 2007).

Accumulating evidence since the sequencing of the human genome in 2003 suggests that genetically determined race differences in IQ are a priori *unlikely*, rather than likely. We now know that there are approximately three billion nucleotide base pairs in the haploid human genome, and direct assessment of genetic variation has revealed that the average proportion of these bases that differ between a human being and a chimpanzee is less than 2%; that the difference between a randomly chosen pair of human beings is approximately 0.1%; and that only 10% of that 0.1%, hence 0.01% of human DNA, differs between European, African, and Asian populations (Barbujani & Colonna, 2010; Jorde & Wooding, 2004)—far less than had previously been assumed. Given that the human genome comprises approximately 22,000 genes, this might be taken to imply that only about 22 genes differ between populations, but that would be quite wrong. For one thing, 98% of human DNA consists of noncoding regions (Elgar & Vavouri, 2008); and second, genes within the coding regions typically contain thousands of DNA bases that show slight variations in allele frequencies between populations. The parts of the human genome that differ systematically between racial groups include coding regions containing genes that influence skin colour, hair type, and facial features; but race, like beauty, is evidently only skin deep, and the total genetic difference must be much smaller than had previously been assumed. Furthermore, recent research has revealed that racial admixture has blurred whatever genetic differences might have existed previously. Within the United States, White Americans are descended predominantly from European populations and Black Americans from West African slaves;

but the latest and best evidence, using high-density genotype data, shows that the proportion of European ancestry in the Black American population is as high as 24% (Bryc, Durand, Macpherson, Reich, & Mountain, 2015). Taken together, these findings on genetic race differences render it *unlikely*, a priori, that Black and White Americans have any genetically based psychological characteristics that distinguish them sharply.

In addition to this, it is worth reminding ourselves that “race is a socially constructed concept, not a biological one” (Sternberg, Grigorenko, & Kidd, 2005, p. 49). In the United States, people of visibly mixed Black and White descent tend to be classified as Black or African American (Ho, Sidanius, Levin, & Banaji, 2011)—a phenomenon called *hypodescent*—whereas in most parts of Latin America, a person with even a small amount of recognizable European ancestry tends to be classified as White (Skidmore & Smith, 2005, p. 152). This further reduces the a priori likelihood of significant genetically based race differences, although it is going too far to infer that it makes them literally *impossible*, as Gould (1986) and others have claimed. But even two relatively homogeneous populations seem hardly likely to show very marked genetic differences, especially on complex traits like intelligence that are now known to be influenced by very many genes scattered across the entire genome, each contributing only a small effect (Davies et al., 2011; Kirkpatrick, McGue, Iacono, Miller, & Basu, 2014). Given so many genes determining IQ differences, and the fact that each of the implicated genes contributes so little, it seems unlikely that a large race difference in IQ could arise from the tiny DNA difference of only a 0.01%. It follows, fortiori, that two socially defined groups with substantial genetic admixture, such as Black and White Americans, are even less likely to show marked differences. Darwin (1871, p. 225), whose powers of naturalistic observation are legendary, suspected as much a century and a half ago, when he wrote: “It may be doubted whether any character can be named which is distinctive of a race and is constant.”

The a priori argument in favour of the hereditarian interpretation of the Black–White IQ gap is evidently not as persuasive as it may appear. But no firm conclusions can be reached by a priori reasoning alone. The question is empirical, and the evidence therefore needs to be examined, as Eysenck himself always insisted.

2.4. Heritability of IQ scores and race differences

The central plank in Eysenck’s argument relates to the heritability of IQ scores. On this pivotal issue, Eysenck (1971, p. 25) quoted from Jensen’s article:

“Individual differences in intelligence—that is, IQ—are predominantly attributable to genetic differences, with environmental factors contributing a minor portion of the variance among individuals. The heritability of the IQ—that is, the percentage of individual differences variance attributable to genetic factors—comes out at about 80 per cent, the average value obtained from all relevant studies now reported.”

Eysenck (p. 117) linked this to race differences as follows:

“The argument is simply that this discovery of a strong genetic involvement in the determination of individual differences in IQ between members of a given population is an essential precondition for going on to argue in favour of the genetic determination (in part at least) of racial differences in IQ. For clearly if all within-race differences could be accounted for in environmental terms, we would have no business to look further than that in our search for between-race differences.”

Eysenck (1970, p. 30) assumed that, if IQ variability in the general population is due mainly to heredity, then it is “a not unreasonable hypothesis that genetic factors are strongly

implicated in the average negro–white intelligence difference” (again quoting Jensen). This argument is not only pivotal but also slightly technical, so some explanation is in order. The *heritability* of a trait in a specified population is the proportion of the *variance* in the trait that is attributable to genetic differences between individuals. The heritability of IQ is therefore the proportion of the variance in IQ scores that is attributable to genetic variance in the population, variance being a measure of the degree of variability or scatter in a set of scores. This has nothing whatever to do with how much of an individual’s IQ is determined by genes: that is a meaningless question, because without the requisite genes there could be no brain, and without a brain, no IQ. The broad heritability (h^2) of IQ is the proportion of the phenotypic or measurable variance in IQ scores (V_P) that is attributable to genetic variance (V_G) in a particular population at a particular time. Hence, h^2 (broad) = V_G/V_P , and because it is a proportion, it ranges from 0 (observed variance entirely attributable to non-genetic factors) to 1 (observed variance entirely attributable to genetic factors), although it is often expressed as a percentage.

Eysenck had a high opinion of his own mathematical prowess and was not shy about saying so, even in print (see, e.g., Eysenck, 1990, pp. 26, 53, 55, 56–57, 95, 117), but I believe that his talents lay in writing, public speaking, and perhaps managing organizations, rather than in mathematics. He certainly did not understand the concept of heritability. In particular, he failed to grasp the fundamental point that heritability is a parameter of a population, with no meaningful application to an individual. He (Eysenck, 1971, p. 71) wrote:

“Another qualification, not often mentioned, is that the figure of 80% heritability is an average; it does not apply equally to every person in the country. For some people environment may play a much bigger part than is suggested by this figure; for others it may be even less.”

The reason why this is “not often mentioned” is that it is not true: a heritability value is certainly not an average. What is more, the variance of an individual score is invariably zero. As I pointed out immediately (Colman, 1972, p. 145), it follows that Eysenck was being far too modest in claiming that 80% of an individual person’s IQ is attributable to genetic factors. He could have pointed out that 200% is, because $(200/100) \times 0 = 0$; but then the nonsense would have been obvious.

One problem with the argument from heritability is that the estimate of h^2 (broad) = .80, on which both Jensen (1969) and Eysenck (1971) based their argument, is now known to be too high. Over many decades, three classic methods were used to provide estimates of the heritability of IQ: studies of separated identical twins, family studies, and adoption studies. All three provide indirect estimates, and all have limitations that I will not address here (see, e.g., Colman, 1987, 1990; Mackenzie, 1984; Neisser et al., 1996). More recently, direct methods based on genome-wide association studies (GWAS) have become feasible, and they have yielded direct estimates of heritability between .40 and .50 in one study (Davies et al., 2011) and .35 in the other (Kirkpatrick et al., 2014). Population geneticists now believe that the heritability of IQ usually lies somewhere between .35 and .70, depending on various features of the sample being investigated; for example, it tends to be larger in older populations and smaller among children, and it is close to zero at the lowest socioeconomic status levels (Mackintosh, 2011, chap. 11; Nisbett et al., 2012).

The most serious problem with the argument from heritability is that it uses data about the heritability of IQ *within* populations to draw conclusions about the genetic basis of differences *between* populations. The argument is now known to be invalid, as Lewontin (1970) demonstrated with the following famous *Gedankenexperiment* (thought experiment). Take two handfuls of seed from the same sack and plant them in separate plots, the first rich

and the second deficient in nutrients. The plants in the first plot will grow tall and those in the second will be stunted. The average difference between the two groups of plants will be due entirely to environmental factors (nutrients), because the seeds come from the same sack and are therefore genetically the same. But the variability within each plot will be due entirely to genetic factors, because the environment is identical for all seeds within the same plot. In other words, heritability is 100% within each group, but the average difference between the two groups is due entirely to environmental factors. Lewontin's *Gedankenexperiment* shows that, even if the heritability of IQ were as high as Eysenck and Jensen believed it to be, the differences between racial groups could be caused entirely by non-genetic factors.

Eysenck's (and Jensen's) argument from heritability is fallacious, because heritability within populations does not imply that differences between populations are caused by genetic factors. As explained in a leading text on population genetics:

"Sometimes the argument is made that because a trait is heritable within two different populations that differ in their mean trait value, then the average trait differences between the populations are also influenced by genetic factors (e.g., Herrnstein and Murray 1994). Because heritability is a within-population concept that refers to variances and not to means, such an argument is without validity. Indeed, heritability is irrelevant to the biological causes of mean phenotypic differences between populations." (Templeton, 2006, p. 285)

2.5. Racial admixture and crossing studies

Eysenck (1971) was adamant that "the evidence is circumstantial" and that "we must look at many lines of research rather than at any single, decisive experiment" (p. 30). However, among the classic studies there is a line of evidence, mentioned by Eysenck (pp. 98–99) only in passing, in relation to skin colour and without citing any US data, that yields direct evidence. Racial admixture studies capitalize on the fact, mentioned earlier, that Black Americans have varying amounts of European ancestry. This makes possible "the most direct test of genetic versus environmental hypotheses" (Mackenzie, 1984, p. 1224). If the Black–White IQ gap is mainly due to genetic factors, then those Black Americans with the most European ancestry, and therefore the most European genes, should have higher average IQ scores than those with no European ancestry.

The first study to use this method (Witty & Jenkins, 1935) focused on 63 children with the highest IQ scores among 8,000 Black American children in the Chicago public school system. When the researchers classified these high-IQ children according to their ancestry as reported by their parents, they found no evidence that they had any more European ancestry than a comparison group of ordinary Black Americans. For example, the results showed that 14.3% of the high-IQ children had predominantly White ancestry, compared to 14.8% of the comparison group. If genetic factors determine the Black–White IQ gap to any significant extent, then there should be substantially more children with predominantly White ancestry in the high-IQ group. In fact, the distribution of White ancestry was remarkably similar in both groups of children, and the brightest child in the entire sample, a girl with an exceptionally high IQ of 200, was one of those whose parents reported no knowledge of any White ancestry at all.

This admixture evidence is devastating to the hereditarian interpretation of the Black–White IQ gap. The Witty and Jenkins (1935) study has been criticized on the grounds that parental reports do not provide entirely accurate measures of European ancestry and that the comparison group was not ideally matched with the 63 high-IQ children. Nevertheless, if the large Black–White IQ gap were significantly caused by genetic factors, then there would have to have been far more children with predominantly White ancestry in the high-IQ group

than in the comparison group. This follows from the recently discovered *fourth law of behaviour genetics* (Chabris, Lee, Cesarini, Benjamin, & Laibson, 2015), according to which human behavioural traits are generally associated with very many genes, each contributing only a small part of the effect. Direct evidence for this law in relation to IQ (Davies et al., 2011; Kirkpatrick et al., 2014) has already been mentioned in this article. It follows that if the Black–White IQ gap were due predominantly to genetic factors, then this would have to have shown up, with large differences between groups, even in the rather crude admixture study reported by Witty and Jenkins.

Later studies, using more objective methods for estimating racial admixture and in some cases much larger samples, yielded the same result. Scarr, Pakstis, Katz and Barker (1977) used 43 blood group markers to estimate European ancestry in a sample of 362 Black American schoolchildren in Minnesota and found no significant correlation between European admixture and scores on any of the five separate intelligence tests that they administered. Furthermore, the children with the most European ancestry did not differ significantly from those with the least. In fact, there was a marginally significant tendency ($p < .10$) for the children with the most European ancestry to score *lower* on one of the tests (paired associates). These findings corroborate those of Witty and Jenkins (1935) in failing to find any relationship between degree of European ancestry and IQ scores in the Black American population. They provide strong evidence suggesting that the Black–White IQ gap is not predominantly attributable to genetic differences.

Loehlin, Vandenberg and Osborne (1973) used blood group markers to estimate the degree of European ancestry in two groups of Black American adolescents ($N = 40$ and $N = 44$). There were no significant correlations between European ancestry and IQ scores in either group. In one of the groups, the correlation was almost exactly zero, and in the other it was non-zero but the non-significant difference was in the opposite direction—suggesting marginally *lower* IQ scores for adolescents with more European ancestry.

Moore (1986) measured the IQ scores of 46 Black and mixed-race US children who had been adopted by either Black or White middle-class parents. The half-White children turned out to have virtually the same average IQ as the Black children, suggesting that having 50% European genes provided no advantage to the mixed-race children. However, both Black and mixed-race children had IQ scores 13 points higher, on average, when they were adopted by White parents than by Black parents, demonstrating that non-genetic environmental factors had an effect on IQ large enough to account for almost the entire Black–White IQ gap.

Racial admixture studies have clearly failed to support the hereditarian interpretation of the Black–White IQ gap. Instead, they have provided evidence that seems to contradict it. Even Rushton and Jensen (2005) acknowledged that “blood groups distinguishing African from European ancestry did not predict IQ scores in Black samples” (p. 262), but on the same page they claimed inexplicably that “studies of racial hybrids are generally consistent with the genetic hypothesis, [although] to date they are not conclusive”. Nisbett (2005, p. 309) responded to Rushton and Jensen with what seems like a more reasonable conclusion: “The most directly relevant research concerns degree of European ancestry in the Black population. There is not a shred of evidence in this literature, which draws on studies having a total of five very different designs, that the gap has a genetic basis.”

Racial crossing studies provide evidence of a different kind, and they have also failed to support the hereditarian interpretation. These studies avoid the complications and ambiguities involved in estimating White ancestry by focusing instead on Black, White, and mixed-race children who, for one reason or another, happen to be raised in the same or at least similar environments. If genetic factors are mainly responsible for the Black–White IQ gap, then in these circumstances Black children should have lower average IQ scores than

mixed-race children, and mixed-race children should have lower scores than White children. On the other hand, if non-genetic factors are all-important, then the Black, mixed-race, and White children should have similar average IQ scores.

It is difficult or impossible to find children from different racial groups raised in identical environments, and that may appear to expose this line of research to methodological criticism. The most obvious objection is that it is literally impossible to raise Black, White, and mixed-race children in identical environments if racism itself is a significant environmental factor. If Black children in such a study score lower than White children, then critics can always argue that the supposedly similar environments actually favoured the White children, because they were not exposed to the negative environmental effects of anti-Black racism. But this objection turns out to be entirely irrelevant, because Black and mixed-race children do not, in fact, score lower than White children raised in similar environments. In the racial crossing studies that have been published, children from the different racial groups have, in almost every case, been found to achieve remarkably similar average IQ scores.

Eyferth (1961) studied *Besatzungskinder* (occupation children) who were the illegitimate offspring of sexual liaisons between American (and a few French) occupation troops and German women in Germany after the Second World War. Some of the children's American fathers were Black and some were White. All the children were raised by White mothers or foster parents in post-war Germany, where anti-Black prejudice was largely absent, because there had been no significant Black presence in Germany before the war. The two groups were matched for location, school, and mothers' circumstances. The average IQ of the mixed-race children (96.5), who inherited half their genes from their Black fathers, differed by less than one point from the average IQ of the White children (97.2), whose genetic heritage was entirely European. In other words, children whose genomes were 50% African American did not score significantly lower on IQ tests than those with exclusively European genomes raised in similar environmental circumstances. Even Jensen (1998, p. 483) had to concede that this result is: "consistent with a purely environmental hypothesis of the racial difference in test scores."

The Minnesota Transracial Adoption Study (Scarr & Weinberg, 1976) focused on 145 Black, mixed-race, and White children between 4 and 12 years old raised in middle-class White adoptive homes. The three groups of children shared essentially similar environments including, importantly, any effects of having been adopted. The average IQ scores of the three groups were 96.8, 109.0, and 111.5, respectively. There was no significant difference between the mixed-race and White means, apparently contradicting the hereditarian prediction, but the Black children scored significantly lower, on average, than the others. The study was flawed, as the researchers acknowledged in their original article, because the Black children had been adopted later in life and had therefore spent less time in their adoptive homes when they were tested, and both their natural and adoptive parents were less well-educated than those of the mixed-race and white children. Thus only the mixed-race and White children were raised in reasonably comparable environmental circumstances, and the researchers concluded that the similar average IQ scores of these two groups "support the view that the social environment plays a dominant role in determining the average IQ level of black children" (p. 739). If the Black-White IQ gap were determined predominantly by genetic differences, then there would have to have been a large and significant difference between the mixed-race and White children, but there was not.

It is remarkable that Jensen (1981) managed to cite this study in *support* of his hereditarian interpretation. On page 224 of this book, he listed the mean IQ scores of the children as follows: "Black/black adoptees: 96.8", "White/black adoptees: 109.0", and "Natural children of adoptive parents: 116.7", suggesting that the mixed-race children

(“White/black adoptees”) did indeed score significantly below the White children (“Natural children of adoptive parents”). But the appropriate White group was the White adopted children, whose mean score of 111.5 was hardly different from the mean of the mixed-race group, not the irrelevant “natural children of the adoptive parents”—the biological offspring of the parents in the study who happened to have natural as well as adopted children in their homes. These natural children had not been adopted and had not experienced any of the environmental deprivation of the adopted children, and their mean IQ was far above the others. By omitting the appropriate adopted White group and substituting an irrelevant non-adopted White group to compare with the adopted mixed-race and adopted Black children, Jensen was able to convey the misleading impression that the children’s IQ scores increased in an orderly fashion in line with the proportion of White genes that they had inherited. This enabled him (p. 224) to conclude: “The relative differences among all these averages appear to be consistent with a genetic hypothesis.” It seems ironic that this devious manoeuvre appeared in a book entitled *Straight Talk About Mental Tests*!

The children were re-studied 10 years later when most were teenagers (Weinberg, Scarr, & Waldman, 1992), and the pattern of results was generally similar. As usually happens in longitudinal follow-up studies, the researchers did not manage to retest all children from the earlier study, and unfortunately the White adopted group suffered attrition of some of its lowest-scoring children, causing the mean IQ score for that group to be significantly higher in the follow-up (117.6) than in the original study (111.5), whereas the mean IQ scores of the mixed-race (109.5) and Black (95.4) children were not significantly different from their original means—actually slightly lower, because of test renormalization. This introduced a further methodological flaw into the follow-up, making interpretation difficult. Hierarchical regression analyses showed that the IQ scores of the three groups of adopted children were not significantly different after adjusting for pre-adoption measures. Nevertheless, it is striking that the Black children had shown no increase in IQ after spending many years being raised in middle-class White homes, and this seems more consistent with a hereditarian than an environmental interpretation of the Black–White IQ gap, as Lynn (1994) and Rushton and Jensen (2005), among others, were keen to point out. Taking everything into consideration, especially the non-comparability of the Black children to the others in the study, Weinberg, Scarr and Waldman (p. 133) concluded: “The results of the longitudinal follow-up continue to support the view that the social environment maintains a dominant role in determining the average IQ level of black and interracial [mixed-race] children.”

Racial admixture and crossing studies are uniquely important in the debate over the interpretation of the Black–White IQ gap, because they offer the most relevant evidence on the putative genetic origin of the gap, and none of them has provided persuasive support for the hereditarian interpretation proffered by Eysenck. After a comprehensive review of these studies, Nisbett (2009) went as far as to conclude that they provide no evidence whatsoever in favour of this interpretation. On the contrary, racial admixture and crossing studies, and especially studies using advanced techniques of molecular genetics, all provide rather compelling evidence against the hereditarian interpretation.

Discussion and conclusion

Eysenck (1971, p. 7) began his discussion of race and intelligence with disarming humility: “Most people who write on this topic seem to know all the answers, and are firmly convinced that their point of view is correct; I know perfectly well that we do not know all the answers, and feel little confidence that such views as I have formed are necessarily correct.” He quoted Jensen’s cautious-seeming suggestion of a “not unreasonable hypothesis that genetic factors are strongly implicated in the average negro-white intelligence difference” (p. 30). It is revealing to trace the gradual evaporation of doubt and caution as

Eysenck's book progresses: "there may be genetic differences favouring one race (or ethnic subgroup) as against another" (p. 11); "individual differences in intelligence—that is, IQ—are predominantly attributable to genetic differences, with environmental factors contributing a minor portion of the variance among individuals" (p. 25); "All the evidence to date suggests the strong and indeed overwhelming importance of genetic factors in producing the great variety of intellectual differences which we observe in our culture, and much of the difference observed between certain racial groups" (p. 130); "the fact [is] that negroes show some degree of genetic inferiority" (p. 142). What starts out as a "not unreasonable hypothesis", cautiously advanced by a writer who does not claim to know all the answers, is progressively transmogrified into a simple "fact" of "genetic inferiority" backed up by "all the evidence to date".

Even when his book was written all those years ago, the proposition that the Black–White IQ gap is predominantly attributable to genetic factors was debatable, and in fact I and many others debated it at the time. We now have much stronger evidence and a deeper understanding of population genetics, and it seems clear that the hereditarian interpretation is not supported by the data. The one study that has been claimed to provide a scrap of supportive evidence, namely the Minnesota Transracial Adoption Study (Scarr & Weinberg, 1976; Weinberg, Scarr, & Waldman, 1992), is interpreted by its own researchers and many commentators as providing no such evidence. The other most relevant studies all appear to contradict the hereditarian interpretation.

I believe that Eysenck's (1971) ideas on this topic were seriously mistaken. The Black–White IQ gap appears to be caused, not predominantly by genetic factors, but by differences in socio-economic status, together with educational, demographic, cultural, and other non-genetic factors, some of which have been discovered and at least partly understood. An exhaustive discussion of these factors is clearly beyond the scope of this article (see Dickens & Flynn, 2001, for a review and theoretical interpretation). It is nevertheless worth commenting on one phenomenon, namely the *Flynn effect*, that illustrates how powerfully non-genetic factors can influence IQ scores and that may also provide a crucial key to the Black–White IQ gap. Flynn (1987) discovered large increases in IQ scores, typically three IQ points per decade, that have been occurring in both White and Black American populations since the introduction of IQ tests in the US in 1916 and in many other populations around the world. These rapid IQ gains must be due to non-genetic factors, because natural selection—the mechanism that underlies genetic changes in populations—is so gradual that differences are imperceptible from one generation to the next. Flynn (2007, 2010, 2012, pp. 132–141) suggested that the effect could be explained by cultural diffusion during the 20th century of scientific "habits of mind", including especially abstract and hypothetical reasoning, and that this may also explain the Black–White IQ gap, in part at least. Scientific modes of reasoning can be acquired only by sustained effort, and if there are aspects of the Black cultural ethos that devalue or discourage such cognitive challenges, or that fail to engender as much motivation in Black as in White families to encourage the intellectual effort required to acquire them, then that may account for the gap.

The issue of race differences in IQ scores is interesting from a purely scientific point of view, and it also carries a great deal of political and moral baggage. Eysenck (p. 12) claimed: "I found it very difficult to look at the evidence detailed in this book with a detached mind, in view of the fact that it contradicted certain egalitarian beliefs I had considered almost axiomatic." It is commendably rational to accept repugnant facts when empirical evidence demands their acceptance. But maintaining unpleasant doctrines when the evidence does not support them is no form of rationality; it is mere intellectual masochism—a form of self-abuse, in the proper sense of that word. In Eysenck's case, because there were dangerous and reactionary interest groups and prejudiced individuals all too keen to capitalize on his

authoritative endorsement of the hereditarian doctrine for their own sinister ends, I believe that it was also ill-advised.

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