

Research on group differences in intelligence: A defense of free inquiry

Nathan Cofnas

To cite this article: Nathan Cofnas (2020) Research on group differences in intelligence: A defense of free inquiry, *Philosophical Psychology*, 33:1, 125-147, DOI: [10.1080/09515089.2019.1697803](https://doi.org/10.1080/09515089.2019.1697803)

To link to this article: <https://doi.org/10.1080/09515089.2019.1697803>



© 2019 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 23 Dec 2019.



Submit your article to this journal [↗](#)



Article views: 94128



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 8 View citing articles [↗](#)

Research on group differences in intelligence: A defense of free inquiry

Nathan Cofnas

Balliol College, University of Oxford, Oxford, UK

ABSTRACT

In a very short time, it is likely that we will identify many of the genetic variants underlying individual differences in intelligence. We should be prepared for the possibility that these variants are not distributed identically among all geographic populations, and that this explains some of the phenotypic differences in measured intelligence among groups. However, some philosophers and scientists believe that we should refrain from conducting research that might demonstrate the (partly) genetic origin of group differences in IQ. Many scholars view academic interest in this topic as inherently morally suspect or even racist. The majority of philosophers and social scientists take it for granted that all population differences in intelligence are due to environmental factors. The present paper argues that the widespread practice of ignoring or rejecting research on intelligence differences can have unintended negative consequences. Social policies predicated on environmentalist theories of group differences may fail to achieve their aims. Large swaths of academic work in both the humanities and social sciences assume the truth of environmentalism and are vulnerable to being undermined. We have failed to work through the moral implications of group differences to prepare for the possibility that they will be shown to exist.

ARTICLE HISTORY

Received 31 October 2018
Accepted 20 February 2019

KEYWORDS

Intelligence research; group differences in intelligence; psychometrics; censorship; free inquiry; values in science

1. Introduction

The idea that all human groups have, on average, the same potential to develop all psychological traits and abilities is an empirically testable claim, but in some important ways it is unlike most other empirical claims investigated by scientists. Many scientists, philosophers, and even laypeople hold that, for a variety of reasons, we are morally obligated to affirm this proposition, or refrain from conducting research that might undermine it (e.g., Block & Dworkin, 1974; Chomsky, 1976, 1988; Dummett, 1981; Gardner, 2001; Horgan, 2013; Kourany, 2016; Sternberg, 2005). Prominent

CONTACT Nathan Cofnas  nathan.cofnas@balliol.ox.ac.uk  Balliol College, University of Oxford

For this article we have a separate Editor's note published along with this issue. Please see (<https://doi.org/10.1080/09515089.2020.1709283>)

© 2019 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

researchers who publicly endorse hereditarianism about group differences in intelligence¹ have been condemned as immoral, fired from their positions, and physically threatened (examples are documented in Ceci & Williams, 2009; Cofnas, 2016; Gottfredson, 2010; Sesardic, 2005). Many scholars assume that there is no legitimate reason to be interested in group differences. According to Rose (2009), the fact that psychometricians focus on the IQ gap between some groups (e.g., Blacks vs. Whites) rather than others (e.g., north vs. south Welsh) “calls into question the motivation behind looking for such specific group differences in intelligence, sheds doubt on whether such research is well-founded, and begs whether answers could possibly be put to good use” (p. 786). He concludes that “in a society in which racism and sexism were absent, the questions of whether whites or men are more or less intelligent than blacks or women would not merely be meaningless – they would not even be asked” (p. 788). Virtually no scientific hypothesis besides race and sex differences is rejected in this way.

The fact that the majority of genetic variation in our species exists within rather than between races, as Lewontin (1972) discovered, does not rule out the possibility of significant race differences in psychological traits like intelligence. Lewontin argued that, because there is more genetic variation within than between races, racial classifications do not correspond to any (genetically based) population structure. That implies that there can be no genetically based racial classification, thus there can be no genetically based racial differences. This argument overlooks the fact that racial classification can be based on small differences in gene frequencies at multiple polymorphic loci. Looking at a single locus gives us almost no taxonomically useful information, but looking simultaneously at multiple loci allows us to classify people into ethnic groups with accuracy that can approach 100% (Edwards, 2003; Tal, 2012). David Reich, who runs a leading genetics lab at Harvard University, recently acknowledged that Lewontin’s argument has been used by geneticists to “deliberately” conceal the possibility of significant genetically based population differences:

I have deep sympathy for the concern that genetic discoveries about differences among populations may be misused to justify racism. But it is precisely because of this sympathy that I am worried that people who deny the possibility of substantial biological differences among populations across a range of traits are digging themselves into an indefensible position, one that will not survive the onslaught of science. In the last couple of decades, most population geneticists have sought to avoid contradicting the orthodoxy. When asked about the possibility of biological differences among human populations, we have tended to obfuscate, making mathematical statements in the spirit of Richard Lewontin about the average difference between individuals from within any one population being around six times greater than the average difference between populations But this carefully worded formulation is deliberately masking the possibility of substantial average differences in biological traits across populations. (Reich, 2018, p. 254)

Reich (2018) addresses another common argument used to reject the possibility of substantial race differences: even if there is genetically based variation “affecting cognition or behavior,” these differences must be small because “so little time has passed since the separation of populations” (p. 258). He finds this argument untenable in the light of recent findings in genetics:

The average time separation between pairs of human populations since they diverged from common ancestral populations, which is up to around fifty thousand years for some pairs of non-African populations, and up to two hundred thousand years or more for some pairs of sub-Saharan African populations, is far from negligible on the time scale of human evolution. If selection on height and infant head circumference can occur within a couple of thousand years, it seems a bad bet to argue that there cannot be similar average differences in cognitive or behavioral traits. Even if we do not yet know what the differences are, we should prepare our science and our society to be able to deal with the reality of differences instead of sticking our heads in the sand and pretending that differences cannot be discovered. (Reich, 2018, p. 258)

Section 2 explains why, from a scientific perspective, it is so difficult to determine the cause of group differences in intelligence. Although the genetic origin of race differences can only be definitively established when the fields of genetics and neuroscience are unified in a way that will not happen for several years, less definitive evidence that is currently available seems to implicate genes. Section 3 raises a question of values: should science be absolutely committed to the truth, or, as some philosophers and scientists believe, are topics such as race differences in intelligence just too dangerous to face openly? Section 4 argues that utilitarian considerations favor open inquiry into the cause of race differences. Section 5 argues that truth has value independent of its consequences, though this value should be balanced against the potential dangers of truth. Section 6 argues that philosophers should help devise an ethical way to respond to group differences in intelligence in anticipation of the possibility that they will be shown to exist

2. The scientific controversy

The mere fact that populations differ in IQ tells us little or nothing about the source of the difference. The difference could be due to genes, but it could also be due to some environmental factor(s) – education, nutrition, cultural bias in IQ tests, and so on. How can we disentangle the effects of genes and environment? Behavioral geneticists have two principal methods for probing the role of genes in phenotypic differences: (a) behavioral genetic studies on adoptees and twins, and (b) genome-wide association studies.

The heritability of a trait – the proportion of the variance in a population explained by genetic differences – can be determined by adoption and twin studies. If adopted children grow up to resemble their biological rather than

their adoptive parents, this implicates genes. If (genetically identical) monozygotic twins raised together grow up to resemble each other more than (genetically related but nonidentical) dizygotic twins raised together, this, too, implicates genes (on certain testable assumptions, such as equal environments, or, in the case of adoption studies, random placement into adoptive environments). Adoption and twin studies show that, in the contemporary United States, the heritability of IQ in adulthood is around 60 to 80% (Plomin & Deary, 2015).

Even if IQ has high heritability within racial groups, this does not imply that race differences are genetic. We cannot infer between-group heritability from within-group heritability. Lewontin (1970, pp. 7–8) illustrates this point with the following example. Suppose we have a sack of genetically variable corn seeds, and we plant a handful on two plots of soil. Conditions within each plot are carefully controlled so that each plant receives the same nutrients, sunlight, and so on. Since there is no variation in the environmental factors that affect growth, differences in height within each plot will be due entirely to genes – height will be 100% heritable. But suppose one plot contains a low concentration of nitrates. The corn in the low-nitrates plot will grow shorter on average for purely environmental reasons. Within-group (i.e., within-plot) heritability will be 100%, while between-group heritability will be 0%.

Heritability studies cannot show definitively that race differences in intelligence have a genetic cause. It is always possible that there is some hidden environmental factor(s) – a so-called “X factor,” analogous to nitrates in the corn example – that explains differences between – but not within – races (an X factor that explains the Black–White IQ gap would have to affect all Blacks equally in order to preserve high heritability and shift the population mean downwards without changing the variance). Nevertheless, the high within-group heritability of IQ can be part of a package of evidence for between-group heritability. This point was made by Jensen (1969), who was widely misunderstood as naively inferring between- from within-group heritability (see Sesardic, 2005, pp. 128–138). Expounding on Jensen’s argument, Flynn (1980) writes that “the probability of a genetic hypothesis will be much enhanced if, in addition to evidencing high [heritability] estimates, we find we can falsify literally every plausible environmental hypothesis [i.e., X factor] one by one” (p. 40; quoted in Sesardic, 2005, p. 136). The obvious candidate X factor that could explain race differences is, of course, racism. If racism lowers IQ, this could explain why the mean is shifted downwards for victimized groups. However, as Flynn argues, attributing differences to racism

is simply an escape from hard thinking and hard research. Racism is not some magic force that operates without a chain of causality. Racism harms people because of its

effects and when we list those effects, lack of confidence, low self-image, emasculation of the male, the welfare mother home, poverty, it seems absurd to claim that any one of them does not vary significantly within both black and white America. (Flynn, 1980, p. 60; quoted in Sesardic, 2005, pp. 141–142)

Now, after decades of intensive searching, the X factor remains elusive. The adult Black–White IQ gap has remained stubbornly constant at approximately one standard deviation (15 IQ points) among cohorts born since around 1970 (Murray, 2007). Dickens and Flynn (2006) report that “Blacks gained 4 to 7 IQ points on non-Hispanic Whites between 1972 and 2002” (p. 913), but these gains appear to be among Blacks born before the early seventies. Dickens and Flynn (2006, Figure 3) indicate that, in 2002, the Black–White IQ gap in among 20-year-olds was approximately one standard deviation, or 15 points. Nisbett (2017) writes that “Dickens and Flynn found [the Black–White gap in IQ to be] around 9.5 points,” but this is only the gap if we include children (as R. Nisbett confirmed in a personal communication, December 24, 2018). More recent evidence indicates that the gap has persisted or even widened. Frisby and Beaujean (2015, Table 8) find a Black–White IQ gap of 1.16 standard deviations among a population-representative sample of adults used to norm the Wechsler Adult Intelligence Scale IV in 2007. Intensive interventions can raise IQ substantially during childhood when the heritability of IQ is low. But despite some misleading claims about the success of early intervention programs, gains tend to dissolve by late adolescence or early adulthood (Baumeister & Bacharach, 2000; Lipsey, Farran, & Durkin, 2018; Protzko, 2015). Adoption by white families – one of the most extreme interventions possible – has virtually no effect on the IQ of black adoptees by adulthood. Black children adopted by middle- and upper-middle-class white families in Minnesota obtained IQ scores at age 17 that were roughly identical to the African American average. Adoptees with one black biological parent obtained IQ scores that were intermediate between the black and white means (Loehlin, 2000, Table 9.3).²

To reiterate, the high within-group heritability of IQ combined with the failure to find an environmental X factor to explain the IQ gap does not show decisively that race differences are genetic, because it is possible that an X factor will be discovered in the future. However, the environmentalist theory of race differences has not, by normal scientific standards, been an especially progressive research program (in the sense of Lakatos, 1970). Environmentalists never predicted that the Black–White IQ gap would, after reaching one standard deviation, remain impervious to early education, adoption, massive improvements in the socioeconomic status of Blacks, and the (apparent) waning of overt racism and discrimination. Commenting 45 years ago on environmentalist theories that appeal to an X factor, Urbach (1974) noted that “any data in the world can be made consistent with any theory by invoking nameless and untested factors” (p.

134). Nevertheless, we cannot technically say that the environmentalist explanation for the IQ gap has been falsified. The fact that the gap did narrow since the early twentieth century gives some credibility to the idea that environment is playing a role.

Let us turn to the second method for investigating the role of genes in development: genome-wide association studies (GWAS). Unlike heritability studies, GWAS can uncover specific genetic variants – or single-nucleotide polymorphisms (SNPs) – associated with IQ. In just the last couple years, GWAS has identified hundreds of such SNPs (Davies et al., 2018; Savage et al., 2018; Sniekers et al., 2017), which together explain around 11% of the variance in IQ (Allegrini et al., 2019).

If we find that the SNPs implicated in IQ are differentially distributed across racial groups, this would not necessarily imply that race differences in intelligence are genetic. SNPs might have different effects across races and environments due to gene–gene and gene–environment interactions. SNPs with no causal relation to intelligence can be genetically linked to SNPs that do have a causal relation in some populations but not others, so SNP–intelligence correlations may not always hold across races (Rosenberg, Edge, Pritchard, & Feldman, 2019). But if we find that many of the same SNPs predict intelligence in different racial groups, a risky prediction made by the hereditarian hypothesis will have passed a crucial test. Even then, however, GWAS will only establish a correlation between SNPs and IQ without revealing the causal chain linking SNP to phenotype. It would still be theoretically possible that these SNPs lead to differences in intelligence as a consequence of environmental factors (e.g., parenting effects) that can be manipulated so as to eliminate race differences. But if work on the genetics and neuroscience of intelligence becomes sufficiently advanced, it may soon become possible to give a convincing causal account of how specific SNPs affect brain structures that underlie intelligence (Haier, 2017). If we can give a biological account of how genes with different distributions lead to race differences, this would essentially constitute proof of hereditarianism. As of now, there is nothing that would indicate that it is particularly unlikely that race differences will turn out to have a substantial genetic component. If this possibility cannot be ruled out scientifically, we must face the ethical question of whether we ought to pursue the truth, whatever it may be.

3. Should science be absolutely committed to truth?

Truth was traditionally thought of – and is still often advertised – as the fundamental commitment of science (e.g., Dawkins, 2006). Some of the great heroes of science – most famously Galileo – are celebrated for resisting moral and religious authorities who feared that free inquiry would bring

disaster. But the fact that the censors of previous eras were wrong does not mean that those of today cannot be right (Dummett, 1981, pp. 287–288). Sesardic (1992), who ultimately defends free inquiry, observes that since the days when “truth was . . . regarded as the categorical imperative for scientists,” we have “learned from some dramatic instances that there is no guarantee that . . . new knowledge [will] serve the good of mankind” (p. 129). Just as physics can produce an atom bomb with the potential to destroy us physically, perhaps social science can produce an equivalent – a discovery that would undermine the social order and destroy us just the same.

Many scientists claim to be absolutely committed to truth while at the same time advocating or tolerating varying degrees of suppression of controversial work. In his famous article “The Responsibility of Intellectuals,” Chomsky (1967) makes the bald statement that “it is the responsibility of intellectuals to speak the truth and to expose lies.” Elsewhere, however, he says that scientists should not pursue the truth about group differences in intelligence because this could have dangerous social consequences (Chomsky, 1976, pp. 294–295). He says that while people “surely . . . differ in their biologically determined qualities,” it is wrong to investigate an association between group membership and IQ because to do so is to indicate “that the answer to the question makes a difference; it does not, except to racists, sexists, and the like” (Chomsky, 1988, p. 164; quoted in Cofnas, 2016, p. 486). “To anyone not afflicted with these disorders, it is of zero interest whether the average value of IQ for some category of persons is such-and-such” (Chomsky, 1988, p. 164).

Cofnas (2016) documented several prominent scientists and philosophers opposing the study or dissemination of findings related to group differences in intelligence. Howard Gardner, for example, who is known for his theory of multiple intelligences (Gardner, 1983), writes: “I myself do not condone investigations of racial differences in intelligence, because I think that the results of these studies are likely to be incendiary” (Gardner, 2001, p. 8). He also says that we should reject the work of hereditarian IQ theorists such as Arthur Jensen (whom he calls “the bad guys”) because even if they

turn out to be more correct scientifically than I am, life is short, and we have to make choices about how we spend our time. And that’s where I think the multiple intelligences way of thinking about things will continue to be useful even if the scientific evidence doesn’t support it. (Gardner, 2009, 45:11)

The leading intelligence researcher Robert Sternberg (2005) argues that good science is characterized by “taste in the selection of problems to solve” (p. 295), and that it is in bad taste to investigate the genetic basis of race differences. Sam Harris, a neuroscientist famous for aggressively promoting a “reason-and-evidence” based worldview, recently interviewed *Bell*

Curve (Herrnstein & Murray, 1994) coauthor Charles Murray. Harris accepted all of Murray's claims about hereditarianism, yet in the introduction to the interview he said:

I do remain skeptical about the wisdom of looking for cross-cultural or interracial differences in things like intelligence. I'm not sure what it gets you apart from a lot of pain. So many of the topics I discussed in the podcast with Murray are not topics I would ordinarily think about, or recommend that you think about. (Harris, 2017, 8:53)

Although he does not argue that the information should be suppressed, he does believe that facts about group differences conduce to “pain,” and we might be better off not thinking about them.

A degree of censorship is already in operation when it comes to findings supporting hereditarianism about group differences. Mainstream media coverage of the race-and-IQ controversy almost always falsely claims that there is a consensus among the relevant experts that hereditarianism has been refuted. In fact, anonymous surveys reveal that a substantial proportion of experts on intelligence believe that there is a genetic component to race differences (Rindermann, Becker, & Coyle, 2016, 2020, Figure 3; Snyderman & Rothman, 1987, 1988). Research supporting both hereditarian and environmentalist explanations of race differences is routinely published in major psychology journals, particularly in psychometrics journals like *Intelligence* and *Personality and Individual Differences*. However, work supporting hereditarianism can be much more difficult to publish and disseminate, and research testing the possible genetic basis of race differences is rarely funded. As James Flynn (after whom the “Flynn effect” is named) notes, “if universities have their way, the necessary research [on race and intelligence] will never be done. They fund the most mundane research projects, but never seem to have funds to test for genetic differences” (Flynn, 2012, p. 36). Flynn (2018) says that “scholars at one of America's most distinguished universities ... admitted [to him] that they had never approved a research grant that might clarify whether black[s] and white[s] had equivalent genes for IQ” (p. 128). When he suggested some ways to test if there is a genetic component to the Black–White IQ gap, “they evaded the issue” (J. Flynn, personal communication, January 7, 2019). And because the state of the science is often misrepresented to the public (hence the common belief that there is no evidence at all for hereditarianism), findings are subject to de facto censorship. In some academic fields such as sociology and history, virtually all mainstream scholars refuse to consider the implications of group differences in intelligence for the problems they address. The questions before us are: should research on group differences be conducted?; should findings related to differences be publicly disseminated?; and finally, what role should philosophers – who often act as intermediaries between

science and the humanities, and between science and society at large – play in supporting or opposing work on the genetics of group differences?

Arguments in favor of restricting scientific research generally, or research on group differences specifically, are almost always utilitarian: they contend that free inquiry can, in some cases, be expected to have an overall negative effect on human well-being (e.g., Block & Dworkin, 1974; Chomsky, 1976; Dummett, 1981; Kourany, 2016). The present paper argues that utilitarian arguments in favor of restricting research on group differences in intelligence have generally given short shrift to the potential and actual serious harms that have resulted from the current practice of stigmatizing and dismissing controversial work, and they have also ignored the potential benefits that might follow from openly confronting evidence about group differences.

This paper suggests that there are also at least two compelling non-utilitarian reasons to allow free inquiry (compelling, that is, to those who are not utilitarians). First, truth is (to some degree) valuable independent of its felicitic consequences. Proscribing the study of group differences undermines the integrity of huge swaths of work in biology, psychology, economics, sociology, history, and moral and political philosophy. If we accept that truth is intrinsically valuable, then this is a cause for concern. Second, if not all groups have identical distributions of potential, then it is unjust to assume that some people must be blamed for average differences in performance among groups.

4. Utilitarian reasons to favor free inquiry

In 2001, virologists at the State University of New York at Stony Brook created a synthetic version of the poliovirus using strands of DNA purchased by mail order. They obtained the RNA sequence of the virus from the Internet, where it is freely available for all to see. Other researchers have published what are essentially instructions for recreating a smorgasbord of viruses that could potentially kill tens of millions of people were they to be released in the modern world (Kourany, 2016, pp. 784–785). In response, prominent medical authorities have called for restrictions on creating deadly viruses or publishing information that could help terrorists to do so (National Research Council, 2004).

Kourany (2016) asks: “is there any reason new policy constraints like these for the life sciences should not be put into effect for the social sciences – new policy constraints that include research guidelines for weighing societal harms of research against societal benefits . . . ?” (p. 786). As to the suggestion that the potential harm from deadly viruses is greater than the harm from research on intelligence differences, she urges us not to minimize the latter: intelligence research

has already been shown to cause significant harm ... to lots more people [than a virus] – to all the people whose self-esteem, self-efficacy, ambitions, and successes are lessened as a result of direct or indirect exposure to the research or aspects of the research ... ; to all the people whose self-esteem, self-efficacy, ambitions, and successes are lessened as a result of the treatment they receive from others who have been directly or indirectly exposed to the research or aspects of the research; and so on – in short, to all or most women and, in the United States at least, to most minority men and many men of color in other parts of the worldCognitive group differences research, then, arguably does pose harms to society near – perhaps even exceeding – the harms posed by the recent synthetic genomics research. (p. 787)

The reality of all these harms cannot, however, be taken for granted. As for the situation in the United States, it is a well-established finding that the average levels of self-esteem in ethnic groups has, contra common wisdom, a negative relationship with average IQ. At least since the 1980s, Blacks have scored significantly higher than Whites, who in turn have scored higher than Asians, on measures of self-esteem (Bachman, O'Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011; Twenge & Crocker, 2002). Is the success of members of some ethnic groups impaired by hearing about research on intelligence differences? That depends on the strength of the effect of *stereotype threat*. According to the theory of stereotype threat, telling people that their group has a low mean score on a cognitive test (i.e., priming them with a negative stereotype) impairs their performance (Steele & Aronson, 1995). In recent years, stereotype threat has run into trouble.

The “replication crisis” in psychology has revealed that many widely touted discoveries – particularly in social psychology and, within social psychology, specifically in regard to priming effects – may be completely false (Kahneman, 2012; Open Science Collaboration, 2015; Yong, 2012). Some psychologists have suggested that stereotype threat could end up being another casualty of the crisis. Ganley et al. (2013) failed to replicate the effect in three large studies of female mathematics performance. Using statistical techniques to test for publication bias, Flore and Wicherts (2015) found evidence that publication bias may “seriously distort the literature on the effects of stereotype threat” (p. 25) on math performance in girls. In a pre-registered study of more than two thousand Dutch high school students, Flore, Mulder, and Wicherts (2018) failed to find any evidence that gender stereotype threat affects math performance. There has not yet been an authoritative replication attempt of studies on the effect of priming with racial stereotypes. As of now, we certainly cannot say that stereotype threat “has already been shown to cause significant harm” (Kourany, 2016, p. 787). If stereotype threat is not real, then conducting research on group differences in IQ will not harm lower-scoring groups via a nonexistent effect. Even if it does turn out to be real, it is not clear that it is responsible

for “significant harm,” since the Black–White IQ gap remains unchanged even when stereotype threat is eliminated. Stereotype threat is alleged only to *increase* the gap under controlled test-taking conditions (Sackett, Hardison, & Cullen, 2004; Steele & Aronson, 2004, p. 48). If stereotype threat turns out to be both real and to cause some devastating harm, that could raise ethical problems for intelligence research – but even its reality is far from being established.

There is also an important sense in which restrictions on publishing instructions to create deadly viruses and restrictions on intelligence research are not analogous. In the former case, the proposal is to conceal knowledge while being open about our motives: we should not (according to the proposals) publish instructions about how to make deadly viruses because we do not want terrorists to use them to make biological weapons. In the latter case, however, the proposal is to, if necessary, misrepresent the state of knowledge while being dishonest about our motives – to assert that there are no innate differences between groups while pretending that this is an established discovery of science. Given the disanalogy, we cannot so easily make an inference from the acceptability of limits on publishing work in virology to the acceptability of censoring or prohibiting work on intelligence, even if findings concerning intelligence differences could be shown to produce some sort of harm.

It is also easy to overlook the harms that have been caused by uncritical commitment to environmentalism. Kourany (2016) comments:

Finding out that blacks have lower IQ scores than whites . . . could be the beginning of educational and training programs to work with the strengths and work on the weaknesses of every group to help make them the very best they can be, and even to use the special talents of each group to help the others. Finding these things out could be the beginning of innovative programs that support rather than undermine the right to equality. That this does not happen, or seldom happens, is a function of the . . . racism of society. (pp. 783–784)

But the reason that these programs, which Kourany rightly says ought to exist, have never been created is not because of racism but because of the taboo on talking about genetic differences among policy makers. No mainstream politician can acknowledge that there are differences that might call for the creation of a program to “work with the strengths and work on the weaknesses of every [ethnic] group to help make them the very best they can be.” It is hereditarians who have advocated these programs and environmentalists who have resisted them. The abstract to Jensen’s (1969) paper – the first major modern defense of hereditarianism – says (written in the third person):

Jensen examines other mental abilities [besides *g*] that might be capitalized on in an educational program, discussing recent findings on diverse patterns of mental abilities

between ethnic groups and his own studies of associative learning abilities that are independent of social class. He concludes that educational attempts to boost IQ have been misdirected and that the educational process should focus on teaching much more specific skills. He argues that this will be accomplished most effectively if educational methods are developed which are based on other mental abilities besides IQ. (p. 2)

Contemporary hereditarians have also called for tailored training programs (e.g., Gottfredson, 2005a, 2005b, p. 318; Lubinski & Humphreys, 1997). Accumulating evidence suggests that education can indeed be effective in raising specific cognitive skills (Ritchie, Bates, & Deary, 2015).

Decades ago, Jensen (1969) was vilified for predicting that Head Start – a program based on the environmentalist assumption that early intervention can permanently raise intelligence and academic performance – would not have its intended effects. In *The Bell Curve*, hereditarians Herrnstein and Murray (1994) marshaled compelling evidence that Head Start was not working.³ In 2012, a congress-mandated report by the United States Department of Health and Human Services (HHS) stated that the effects of Head Start disappear by third grade (Puma et al., 2012, p. xxi) – that is, Head Start was not working. Of course, the report did not endorse hereditarianism or recommend that Head Start be discontinued. It suggested that the program may confer some as-yet-undetectable benefits that last many years after participation.⁴ Nevertheless, in the years immediately following HHS's report, the government increased funding for Head Start by hundreds of millions of dollars (Enriquez, 2016). If we had followed Jensen's recommendation in 1969 to devote money to programs that were tailored to the strengths of different groups rather than to Head Start, around two hundred billion dollars would have gone to improving lives instead of accomplishing nothing that can be detected. This is one of many examples of how basing social policies on questionable scientific premises can have enormous opportunity costs.

4.1. *Unknown dangers*

It is impossible to know exactly what the consequences would be if race differences were proven to have a substantial genetic component and this finding became widely accepted. We ought to try to anticipate the potential harms and – keeping in mind the poor track record of even the most talented prognosticators of cultural trends – determine how seriously we should take them.

In the liberal West, many of our institutions, laws, and moral values are predicated on the assumption that race differences are either nonexistent or environmentally caused. If the hereditarian theory of race differences became widely accepted, it seems inevitable that there would be significant

cultural changes, even if we cannot predict what those changes would be with any precision. Just about any radical change – even if it ultimately benefits the vast majority of people – will have some negative consequences, but the fact that change always has negative consequences is not by itself a compelling reason to preserve the status quo. Every instance of progress has negative byproducts: alternative energy puts coal miners out of work, teaching evolution causes distress to creationists, and so on. Many examples throughout history show that attempts to block scientific progress, for whatever reason, are generally both futile and ultimately harmful. Is research on race differences a special case? Would finding a genetic origin to race differences pose a uniquely serious threat?

A common fear is that, if race differences were proven to have a genetic basis, this would cause people to turn to Nazism. Indeed, the study of race differences is often explicitly equated with Nazism. This fear seems to be based on a historical misunderstanding. Nazi ideology was not based on scientific discoveries. The Nazis were flagrant pseudoscientists whose research in biology and psychology was permeated with ideology. Contrary to a popular myth, both the Nazis and their ideological predecessors (such as Joseph Arthur Comte de Gobineau and Houston Stewart Chamberlain) rejected Darwinism (Richards, 2013).⁵ Most important for the present discussion, Nazi scientists rejected mainstream intelligence testing and the concept of IQ (i.e., general intelligence, or the *g* factor derived by factor analysis), preferring a mystical view of intelligence tied to race. Erich Jaensch, an influential Nazi psychologist at the University of Marburg, claimed that IQ tests advanced the “supremacy of Bourgeoisie spirit” and would be a tool “of Jewry [to] fortify its hegemony” (Rindermann, 2018, p. 61). Jaensch’s student Friedrich Becker advocated “intelligence measurement according to a national and typological point of view,” and called for what was essentially a version of multiple-intelligences theory that accounted for “realism,” “conscientiousness,” “the character value of intelligence,” and “practical intelligence” (Rindermann, 2018, p. 61).

The fact that the Nazis rejected Darwinism and the concept of IQ does not necessarily mean that the study of race differences could never inspire a dangerous political movement. It does mean, however, that we cannot point to Nazi Germany as an illustration of what is liable to happen when people adopt a biologically informed view of the evolution of intelligence. In Nazi Germany, “science” followed from ideology, not the other way around. Some contemporary neo-Nazis claim to find support for their Nazi-inspired views in Darwinism and IQ research, but their ideology tends to dictate their interpretation of the science – which is usually grossly uninformed.

There is a legitimate fear that findings on race differences could be widely misunderstood in ways that would promote racial discrimination, hatred, and conflict. Our tendency for “folk essentialism,” which manifests in early childhood (Gelman, 2003), is a possible source of danger. People tend to explain why each entity has the properties it does by appealing to invisible essences shared by all members of a particular category that generate those properties (Gelman, 2003). Thus, children believe that rocks, men, women, and trees belong to categories whose members possess rock-ness, maleness, etc. The fear is that the discovery of race differences could reinforce our tendency to see members of different races as possessing different essences, which would in turn foster stereotypical thinking and discrimination.

There is reason to think that this dismal outcome is not inevitable. First, cross-cultural studies have found that “essentialist intuitions [vary] enormously across cultures and education levels” (Olivola & Machery, 2014, p. 499), and are thus highly plastic. Some evidence suggests, for example, that in cultures which recognize transsexual women as a third gender people do not essentialize males (Olivola & Machery, 2014). Perhaps we should not be too pessimistic about people’s capacity to learn the error of essentializing race. Second, outside of certain university departments, virtually everyone believes that there are physical and psychological differences (on average) between men and women, and most people essentialize these differences. The fact that most people in the West essentialize the differences between men and women did not stop men from supporting women’s rights, and did not prevent societies from making great progress toward that end. Even if people continued to (erroneously) essentialize races, this need not create an insuperable barrier to racial harmony.

We should also keep in mind that we have to weigh the danger of open inquiry against the alternative, which is opposing open inquiry. If there is a legitimate fear that disseminating findings about race differences could lead people to essentialize race and then lead to racial conflict, we have to consider the possibility that concealing these findings could lead to a similar or perhaps worse result. As long as people believe that race differences have a purely environmental cause, differences will, in practice, most likely be attributed to racism or institutional racism. Denying the possible genetic cause of race differences will not stop people from being focused on race. If people believe that members of certain races are victimized or benefited by racism, this could also foster essentialist thinking. It may be *more* likely to lead to racial conflict, since, as discussed below, some people will invariably be blamed, and whole races are likely to be held collectively accountable.

5. Non-utilitarian considerations in favor of free inquiry

5.1. *The intrinsic value of truth*

From a utilitarian perspective, there is nothing inherently wrong with falsehood. If not “productive of any material effects, [it] can never, upon the principle of utility, constitute any offense at all” (Bentham, [1823] 1876, §16.24). However, many utilitarians take it to be an empirical fact that the felicitic consequences of falsehood tend to be negative, and they oppose it on those grounds. Singer (1996), for example, advocates freedom of inquiry as far as what can be investigated, and specifically opposes restrictions on intelligence research.⁶ Naturally, he opposes methods of inquiry that would harm human or animal subjects without being justified on utilitarian grounds. Bentham says that, “combined with other circumstances, there is scarce any sort of pernicious effect which [falsehood] may not be instrumental in producing” (Bentham, [1823] 1876, §16.24; cf. James, [1896] 1907). When it comes to extolling truth, even philosophers who are not utilitarians often emphasize its instrumental usefulness rather than its intrinsic value. Clifford ([1877] 1999), citing practical dangers, famously suggests that it is immoral to believe anything without sufficient evidence. He reasons that even if no harm follows from a particular false belief, we must guard against cultivating a habit of credulousness, which would eventually lead to our destruction. When Frankfurt (2006) considers why truth is important, the first thing that comes to his mind is that “truth often possesses very considerable practical utility. Any society that manages to be even minimally functional must have . . . a robust appreciation of the endlessly protean utility of truth” (p. 15). He expounds:

Our success or failure in whatever we undertake, and therefore in life altogether, depends on whether we are guided by truth or whether we proceed in ignorance or on the basis of falsehood. [To] the extent that we recognize what dealing effectively with the problems of life entails, we cannot help loving truth. (Frankfurt, 2006, pp. 35–36, 48)

All the reasons Frankfurt gives for why we should be concerned with truth connect directly or indirectly to its usefulness in helping us to satisfy our desires or otherwise achieve our goals.

There is also a long-standing tradition that truth has some intrinsic value, and that comprehending the truth and acting in conformity with it are worthwhile goals even if, in some cases, “he who increases knowledge increases sorrow” (Ecclesiastes 1:18 NKJV). When Democritus said that he would “rather discover one causal law than be King of Persia” (Pearl, 2000, p. 41), he was probably expressing his deep commitment to truth rather than claiming that understanding leads to the greatest possible pleasure. Nozick (1974) took it for granted that most people (under normal circumstances) would reject a life of pleasure in an “experience machine” at

the cost of being unaware that their perceived reality was a simulation and thus not really true.⁷

People do have different intuitions and views about whether truth is intrinsically valuable, but it seems likely that many professional philosophers and scientists are driven by a desire to attain some degree of true understanding of the world, ourselves, and our place in it. For these scholars, having wrong views is a tragedy even if they never suffer pain because of their mistake.

If there is meaningful, evolved, genetically based psychological diversity among geographic human populations, this has far-reaching implications for several areas of science (Winegard, Winegard, & Boutwell, 2017) as well as philosophy. We cannot understand the nature and evolution of intelligence unless we can explain why selection favored different levels of general intelligence, or specific intelligences, under different conditions. Since IQ is the best predictor of many individual and group outcomes that are studied in social science (Deary, 2012; Gottfredson, 2004; Haier, 2017; Jones, 2016; Rindermann, 2018), we will be in the dark about many sociological phenomena if we refuse to confront intelligence differences. Most theories in moral and political philosophy acknowledge the possibility of differences among individuals, but do not address the possibility of group differences. If holding ethical views that are consistent, justified, and applicable to the real world is valuable to us, then we must consider the implications of human diversity.

Those who believe the pursuit of truth to be valuable for its own sake recognize other competing values. No sane person would pursue some interesting truth at the cost of destroying society or instigating genocide – the results feared by some opponents of research on race differences. The point is only that the intrinsic value of truth should at least be part of our moral calculation.

5.2. Justice

Linda Gottfredson (2005b) observes that “currently, racial parity in outcomes is often treated as the ultimate standard for fairness and lack of parity as a measure of White racism” (p. 317). Those who deny that there is evidence in favor of hereditarianism are forced to conclude that phenotypic differences between groups “must be artificial, manmade, manufactured. *Someone* must be at fault” (p. 318). However, if hereditarianism is true, then it may be that no one should necessarily be blamed for different average outcomes among groups. There is no theory of justice that says it is right to falsely blame a group of people for wrongs they did not commit because confronting the exculpatory evidence causes us discomfort.

Some environmentalists may blame *structural racism* for group differences in IQ.⁸ Structural racism refers to the lingering effects of past racism that are embodied in our institutions, and which have pernicious effects regardless of whether or not living people are personally racist. Although the theory that IQ gaps are due to structural racism does not imply that living people are racist, it still implies that living people should be blamed in some ways for unequal outcomes. If the theory is correct, people who benefit from structural racism have a moral obligation to oppose it and counteract its effects. So long as racial gaps remain, people will be blamed for failing to extirpate structural racism.

6. Conclusion: The responsibility of philosophers

The strategy – advocated by some influential scholars – of stigmatizing, suppressing, or downplaying evidence in favor of hereditarianism about group differences has been tried and has not worked. Research on this topic has been done and the results are widely available. Major psychology journals continue to publish work that deals openly with group differences (though researchers still debate about the relative contribution of genes and environment, and the question has not been settled definitively). Any measures that would be effective in preventing further work, such as those advocated by Kourany (2016), would have to be so severe that they would only attract even more attention to the findings they aimed to suppress. Science will carry on, and these questions will be answered. We should prepare in advance for the possibility that the genes underlying intelligence differences will not be distributed identically among ethnic groups. Failure to do this will only create a vacuum for “cranks rather than scientists” to opine on the nature and consequences of group differences (Anomaly, 2017, p. 293). Reich (2018) warns that if scientists “willfully abstain from laying out a rational framework for discussing human differences, [they] will leave a vacuum that will be filled by pseudoscience” (p. 258).

This paper has argued that the usual utilitarian reasons given for restricting intelligence research are not convincing and, in fact, there are strong reasons, both utilitarian and non-utilitarian, to favor free inquiry. For philosophers specifically, there is an additional consideration. For decades, the contribution of philosophers to this debate has consisted mostly in providing alternative explanations for evidence seeming to support hereditarianism about race differences (see Sesardic, 2000, 2005), and advocating various kinds of restriction and censorship (see Cofnas, 2016). This may be because hereditarianism is controversial, and philosophers are strongly disincentivized from pursuing lines of argument that lead to truly controversial conclusions. Testifying to how serious this problem is, Jeff McMahan, Francesca Minerva, and Peter Singer recently founded the

Journal of Controversial Ideas, which will allow scholars to publish pseudonymously. Singer (2017) commented that “it’s unfortunate that such a journal should ever be considered necessary to enable controversial ideas to be published, but perhaps we have got to the point where it is.” It is not clear what kind of controversial ideas Singer had in mind, and the journal has not yet released its first issue, but it is hard to find a more controversial idea than hereditarianism about race differences in intelligence.

There is a danger for the philosophical community in putting our credibility on the line over the claim that race differences are entirely environmental. If work on genetics and neuroscience within the next decade produces convincing evidence that differences in measured intelligence among groups have a significant genetic component, there will be no way to conceal this information. The hereditarian explanation will have to be accepted, and people will know that philosophers were on the wrong side of the issue both scientifically and morally: scientifically, because we are supposed to be careful, disinterested commentators on scientific controversies, not activists supporting only the politically popular side; morally, because we did not help lay the groundwork for responding in a moral way to these facts that we should have known might be coming.

Notes

1. Virtually all informed scholars are, to varying degrees, hereditarians about individual differences in intelligence (Neisser et al., 1996). The controversy centers on the role of genes in group differences. Hereditarians about group differences believe that genes play a nontrivial role in these differences – environmentalists, that genes play no significant role.
2. The researchers who carried out the Minnesota Transracial Adoption Study argue that the “results...provide little or no conclusive evidence for genetic influences underlying racial differences in intelligence” (Waldman, Weinberg, & Scarr, 1994, p. 29). They give two main reasons for this conclusion. First, the mean IQ of Asian/Indian adoptees was lower than that of white adoptees, despite the fact that mean (East) Asian IQ is higher than that of Whites. This contradicts the hereditarian prediction that the rank ordering of the adoptees would reflect the rank ordering of their respective racial groups. Second, black children had worse early adoptive experiences than white children: Whites were placed with an adoptive family sooner and spent more time with them than Blacks (although half-black children were placed sooner than white children). Controlling for early experience explained a small proportion of the variance in IQ at age 17, but the fact remains that adoption did not have a significant effect on the IQ gap. Scarr (1998) later wrote: “The test performance of the Black/Black adoptees was not different from that of ordinary Black children reared by their own families in the same area of the country. My colleagues and I reported the data accurately and as fully as possible, and then tried to

make the results palatable to environmentally committed colleagues. In retrospect, this was a mistake” (p. 230).

3. Herrnstein and Murray (1994) conclude that “it seems highly likely...that both genes and environment have something to do with racial differences” (p. 311). They do not give an estimate as to the relative importance of one or the other.
4. Some scholars claim that early intervention programs, such as the Abecedarian Project, have produced lasting benefits. As noted, the evidence for these claims is often questionable (see Baumeister & Bacharach, 2000).
5. Richards (2013) magisterially documents the lack of a connection between Darwinism and Nazism.
6. Although it is not entirely clear what his views are, Singer (2007) appears to believe that, given the state of the science (at least in 2007), advocating hereditarianism about group differences “raise[s] the suspicion of racism” because hereditarianism “lacks a solid scientific foundation.” In this passage, Singer was responding to DNA co-discoverer James Watson, who wrote that “the overwhelming desire of society today is to assume that equal powers of reason are a universal heritage of humanity. It may well be. But simply wanting this to be the case is not enough. This is not science. To question this is not to give in to racism” (Watson, 2007). Singer (2007) agrees that “questioning this assumption is not, in itself, racist.”
7. “We learn that something matters to us in addition to experience by imagining an experience machine and then realizing that we would not use it” (Nozick, 1974, p. 44).
8. It is not clear why structural racism would lead to higher mean IQs for East Asians and Jews, but whether the “structural racism” explanation for group differences is plausible is not the point at issue here.

Acknowledgments

Thanks to Timothy Bates, Rafael De Clercq, Hrishikesh Joshi, Neven Sesardić, Omri Tal, and two anonymous reviewers for helpful comments on earlier drafts of this paper.

Notes on contributor

Nathan Cofnas is reading for a DPhil in philosophy at the University of Oxford.

References

- Allegrini, A. G., Selzam, S., Rimfeld, K., von Stumm, S., Pingault, J. B., & Plomin, R. (2019). Genomic prediction of cognitive traits in childhood and adolescence. *Molecular Psychiatry*, 24, 819–827.
- Anomaly, J. (2017). Race research and the ethics of belief. *Journal of Bioethical Inquiry*, 14, 287–297.
- Bachman, J. G., O'Malley, P. M., Freedman-Doan, P., Trzesniewski, K. H., & Donnellan, M. B. (2011). Adolescent self-esteem: Differences by race/ethnicity, gender, and age. *Self and Identity*, 10, 445–473.
- Baumeister, A. A., & Bacharach, V. R. (2000). Early generic educational intervention has no enduring effect on intelligence and does not prevent mental retardation: The infant health and development program. *Intelligence*, 28, 161–192.

- Bentham, J. ([1823] 1876). *An introduction to the principles of morals and legislation*. Oxford: Clarendon Press.
- Block, N. J., & Dworkin, G. (1974). IQ, heritability and inequality, part 2. *Philosophy & Public Affairs*, 4, 40–99.
- Ceci, S. J., & Williams, W. M. (2009). Should scientists study race and IQ? YES: The scientific truth must be pursued. *Nature*, 457, 788–789.
- Chomsky, N. (1967, February 23). The responsibility of intellectuals. *The New York Review of Books*. Retrieved from <http://www.nybooks.com/articles/1967/02/23/a-special-supplement-the-responsibility-of-intelle/>
- Chomsky, N. (1976). The fallacy of Richard Herrnstein's IQ. In N. J. Block & G. Dworkin (Eds.), *The IQ controversy: Critical readings* (pp. 285–298). New York: Pantheon Books.
- Chomsky, N. (1988). *Language and problems of knowledge: The Managua lectures*. Cambridge, MA: MIT Press.
- Clifford, W. K. ([1877] 1999). The ethics of belief. In W. K. Clifford (Ed.), *The ethics of belief and other essays* (pp. 70–96). New York: Prometheus Books.
- Cofnas, N. (2016). Science is not always “self-correcting”: Fact–Value conflation and the study of intelligence. *Foundations of Science*, 21, 477–492.
- Davies, G., Lam, M., Harris, S. E., Trampush, J. W., Luciano, M., Hill, W. D., . . . Deary, I. J. (2018). Study of 300,486 individuals identifies 148 independent genetic loci influencing general cognitive function. *Nature Communications*, 9, 2098.
- Dawkins, R. (2006). *The god delusion*. New York: Houghton Mifflin.
- Deary, I. J. (2012). Intelligence. *Annual Review of Psychology*, 63, 453–482.
- Dickens, W. T., & Flynn, J. R. (2006). Black Americans reduce the racial IQ gap: Evidence from standardization samples. *Psychological Science*, 17, 913–920.
- Dummett, M. (1981). Ought research to be unrestricted? *Grazer Philosophische Studien*, 12, 281–298.
- Edwards, A. W. F. (2003). Human genetic diversity: Lewontin's fallacy. *BioEssays*, 25, 798–801.
- Enriquez, B. (2016). FY 2016 Head Start funding increase. Retrieved from https://eclkc.ohs.acf.hhs.gov/sites/default/files/docs/policy-pi/2016-08/acf-pi-hs-16-03_0.pdf
- Flore, P. C., Mulder, J., & Wicherts, J. M. (2018). The influence of gender stereotype threat on mathematics test scores of Dutch high school students: A registered report. *Comprehensive Results in Social Psychology*, 3, 140–174.
- Flore, P. C., & Wicherts, J. M. (2015). Does stereotype threat influence performance of girls in stereotyped domains? A meta-analysis. *Journal of School Psychology*, 53, 25–44.
- Flynn, J. R. (1980). *Race, IQ and Jensen*. London: Routledge & Kegan Paul.
- Flynn, J. R. (2012). *Are we getting smarter? Rising IQ in the twenty-first century*. New York: Cambridge University Press.
- Flynn, J. R. (2018). Academic freedom and race: You ought not to believe what you think may be true. *Journal of Criminal Justice*, 59, 127–131.
- Frankfurt, H. G. (2006). *On truth*. New York: Knopf.
- Frisby, C. L., & Beaujean, A. A. (2015). Testing Spearman's hypotheses using a bi-factor model with WAIS-IV/WMS-IV standardization data. *Intelligence*, 51, 79–97.
- Ganley, C. M., Mingle, L. A., Ryan, A. M., Ryan, K., Vasilyeva, M., & Perry, M. (2013). An examination of stereotype threat effect on girls' mathematics performance. *Developmental Psychology*, 49, 1886–1897.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Gardner, H. (2001). The ethical responsibilities of professionals. Retrieved from <http://thegoodproject.org/wp-content/uploads/2012/09/GoodWork2.pdf>

- Gardner, H. (2009). *Intelligence: It's not just IQ*. New York: Rockefeller University. Retrieved from <http://www.youtube.com/watch?v=cP4CBpLNyE&feature=related>
- Gelman, S. A. (2003). *The essential child: Origins of essentialism in everyday thought*. Oxford: Oxford University Press.
- Gottfredson, L. S. (2004). Life, death, and intelligence. *Journal of Cognitive Education and Psychology*, 4, 23–46.
- Gottfredson, L. S. (2005a). Suppressing intelligence research: Hurting those we intend to help. In R. H. Wright & N. A. Cummings (Eds.), *Destructive trends in mental health: The well-intentioned path to harm* (pp. 155–186). New York: Routledge.
- Gottfredson, L. S. (2005b). What if the hereditarian hypothesis is true? *Psychology, Public Policy, and Law*, 11, 311–319.
- Gottfredson, L. S. (2010). Lessons in academic freedom as lived experience. *Personality and Individual Differences*, 49, 272–280.
- Haier, R. J. (2017). *The neuroscience of intelligence*. New York: Cambridge University Press.
- Harris, S. (2017). Forbidden knowledge: A conversation with Charles Murray. Retrieved from <https://samharris.org/podcasts/forbidden-knowledge/>
- Herrnstein, R. J., & Murray, C. (1994). *The bell curve: Intelligence and class structure in American life*. New York: Free Press.
- Horgan, J. (2013, May 16). Should research on race and IQ be banned? *Scientific American*. Retrieved from <https://blogs.scientificamerican.com/cross-check/should-research-on-race-and-iq-be-banned/>
- James, W. ([1896] 1907). The will to believe. In W. James (Ed.), *The will to believe and other essays in popular philosophy* (pp. 1–31). New York: Longmans Green.
- Jensen, A. R. (1969). How much can we boost IQ and scholastic achievement? *Harvard Educational Review*, 39, 1–123.
- Jones, G. (2016). *Hive mind: How your nation's IQ matters so much more than your own*. Stanford, CA: Stanford University Press.
- Kahneman, D. (2012). A proposal to deal with questions about priming effects. *Nature*. Retrieved from https://www.nature.com/polopoly_fs/7.6716.1349271308!/suppinfoFile/Kahneman%20Letter.pdf
- Kourany, J. A. (2016). Should some knowledge be forbidden? The case of cognitive differences research. *Philosophy of Science*, 83, 779–790.
- Lakatos, I. (1970). Falsification and the methodology of scientific research programmes. In I. Lakatos & A. Musgrave (Eds.), *Criticism and the growth of knowledge: Proceedings of the International Colloquium in the Philosophy of Science, London, 1965, volume 4* (pp. 91–195). London: Cambridge University Press.
- Lewontin, R. C. (1970). Race and intelligence. *Bulletin of the Atomic Scientists*, 26, 2–8.
- Lewontin, R. C. (1972). The apportionment of human diversity. *Evolutionary Biology*, 6, 381–398.
- Lipsey, M. W., Farran, D. C., & Durkin, K. (2018). Effects of the Tennessee Prekindergarten Program on children's achievement and behavior through third grade. *Early Childhood Research Quarterly*, 45, 155–176.
- Loehlin, J. C. (2000). Group differences in intelligence. In R. J. Sternberg (Ed.), *Handbook of intelligence* (pp. 176–193). Cambridge, UK: Cambridge University Press.
- Lubinski, D., & Humphreys, L. G. (1997). Incorporating general intelligence into epidemiology and the social sciences. *Intelligence*, 24, 159–201.
- Murray, C. (2007). The magnitude and components of change in the black–white IQ difference from 1920 to 1991: A birth cohort analysis of the Woodcock–Johnson standardizations. *Intelligence*, 35, 305–318.

- National Research Council. (2004). *Biotechnology research in an age of terrorism*. Washington, DC: National Academies Press.
- Neisser, U., Boodoo, G., Bouchard, T. J., Jr., Boykin, A. W., Brody, N., Ceci, S. J., ... Urbina, S. (1996). Intelligence: Knowns and unknowns. *American Psychologist*, 51, 77–101.
- Nisbett, R. E. (2017, June 17). Who is cherry-picking? *Vox*. Retrieved from <https://www.vox.com/the-big-idea/2017/6/15/15797120/race-black-white-iq-response-critics>
- Nozick, R. (1974). *Anarchy, state, and utopia*. New York: Basic Books.
- Olivola, C. Y., & Machery, E. (2014). Is psychological essentialism an inherent feature of human cognition? *Behavioral and Brain Sciences*, 37, 499.
- Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, 349, aac4716.
- Pearl, J. (2000). *Causality: Models, reasoning, and inference*. Cambridge, UK: Cambridge University Press.
- Plomin, R., & Deary, I. J. (2015). Genetics and intelligence differences: Five special findings. *Molecular Psychiatry*, 20, 98–108.
- Protzko, J. (2015). The environment in raising early intelligence: A meta-analysis of the fadeout effect. *Intelligence*, 53, 202–210.
- Puma, M., Bell, S., Cook, R., Heid, C., Broene, P., Jenkins, F., ... Downer, J. (2012). *Third grade follow-up to the Head Start impact study final report*. Washington, DC: U.S. Department of Health and Human Services. Retrieved from http://www.acf.hhs.gov/sites/default/files/opre/head_start_report.pdf
- Reich, D. (2018). *Who we are and how we got here: Ancient DNA and the new science of the human past*. New York: Pantheon Books.
- Richards, R. J. (2013). Was Hitler a Darwinian? In R. J. Richards (Ed.), *Was Hitler a Darwinian? Disputed questions in the history of evolutionary theory* (pp. 192–242). Chicago: University of Chicago Press.
- Rindermann, H. (2018). *Cognitive capitalism: Human capital and the wellbeing of nations*. Cambridge, UK: Cambridge University Press.
- Rindermann, H., Becker, D., & Coyle, T. R. (2016). Survey of expert opinion on intelligence: Causes of international differences in cognitive ability tests. *Frontiers in Psychology*, 7, 399.
- Rindermann, H., Becker, D., & Coyle, T. R. (2020). Survey of expert opinion on intelligence: Intelligence research, experts' background, controversial issues, and the media. *Intelligence*, 78, 1–18.
- Ritchie, S. J., Bates, T. C., & Deary, I. J. (2015). Is education associated with improvements in general cognitive ability, or in specific skills? *Developmental Psychology*, 51, 573–582.
- Rose, S. (2009). Should scientists study race and IQ? NO: Science and society do not benefit. *Nature*, 457, 786–788.
- Rosenberg, N. A., Edge, M. D., Pritchard, J. K., & Feldman, M. W. (2019). Interpreting polygenic scores, polygenic adaptation, and human phenotypic differences. *Evolution, Medicine, and Public Health*, 2019, 26–34.
- Sackett, P. R., Hardison, C. M., & Cullen, M. J. (2004). On interpreting stereotype threat as accounting for African American–white differences on cognitive tests. *American Psychologist*, 59, 7–13.
- Savage, J. E., Jansen, P. R., Stringer, S., Watanabe, K., Bryois, J., de Leeuw, C. A., ... Posthuma, D. (2018). Genome-wide association meta-analysis in 269,867 individuals identifies new genetic and functional links to intelligence. *Nature Genetics*, 50, 912–919.
- Scarr, S. (1998). On Arthur Jensen's integrity. *Intelligence*, 26, 227–232.

- Sesardic, N. (1992). Science and politics: Dangerous liaisons. *Journal for General Philosophy of Science*, 23, 129–151.
- Sesardic, N. (2000). Philosophy of science that ignores science: Race, IQ and heritability. *Philosophy of Science*, 67, 580–602.
- Sesardic, N. (2005). *Making sense of heritability*. Cambridge, UK: Cambridge University Press.
- Singer, P. (1996). Ethics and the limits of scientific freedom. *The Monist*, 79, 218–229.
- Singer, P. (2007, November 1). Should we talk about race and intelligence? *Project Syndicate*. Retrieved from <https://www.project-syndicate.org/commentary/should-we-talk-about-race-and-intelligence>
- Singer, P. (2017). What is it like to be a philosopher? Retrieved from <http://www.whatisitlikeketobeaphilosopher.com/peter-singer/>
- Sniekers, S., Stringer, S., Watanabe, K., Jansen, P. R., Coleman, J. R. I., Krapohl, E., ... Posthuma, D. (2017). Genome-wide association meta-analysis of 78,308 individuals identifies new loci and genes influencing human intelligence. *Nature Genetics*, 49, 1107–1112.
- Snyderman, M., & Rothman, S. (1987). Survey of expert opinion on intelligence and aptitude testing. *American Psychologist*, 42, 137–144.
- Snyderman, M., & Rothman, S. (1988). *The IQ controversy, the media and public policy*. New Brunswick, NJ: Transaction.
- Steele, C. M., & Aronson, J. A. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69, 797–811.
- Steele, C. M., & Aronson, J. A. (2004). Stereotype threat does not live by Steele and Aronson (1995) alone. *American Psychologist*, 59, 47–48.
- Sternberg, R. J. (2005). There are no public-policy implications: A reply to Rushton and Jensen (2005). *Psychology, Public Policy, and Law*, 11, 295–301.
- Tal, O. (2012). The cumulative effect of genetic markers on classification performance: Insights from simple models. *Journal of Theoretical Biology*, 293, 206–218.
- Twenge, J. M., & Crocker, J. (2002). Race and self-esteem: Meta-analyses comparing whites, blacks, hispanics, Asians, and American Indians and comment on Gray-Little and Hafdahl (2000). *Psychological Bulletin*, 128, 371–408.
- Urbach, P. (1974). Progress and degeneration in the 'IQ debate' (I). *The British Journal for the Philosophy of Science*, 25, 99–135.
- Waldman, I. D., Weinberg, R. A., & Scarr, S. (1994). Racial-group differences in IQ in the Minnesota transracial adoption study: A reply to Levin and Lynn. *Intelligence*, 19, 29–44.
- Watson, J. (2007, October 19). To question genetic intelligence is not racism. *The Independent*. Retrieved from <https://www.independent.co.uk/voices/commentators/james-watson-to-question-genetic-intelligence-is-not-racism-5328720.html>
- Winegard, B., Winegard, B., & Boutwell, B. (2017). Human biological and psychological diversity. *Evolutionary Psychological Science*, 3, 159–180.
- Yong, E. (2012). Nobel laureate challenges psychologists to clean up their act. *Nature*. Retrieved from <https://www.nature.com/news/nobel-laureate-challenges-psychologists-to-clean-up-their-act-1.11535>