

Science Is Not Always “Self-Correcting” Fact–Value Conflation and the Study of Intelligence

Nathan Cofnas

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Abstract Some prominent scientists and philosophers have stated openly that moral and political considerations should influence whether we accept or promulgate scientific theories. This widespread view has significantly influenced the development, and public perception, of intelligence research. Theories related to group differences in intelligence are often rejected a priori on explicitly moral grounds. Thus the idea, frequently expressed by commentators on science, that science is “self-correcting”—that hypotheses are simply abandoned when they are undermined by empirical evidence—may not be correct in all contexts. In this paper, documentation spanning from the early 1970s to the present is collected, which reveals the influence of scientists’ moral and political commitments on the study of intelligence. It is suggested that misrepresenting findings in science to achieve desirable social goals will ultimately harm both science and society.

Keywords Epistemology · Fact–value distinction · Intelligence research · Science and morality

1 Morality and Belief Formation

The affidavit against Socrates charged: “Socrates is guilty of wrongdoing in that he busies himself studying things in the sky and below the earth...” (Plato *Apology* 19b). This activity, it claimed, threatened to “corrupt the youth.” The ultimate execution of Socrates is regarded as a scandal in Western history. Nevertheless, the philosophy of his prosecutors—that morality-threatening scientific investigation should be prohibited—flourishes even today. As shall be discussed, many prominent, influential contemporary scientists and philosophers *explicitly* argue that scientific conclusions should be influenced by moral concerns (e.g., [Dennett 2003, 2006b](#); [Diamond 1997](#); [Gardner 2001, 2009](#); [Kitcher 1985, 1997](#)), or that scientific investigation likely to lead to supposedly “immoral” or politically “dangerous” conclusions should

N. Cofnas (✉)
Department of Philosophy, Lingnan University, Tuen Mun, Hong Kong
e-mail: nathancofnas@ln.hk

not be undertaken (e.g., [Block and Dworkin 1974](#); [Chomsky 1988](#); [Gardner 2001](#); [Sternberg 2005](#)).

Now that the debate about religion is largely over in the scholarly community, one of the most morally controversial areas of science is the study of group differences in psychology, particularly in intelligence. Findings related to group differences in intelligence are widely regarded as either morally wrong or morally dangerous (see [Block and Dworkin 1974, 1976](#); [Dennett 2003](#); [Gardner 2001](#); [Kitcher 1997](#); discussion in [Gottfredson 2010, 2013](#)). Prominent scientists and philosophers have stated that *these findings should be either rejected or suppressed regardless of their scientific validity*. One influential psychologist explicitly describes these claims as possibly being “correct scientifically,” but rules them out a priori on moral grounds ([Gardner 2009](#)). A prominent behavioral geneticist asserts that they are refuted by an “ethical principle that individual and cultural accomplishment is not tied to the genes in the same way as the appearance of our hair” ([Turkheimer 2007](#)).

There seems to be a deep human impulse to conflate facts and moral values. For most people for most of history, popular beliefs were simply unquestionable, and those who challenged them were condemned as evil outsiders. Even in ancient Athens, questioning of popular morality was a capital offense. Before Socrates, Anaxagoras was exiled from that cradle of democracy for suggesting that the sun, reputed to be a deity, is actually “a fiery lump.”¹ King David is quoted in the Hebrew Bible saying: “For indeed those who hate you, O Hashem [God], I hate them, and I quarrel with those who rise up against you! With the utmost hatred, I hate them; they have become enemies unto me” (Psalm 139:21–22). The Talmud (*Megillah* 25b) says that a Jew is permitted to tell an idolater to “take his idol and place it in his *shin tav* [i.e., rectum].” According to reputedly tolerant Buddhism, not having the right view will cause you to be reborn in Hell or as an animal, as the Buddha explains: “Now there are two destinations for one with wrong view, I say: hell or the animal realm” (*Majjhima Nikāya* 57.5—note: this quote is from the Pali Canon, which is the oldest, most authentic Buddhist literature).

Testifying to the naïve intuition that facts and values are inextricably linked, the creation myths of both Judaism and Hinduism assert that the principles of morality were created by God in the same way that he created the physical world (this is discussed at length—with references to the traditional literature—in the Jewish work *Derech Hashem* by Luzzatto 1735/1998, and is declared in the Hindu *Manusmirti* 1:26). “Morality” is conceived as simply part of the creation. According to religious philosophy, there is no context in which value-free reasoning is appropriate, because values—specifically moral values—are literally part of the world. “Values” can imply “facts,” and vice versa.

1.1 Is Science “Self-Correcting”?

What about scientists? Do they abandon hypotheses in the light of empirical evidence, regardless of the moral implications of doing so?

Physicist Lawrence [Krauss \(2012\)](#) suggests that the scientific ethos is embodied in the following three principles, each of which really expresses the same idea, namely, that scientists are willing to abandon hypotheses in the light of evidence:

- (1) follow the evidence wherever it leads; (2) if one has a theory, one needs to be willing to try to prove it wrong as much as one tries to prove that it is right; (3) the ultimate

¹ According to Sotion in *Succession of Philosophers*, Anaxagoras “was brought to trial for impiety by Cleon because he said that the sun was a fiery lump” ([Barnes 2001, 187](#)).

arbiter of truth is experiment, not the comfort one derives from one’s a priori beliefs....
(p. xvi)

Biologist Krebs (2010) writes that “over time, science is self-correcting because someone will have the courage to challenge the prevailing view and win the argument, *provided he or she has sufficient evidence*” (italics added). Practically all commentators on science have emphasized that the willingness to abandon hypotheses—even cherished, comforting hypotheses—when they come into conflict (however that is defined) with objective evidence is an essential part of the scientific process. The willingness to abandon falsified or disconfirmed theories or research programs is thought to be an essential feature separating scientific from religious/prescientific thinking.

From a philosophical perspective, scientific practice ought to involve simply abandoning hypotheses when they are disconfirmed. However, from a sociological perspective, when hypotheses are regarded as supporting certain moral values or desirable political goals, scientists often refuse to abandon them in the light of empirical evidence. We may not have freed ourselves of the tendency to conflate morality and science nearly as much as is usually supposed. The tendency to conflate morality and science is so strong that, as shall be documented, even highly sophisticated people trained in science and the philosophy of science frequently incorporate explicitly moral considerations into their scientific reasoning. Some philosophers have even rationalized this practice, and their arguments, though fallacious, have been surprisingly uncritically accepted. There is widespread acceptance of the idea *among academics* that either (a) morality requires people to hold certain beliefs about empirical matters, and that scientists should not conduct research that threatens to uncover facts that contradict these morally required beliefs, or (b) morality requires people to hold certain beliefs regardless of the evidence.

2 Philosophical Arguments for Mixing Morality and Science

2.1 Raising the Standard of Evidence Required to Accept Dangerous Hypotheses

In the Introduction to *Vaulting Ambition: Sociobiology and the Quest for Human Nature*, philosopher of science Kitcher (1985) writes:

Everybody ought to agree that, *given sufficient evidence* for some hypothesis about humans, we should accept that hypothesis whatever its political implications. But the question of what counts as sufficient evidence is not independent of the political consequences. If the costs of being wrong are sufficiently high, then it is reasonable and responsible to ask for more evidence than is demanded in situations where mistakes are relatively innocuous.² (p. 9)

He goes on to argue that sociobiological theories about human behavior do not meet the requisite higher standard for acceptance, given the alleged negative political consequences of accepting them. He deems “general intelligence” a “myth,” falsely claiming that “various intellectual capacities are not well correlated”³ and citing (presumably dangerous) implications of the theory of general intelligence for “the construction of social policy” (pp. 200–201).

² Kitcher (1997) repeats this argument in a paper published in *Noûs*.

³ That “various intellectual capacities” are highly correlated has been known since the early 20th century (Spearman 1904, 1927; Wechsler 1958; see historical discussion in Sesardic 2005, 34–36; scientific discussions in Carroll 1993; Woodley 2011).

Sesardic (2005, 199–201) suggests that a *public* policy of holding “dangerous” hypotheses to a higher standard, as Kitcher advocates, would be epistemically self-defeating: Everyone, Sesardic argues, would know that the case for dangerous hypotheses was being understated; or, if scientists claimed that there was no evidence for a dangerous hypothesis, people would not know what to believe. But such a policy is not epistemically self-defeating *if the majority of people agree with it*. The fact that *Vaulting Ambition* “convinced a generation of philosophers and others to abandon sociobiology” (Holcomb 2005, 392)—and given how the double standard for dangerous hypotheses was central to the book’s argument—suggests that many, if not most, people do agree that the standard of evidence for accepting hypotheses should be sensitive to the political consequences of their being true or false. The majority of people do seem to believe that the “dangerousness” or moral distastefulness of a hypothesis makes believing it less justified.

However, Kitcher’s policy may be self-defeating in a different sense: It may ultimately undermine the very social good that it is supposed to promote. Accepting or rejecting hypotheses according to whether their truth would be politically desirable will cause us to adopt beliefs which are, in short, not epistemically justified. Leaving aside the intrinsic value of knowledge, to survive and flourish in the world we must understand the world as it is. Only then can we design effective means to accomplish our goals. While clinging to a false but comforting belief may not always have disastrous consequences in the short run, if such commitment stifles cumulative scientific progress then it is likely to lead us to engage in ill-informed action, and to prevent us from achieving desirable social goals. This issue shall be discussed more in Sect. 4.

2.2 Ruling out Immoral and Dangerous Hypotheses A Priori

Daniel Dennett—also a philosopher, but one who has made substantive contributions to cognitive/evolutionary science—says that the standard of evidence required to accept “dangerous” scientific hypotheses should not be raised. Rather, we should never accept them regardless of the evidence (Dennett 2003, 2006b). He is fairly open about his principled opposition to “dangerous” theories, and this leads him to apply jarring double standards to scientific hypotheses with different alleged social consequences.

In *Freedom Evolves*, Dennett (2003) says regarding critics of hereditarianism:

I don’t challenge the critics’ motives or even their tactics; if I encountered people conveying a message I thought was so dangerous that I could not risk giving it a fair hearing, I would be at least strongly tempted to misrepresent it, to caricature it for the public good. I’d want to make up some good epithets, such as *genetic determinist* or *reductionist* or *Darwinian Fundamentalist*, and then flail those straw men as hard as I could. As the saying goes, it’s a dirty job, but somebody’s got to do it.⁴ (pp. 19–20)

So what are we to make of his statement on page 160 of the same book, where he calls the theory that intelligence differences between races are hereditary an “awful racist hypothesis”? This can mean one of two things: he considers hereditarianism about race differences in intelligence to be *either* scientifically wrong *or* socially “dangerous.”

Diamond (1997) writes regarding genetic theories of race differences in intelligence: “The objection to such racist explanations is not just that they are loathsome, but also that they are wrong” (p. 19). (Note that he regards loathsomeness and [alleged] scientific wrongness as two, *separate* objections to the genetic hypothesis). He then asserts:

⁴ See Sesardic (2005, 203). Elsewhere, Dennett (2006b) refers to the problem of balancing “allegiance to truth against...appreciation of the social impact of some truths and hence the need for diplomacy and reticence.”

In fact...modern “Stone Age” peoples are on the average probably more intelligent, not less intelligent, than industrialized peoples....From the very beginning of my work with New Guineans, they impressed me as being on the average more intelligent...than the average European or American is. (pp. 19–20)

Dennett (2003, 160) lauds as “magnificent” the book wherein Diamond proposes the hypothesis of innate New Guinean intellectual superiority. But he dismisses the hypothesis of innate European intellectual superiority on moral grounds.

The double standard advocated by Dennett is striking when we consider his treatment of different theories regarding the relative intelligence of different populations. The following (Hypothesis 1) is Diamond’s argument for the innate intellectual superiority of New Guineans over Europeans:

Hypothesis 1 New Guineans live in a constant state of tribal warfare. The less intelligent are presumably more likely to be killed in this conflict. This can be assumed to have increased the mean intelligence of New Guineans to above the European average. Confirming this is the fact that, in personal interaction, New Guineans seem to Jared Diamond to be more intelligent than Europeans (Diamond 1997, 20–21).

Not only does Dennett (2003, 160–162) praise Diamond’s (1997) book, he praises the consequences of Diamond’s thesis for promoting “human freedom.” What about the following—Hypothesis 2—which is Richard Lynn’s (2006) argument for European intellectual superiority over New Guineans?

Hypothesis 2 Populations that lived in colder climates in the last hundred thousand years tended to evolve greater intelligence in order to handle the survival challenges posed by winter. Supporting this is the fact that mean brain size and measured intelligence of populations are highly, negatively correlated with the temperature of the region in which they lived during the last ice age (28,000 to 10,000 years ago) (Kanazawa 2008; Lynn 2006; Rushton 1995, 2010; Templer and Arikawa 2006). Europeans score more than two standard deviations higher than New Guineans on “culture-fair” IQ tests (Lynn 2006).

According to Dennett’s guidelines, it is clear that Hypothesis 2 should be rejected as “awful” and “racist.” It is obvious that his uncritical acceptance of Diamond’s theory and his a priori rejection of hypotheses such as Lynn’s have nothing to do with the relative scientific merits of the different theories. Presumably, Kitcher would advocate raising the standard of evidence required for us to accept dangerous Hypothesis 2, whereas Dennett advocates “not...giving it a fair hearing,...misrepresent[ing] it, [and] caricatur[ing] it for the public good.”

Though Dennett advocates misrepresenting scientific theories that threaten his values, he disdains those who lie to promote values with which he disagrees. Consider the following passage from his ode to truth, *Breaking the Spell: Religion as a Natural Phenomenon*:

[Some Marxists,] the only ones that were really dangerous, believed so firmly in the rightness of their cause that they believed it was permissible to lie and deceive in order to further it. They even taught this to their children, from infancy. These are the “red-diaper babies,” children of hardline members of the Communist Party of America, and some of them can still be found infecting the atmosphere of political action in left-wing circles, to the extreme frustration and annoyance of honest socialists and others of the left. (Dennett 2006a, 337)

Dennett scorns the Marxists for believing it “permissible to lie and deceive in order to further” their cause. But he said openly that it is meritorious to “misrepresent” and “caricature” *true* theories that conflict with *his* values. Indeed, he said this is not merely meritorious but “a dirty job” that “*somebody’s got to do.*” Lying to promote *his* values is good, lying to promote values he disagrees with is “dangerous.”

2.2.1 *A Priori Rejection of The Bell Curve at Any Cost*

In an article that won the *Australasian Journal of Philosophy*’s “Best Paper Award” for the year 2013, Barber (2013) refers to “science’s immunity to moral refutation” as a fact that “even the most hardboiled moral realist must acknowledge.” He appeals to this immunity to attack “moral realism”—the view that moral propositions can be objectively true or false. He lists five scientific hypotheses that have been challenged on moral grounds, the first of which is the hypothesis propounded in *The Bell Curve* (Herrnstein and Murray 1994). He describes the “notorious” *Bell Curve* as providing “evidence for a partially genetic intellectual hierarchy among racial groups,” which “potentially conflict[s] with prevailing moral assumptions about...*the just distribution of resources*” (p. 634). Barber concludes that fears about its moral consequences do not count as evidence against *The Bell Curve*’s hypothesis.

However, just two pages later—and after approvingly citing Kitcher’s (1985, 9) argument that we should require dangerous hypotheses to meet higher standards of evidence (p. 636, n. 4)—Barber finds another way to dismiss *The Bell Curve* a priori on moral grounds. He asserts:

If a study appears to license racism, this fact cannot stand as counterevidence in and of itself, but it does give us reason to suspect that we’ll find problems with, say, the methodology used or the interpretation of data, since shoddy science with a racist agenda has a rich lineage. (On *The Bell Curve* in particular, see Newby and Newby (1995).)

The reader of the above passage might assume that Newby and Newby (1995)—Barber’s reference to support dismissing *The Bell Curve* as scientifically bankrupt—contains an analysis of the book’s methods and data analysis. The reader would be wrong. In fact, Newby and Newby (1995) contains no scientific argument at all. Instead, it dismisses *The Bell Curve* on moral grounds!

Newby and Newby’s strategy is to document alleged similarities between the theories in *The Bell Curve* and those of morally bad people such as Nazis. They write: “we should recognize that the eugenics movement of the 1920s and 1930s was respectable and generally accepted among society’s elites until Hitler’s Holocaust discredited the movement during World War II” (p. 16). Of course, the scientific basis of eugenics was not discredited by the Holocaust any more than the theory of relativity was discredited by the bombing of Hiroshima. The fact that the *scientific* basis of eugenics was not “discredited” by the Holocaust—and Newby and Newby cite no other reason to think it has been discredited—means that their strategy of pointing out alleged similarities between the *scientific* views of Herrnstein and Murray and Nazi eugenicists does not, according to Alex Barber’s espoused views, undermine the science of Herrnstein and Murray’s book. Newby and Newby conclude their paper (p. 23), citing Lane (1994), by asserting that *The Bell Curve* contains “tainted sources”—referring to the fact that some of the researchers whose work *The Bell Curve* cites are allegedly fascists and white supremacists, and that some of the papers it cites were published in the *Mankind Quarterly*, which is a journal edited by a supposedly bad person (Roger Pearson).

Even a philosopher who seems to bravely question whether a scientific hypothesis can be refuted by moral claims finds a way to dismiss intelligence research on moral grounds.

2.3 Preventing Harmful Consequences of Scientific Research: Can Scientists Know the Social Implications of Their Work?

Philosophers [Block and Dworkin \(1974\)](#) say that “in light of the difficulty of preventing” “harmful consequences which flow from the interpretation likely to be placed on” race-differences-in-intelligence research, “the proper course would be to avoid undertaking such research altogether” (p. 82). Note that they are effectively saying that it is *likely* that research on race differences in intelligence will, in fact, reveal differences. They sum up their conclusion:

We are not...saying that at all times or in all places investigation of racial genotypic differences in IQ scores should stop. What we are saying is that at this time, in this country, in this political climate, individual scientists should voluntarily refrain from the investigation of genotypic racial differences in performance on IQ tests. (p. 98)

Block and Dworkin point out that we would condemn a Nazi scientist for conducting research in nuclear physics knowing that their discoveries would be used to build atom bombs to drop on innocent people. “At some point the harmful consequences for human welfare of one’s research must enter into the decision whether to pursue it” (p. 81). This is no doubt correct. A scientist should not conduct research to help an evil regime kill millions of people. Block and Dworkin claim that the Nazi-physicist thought experiment illustrates in principle that a scientist can be morally obligated to refrain from, or to sabotage, honest research to avoid negative social consequences. A scientist must always, they say, weigh the value of honest research against its “harmful consequences for human welfare.” ([Chomsky 1976](#), 294–295 makes the same point by arguing that a psychologist in Nazi Germany ought to refrain from investigating whether Jews have a genetic disposition to engage in usury, lest whatever findings they obtained be used for propaganda.)

But the situation of the psychometrician in the United States is qualitatively different from that of the nuclear physicist in Nazi Germany. The German physicist *knows* what will happen if they succeed in figuring out how to split the atom. The scientist in the United States does *not* know to what use their work will be put, and this is a difference in *principle*, not *degree*, between their case and that of the Nazi physicist. Under normal circumstances, the scientist cannot possibly know what the social consequences of their work will be—whether good or bad ([Davis 1978](#); [Sesardic 1992](#), 143–144). And though the scientist can never know the consequences of their work, it is an empirically supported generalization that, as Aristotle puts it, “when one begins from an erroneous beginning, something bad inevitably results in the end” (*Politics* 1302a5–6). *Usually* the discovery and promulgation of knowledge betters human welfare, and *usually* ignorance has the opposite effect ([Gottfredson 2005](#); [Sesardic 1992](#), 144–145; see also [Singer 1996](#), 228–229).

In summary, it is questionable whether the example of the Nazi physicist (or psychologist)—purportedly demonstrating that science should be influenced by morality—has relevance to the scientist in a contemporary democratic country.

3 The Conflation of Facts and Values in Scientific Practice

3.1 A Double Standard Applied to Researchers Who Defend Hypotheses with Different Perceived Social Implications: Arthur Jensen and Howard Gardner

In 1984, Snyderman and Rothman anonymously surveyed 1,020 social scientists and educators about their views on intelligence research. (All those surveyed were members of

mainstream professional organizations.) Famously, a majority of respondents indicated that they agreed with Jensen's (1969,1980) most controversial claims: 94% agreed that at least one-out-of-five possible sources of evidence supported a significant nonzero heritability of IQ in the American white population. On a 4-point scale subjects were asked to indicate whether they thought IQ tests were biased against American Blacks, with 1 being *not at all or insignificantly biased*, 2, *somewhat biased*, 3, *moderately biased*, and 4, *extremely biased*. The mean rating was 2.12—revealing that experts thought there is *less* than a moderate degree of bias (Snyderman and Rothman 1987).

What is less well known about Snyderman and Rothman's survey is that respondents were also asked to indicate their regard for 14 social scientists, considering only their work on intelligence research. They rated each scientist on a 7-point scale, with 1 indicating "Very low regard" and 7 "Very high regard." The mean rating for Steven Jay Gould was 4.45. For Leon Kamin, 4.36. For Arthur Jensen, 3.68 (Snyderman and Rothman 1988, Table 4.1). Kamin was known for his extreme position that IQ has a heritability of *zero*: "Patriotism, we have been told, is the last refuge of scoundrels. Psychologists and biologists might consider the possibility that heritability is the first" (Kamin 1974, 3; quoted in Sesardic 2005, 190). Gould relied heavily on Kamin's work in his denunciation of intelligence research. So although most survey respondents agreed with Jensen's *scientific* claims against Gould and Kamin's, they indicated that they held *Jensen* as a scientist in lower regard.

Prior to his controversial 1969 article on race differences in intelligence, Jensen received a Guggenheim Fellowship and a fellowship at Stanford's Center for Advanced Study in the Behavioral Sciences. After 1969 he received no honor from any major psychological organization in the United States, despite having written a number of "citation classics" (Gottfredson 2005, 160–161).⁵ Not only has he written citation classics, but his once-controversial emphasis on general intelligence (*g*) spawned what all intelligence researchers acknowledge was an enormously fruitful research program. Due in part to his work, Sternberg and Kaufman (2012, 235) report that "[i]t is now as well an established fact as exists in psychology that *g* correlates with many forms of human behavior and their outcomes (see, e.g., Hunt 2011; Jensen 1998; Mackintosh 2011)."⁶ By contrast, Howard Gardner's theory of multiple intelligences has never been empirically supported, and the assumptions behind it have been undermined by findings in cognitive science. Kaufman et al. (2013) put it rather bluntly:

[One] criticism of [multiple intelligences] theory relates to its validity. Even though assessments exist to test Gardner's various intelligences (e.g., Gardner et al. 1998), these assessments have not been associated with high levels of psychometric validity, and the evidence regarding reliability of these and similar measures is mixed (e.g., Plucker 2000; Plucker et al. 1996; Visser et al. 2006). (p. 814)

It is interesting to compare the treatment Jensen and Gardner received from the scientific establishment for their respective work.

⁵ Using a combination of quantitative and qualitative criteria, Haggbloom et al. (2002) rank Jensen the forty-seventh most eminent psychologist of the 20th century, just behind Stanley Milgram. Since Haggbloom et al.'s criteria included "survey response frequency...[,] National Academy of Sciences membership, election as American Psychological Association (APA) president or receipt of the APA Distinguished Scientific Contributions Award," controlling for organized persecution of Jensen would lead him to be ranked much higher. In 2006, Jensen received a Lifetime Achievement Award from the International Society for Intelligence Research (an international organization, as its name indicates).

⁶ Sternberg and Kaufman continue: "We do not know of anyone who seriously questions this assertion. Even Gardner (2006), well-known for his theory of multiple intelligences, has agreed that one could speak of a *g*-factor that encompasses some (but not all) of his proposed intelligences and that has wide-ranging predictive value."

While Jensen has received no official recognition in the U.S. since 1969, and despite the fact that the course of events in the last 40-plus years has been consistent with the predictions in his 1969 paper⁷, Gardner received a National Psychology Award for Excellence in the Media from the American Psychological Association (1984) for the book wherein he proposed the theory of multiple intelligences (Gardner 1983), he received the William James Award from the APA in 1987, and he has been granted 29 honorary degrees.

Here is what Gardner (2009) says about the conflict between the theories of general intelligence and multiple intelligences:

[E]ven if at the end of the day, the bad guys [such as Jensen, who emphasize the importance of *g*,] 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. (at 45:11–31)

Gardner’s use of the term “correct scientifically” seems to reflect a notion that there is another sort of “correctness” besides scientific that can apply to empirical claims. IQ theorists are “the bad guys,” he says. Based on his other speeches and his writings, it is clear that the nonscientific “correctness” he alludes to is *moral*: it is possible to be correct scientifically but incorrect morally—or incorrect scientifically but correct morally.

Gardner (2001) writes that he does “not condone investigations of racial differences in intelligence, because [he] think[s] that the results of these studies are likely to be incendiary” (p. 8). Note that he implies that he believes that race differences in intelligence are *likely* to exist—he does “not condone investigations of racial differences in intelligence, because [he] think[s] that the results of these studies are likely”—*likely*—“to be incendiary.” In the same paper he recounts how he was once personally responsible for preventing research on race differences in intelligence. A colleague of his from Australia alerted him to the fact that someone was collecting data on the “multiple intelligences” of various races, and reporting differences.⁸ He recounts:

This stereotyping represented a complete perversion of my personal beliefs. If I did not speak up, who would? Who should? And so, I went on television in Australia and criticized that particular educational endeavor as “pseudo-science.” That critique, along with others, sufficed to result in the cancellation of the project. (pp. 6–7)⁹

Although Gardner opposed this research on moral grounds, he publicly attacked it as scientifically invalid (“pseudo-science”).

⁷ For example, Jensen was pilloried for claiming in 1969 that early intervention programs to boost IQ and academic achievement—such as “Head Start”—would not have lasting effects on their beneficiaries (e.g., by Feldman and Lewontin 1975; Gould 1996, 7; Hacker 1992, 35; Longino 1990, 166; Montagu 1997, 161). In 2012, the U.S. Department of Health and Human Services quietly released a Congress-mandated report showing that the effects of Head Start participation disappear by third grade: “There is clear evidence that Head Start had a statistically significant impact on children’s language and literacy development while children were in Head Start. These effects, albeit modest in magnitude, were found for both age cohorts during their first year of admission to the Head Start program. However, these early effects dissipated in elementary school, with only a single impact remaining at the end of 3rd grade for children in each age cohort: a favorable impact for the 4-year-old cohort (ECLS-K Reading) and an unfavorable impact for the 3-year-old cohort (grade promotion)” (Puma et al. 2012, xxi).

⁸ Gardner does not say how multiple intelligences were being measured. As noted, assessments to test multiple intelligences “have not been associated with high levels of psychometric validity” (Kaufman et al. 2013, 814), but that is beside the point.

⁹ Gardner tells the same story in Gardner (2009).

3.2 Avoiding Immoral Areas of Scientific Investigation

In his critique of Rushton and Jensen's work on race differences in intelligence, Robert Sternberg writes the following:

Scientists might argue that their work is value free and that they are not responsible for the repugnant or even questionable values or actions of opportunistic leaders [who put their research to immoral use]. [Rushton and Jensen \(2005\)](#) seem to believe, as have others, that they do perform a kind of value-free science and that they merely respect the truth. However,...[d]eciding to study group differences represents a value judgment—that the problem is worth studying. Deciding to show that one group is genetically inferior on an index is a value judgment as to what is worth showing. These decisions, among others, indicate that there is no value-free science. ([Sternberg 2005](#), 295)

It is true that scientific investigation involves a judgment about what is worth studying. We study biochemistry rather than calculate the number of grains of sand on beaches because we judge knowledge gained by the former investigation to be more valuable. But matters of fact per se—biochemical truths or truths about grains of sand—are independent of value judgments. Sternberg seems to have a strong but mistaken intuition that facts and values cannot be separated. He seems to suggest that Rushton and Jensen are right vis-à-vis the *scientific* standard of “problem solving” but wrong vis-à-vis the *moral* standard of “taste in the selection of problems to solve”:

The quality of science is determined not only by the quality of problem solving but also by taste in the selection of problems to solve....Would that Rushton and Jensen had devoted their penetrating intellects to other more scientifically and socially productive problems! ([Sternberg 2005](#), 300)

According to [Chomsky \(1988\)](#): “Surely people differ in their biologically determined qualities....But discovery of a correlation between some of these qualities is of no scientific interest and of no social significance, except to racists, sexists, and the like” (p. 164). It is wrong to either affirm *or* deny that there is a relationship between group membership and IQ, he says, because to affirm *or* deny this is to indicate “that the answer to the question makes a difference; it does not, except to racists, sexist[s], and the like.” This is a slight variation on the positions taken by Gardner and Sternberg: questions concerning potentially “immoral” knowledge should not be asked at all.

3.3 Misrepresenting Empirical Findings for the Sake of Moral Values: Stephen Jay Gould and the “Morton Collection”

Although, in his review of *The Bell Curve*, [Gould \(1994\)](#) claimed to be a “card-carrying First Amendment (near) absolutist” who “applaud[s] the publication of unpopular views that some people consider dangerous,” there is now overwhelming evidence that he intentionally misrepresented “dangerous” scientific findings on several occasions. This is perhaps most obvious in the case of his and his supporters’ actions in the “Morton Collection” controversy.

Nineteenth-century American naturalist Samuel George Morton amassed a collection of nearly 1,000 human skulls of different races. He reported that the races differ in mean cranial capacity, with Caucasians having the highest and Africans the lowest. In *The Mismeasure of Man* (1981), Gould reanalyzed Morton's data, and claimed that there were no significant differences in cranial capacity among the races. He accused Morton of being

unconsciously influenced by ideological beliefs about the superiority of Caucasians. Ironically, it was Gould’s treatment of Morton which would later be exposed as an example of ideologically influenced science.

Michael (1988) actually did remeasure more than 20 % of Morton’s skulls (the collection has been preserved), and found no evidence of bias on Morton’s part. Gould repeated his accusation against Morton in the revised edition of *The Mismeasure of Man* (1996) without mentioning Michael’s study.

In a paper published in *Biology & Philosophy*, Kitcher (2004, 13–14, n. 2) falsely claimed that Gould had remeasured Morton’s skulls. In fact, Gould only claimed to have “reanalyzed” Morton’s data, and never touched one of the skulls in question.¹⁰ Although Michael’s refutation of Gould had been published in *Current Anthropology*, Kitcher dismissed Michael as “an undergraduate at Macalester College” whose measurements should not be preferred to those of “professional paleontologist” Gould. A few years later, Lewis et al. (2011) remeasured 50 % of the skulls, reexamined Gould’s critique, and found that Morton’s original analysis had been correct, and the crux of Gould’s “reanalysis” was not including lower-capacity skulls of non-Caucasian races in the analysis in order to bring up non-Caucasian averages.¹¹ So it was Gould, not Morton, whose science had been influenced by ideology.

3.4 “Lewontin’s Fallacy” and Human Genetic Diversity

Lewontin (1972) famously conducted an analysis of variance of allele frequencies at 17 polymorphic loci, using DNA samples from seven large human populations (and a much larger number of subpopulations). He found that only around 15 % of the genetic variance is due to variation between races and ethnic groups, which meant that there is considerably more genetic variation within than between populations. He emphasized his belief that “[h]uman racial classification...is positively destructive of social and human relations” (p. 397). Two years later, Lewontin (1974) suggested that the fact that some scientists continue to classify humans into races in spite of his (1972) discovery “is an indication of the power of socioeconomically based ideology over the supposed objectivity of knowledge” (quoted in Edwards 2003, 799).

In 2003, Edwards (2003) argued that Lewontin’s method for measuring the importance of between-group variation for human genetic diversity—conducting analysis of variance for many individual gene loci and averaging the result—ignores a key element of population differences. Namely, populations vary in their frequencies for specific alleles at different loci. The difference in allele frequencies at any particular locus may not be large—vis-à-vis that locus there will, on average, be more variation within than between populations. However, since populations vary (if slightly) in allele frequencies at many loci, it is possible to assign people to separate, genetically related groups with nearly 100 % accuracy *when considering many loci*. (Today, for \$99 and a saliva sample, 23andMe can determine anyone’s race or racial admixture using this method.) Edwards coined the term “Lewontin’s fallacy” to refer to

¹⁰ Janet Monge, Keeper of Physical Anthropology at the University of Pennsylvania Museum where the Morton collection has been held since the early 1960s, says: “We had never hosted Gould...” (personal communication to Sesardic, reported in Sesardic 2005, 41).

¹¹ Although Lewis et al. (2011) were forced to use circumspect language when describing Gould’s transgressions in their *PLoS Biology* paper, one of the authors of the study—anthropologist Ralph Holloway—was quoted in *The New York Times* as follows: “I just didn’t trust Gould....I had the feeling that his ideological stance was supreme. When the 1996 version of ‘The Mismeasure of Man’ came and he never even bothered to mention Michael’s study, I just felt he was a charlatan” (Wade 2011).

the procedure of analyzing genetic diversity by measuring variation among individual genes while ignoring gene clusters.

Edwards forwarded his (2003) paper to Ernst Mayr, perhaps the most important figure in the development of modern evolutionary theory. Mayr's reply, which has never been published before, is quite interesting:

Thank you for your letter of 20 Aug [2003] and your reprint about Lewontin's trickery. I had already some years ago called attention to Lewontin's misleading claims. I suggest Lewontin's [2000] book *The Triple Helix*. The unwary reader will not discover how totally biased his presentation is. All evidence opposed to his claims is simply omitted! And if you present the truth you are denounced as a Nazi or Fascist! The public unfortunately is all too easily deceived! Particularly when wishful thinking is involved!

Best regards
Ernst Mayr

Many scientists have complained in private correspondences that Lewontin's science was heavily influenced by his politics. Francis Crick wrote to Peter Medawar in 1977: "Lewontin...is known to be strongly politically biased and himself admits to being scientifically unscrupulous on these issues. That is, he takes them as political ones and therefore feels justified in the use of biased arguments" (quoted in [Sesardic 2010](#), 434). Very few scientists have expressed such views in public, and, in some cases, they may have been prevented from expressing such views by reluctant publishers. Fear of being "denounced as a Nazi or Fascist"—among both scientists and publishers of scientific material—has been effective in stifling open inquiry for decades into issues thought to have implications for morality or politics.

4 Conclusion: The Fact–Value Distinction as the Basis of Modern Science and of Social Progress

The thesis was proposed that the fact–value distinction is unnatural to the human mind. People easily resort to a philosophically untenable and socially destructive mode of thinking, where facts and values are inextricably conflated. Philosophers as well as scientists have sought to rationalize the conflation of morality and science with arguments that, upon inspection, seem to be dubious.

Moral opposition to the scientific study of group differences in intelligence was considered as a case study in fact–value conflation. Findings in this area have been rejected by many prominent scientists and philosophers for explicitly moral reasons.

The fact that many philosophers have overlooked obvious objections to the doctrine that science should be influenced by morality testifies to the *naturalness* of fact–value conflation. Three of these objections are the following.

First, the idea that scientists should be sensitive to the social consequences of their work falsely assumes that, under normal conditions, there is a knowable connection between scientific discovery and social consequences. The fact that a nuclear physicist in Nazi Germany ought not to conduct research that will produce an atom bomb that will be dropped on innocent people ([Block and Dworkin 1974](#), 81; see also [Chomsky 1976](#), 294–295) teaches us little about the moral obligations of a scientist in a contemporary democratic country. The modern scientist does not know in advance what the consequences of their work will be except that *usually* more knowledge is good and ignorance is bad.

Second, if supposedly “dangerous” scientific theories should be rejected or suppressed, who is to determine whether a scientific theory is unacceptably dangerous? Should scientists make this determination on behalf of society?—nothing seems to make them qualified to do this. Should the question be put to popular vote, like in ancient Athens?—that seems absurd (Sesardic 1992, 141–142). Attempts to systematically manipulate science for the sake of “values” will tend to create, for lack of a better term, a big mess, and to transform scientific debates into moral debates—more and more disconnected from empirical reality—about whether the values advanced or impeded by competing theories are good or bad.

Finally, as suggested in Sect. 2.1, the practice of rejecting scientific hypotheses because they have politically unwelcome consequences is likely to undermine social welfare as much as it undermines science. Having true beliefs about physics and chemistry is necessary to design airplanes that fly or medicines that cure diseases. In the same way, having true beliefs about human psychology is necessary to design *social policies* that work. Preventing cumulative progress in psychological science for the sake of social welfare—as advocated by those scientists and philosophers mentioned in this paper—will lead policy makers to design ineffective social programs based on incorrect theories.¹² Even though it may be painful to think that certain disturbing scientific hypotheses are true or could be true, designing social policies based on comforting but inaccurate theories will lead to even more pain in the long run.

4.1 Value-Free Science and Human Welfare

James Flynn—moral philosopher and discoverer of the “Flynn effect”—observes that if there are significant, genetically based race differences in intelligence, “the path to social justice will be more difficult.” To those who wish to prevent research that might uncover disconcerting truths, he poses the rhetorical question, “Would anyone who holds humane ideals prefer to pursue them in a fantasy world rather than the real world?” (Flynn 1999, 12). Social justice will not be accomplished by insisting on a fantasy.

Krebs (2010) was quoted in the introduction to this paper asserting that “science is self-correcting because someone will have the courage to challenge the prevailing view and win the argument, provided he or she has sufficient evidence.” Examination of the situation in intelligence research shows that this is not always true. Those who control the institutions of science, and those who present science to the public, sometimes reject, or refuse to consider, challenges to theories that they prefer for nonscientific reasons. Flynn (2012) writes that

[i]f 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 between races. I tell US academics I can only assume that they believe that racial IQ differences have a genetic component, and fear what they might find. They never admit that the politics of race affects their research priorities. (p. 36)

Flynn is certainly right that universities avoid funding research perceived as threatening to political views favored in academe, but he is wrong on the last point. Many scientists *do* admit that politics affects their research priorities, as has been documented in this paper.

No one believes anymore in those gods whose existence Socrates was accused of questioning. In retrospect, the Athenians’ fear that disbelief in their gods would lead to catastrophe was unfounded. And the tradition of value-free reasoning—of “[following] inquiry... wher-

¹² E.g., see the discussion of Head Start in note 7 (above).

ever it may lead” (Plato *Euthyphro* 14c)—that Socrates initiated ultimately led to modern science, and did more good for our species than the ancient Greeks could have even hoped to receive from their false deities. Nevertheless, every revolutionary advance in science has been accompanied by concerns about consequences for the moral order: What if we are not located at the center of the universe? What if the earth is older than our religious books assert? What if we are descended from lower animals? Have no immortal soul? Belong to genetically different groups? Sometimes scientific discoveries have been used to justify evil ideologies or to build technology for evil purposes. Yet, on the whole, we always end up better off with the truth. Those who wish to improve human welfare would probably better advance their own aim by encouraging responsible and moral use of science, rather than attacking or preventing the accumulation of knowledge.

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References

- Aristotle. (1998). *Politics* (C. D. C. Reeve, Trans.). Indianapolis, IN: Hackett.
- Barber, A. (2013). Science’s immunity to moral refutation. *Australasian Journal of Philosophy*, 91(4), 633–653. doi:10.1080/00048402.2013.768279.
- Barnes, J. (2001). *Early greek philosophy* (2nd ed.). London: Penguin Books.
- [Bible, Hebrew] *Tanach*. (1996). (2nd ed., Scherman, N., Ed.) New York: Mesorah.
- Block, N. J., & Dworkin, G. (1974). IQ, heritability and inequality, part 2. *Philosophy & Public Affairs*, 4(1), 40–99.
- Block, N. J., & Dworkin, G. (Eds.). (1976). *The IQ controversy: Critical readings*. New York: Pantheon Books.
- Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies*. Cambridge, UK: Cambridge University Press.
- 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.
- Davis, B. D. (1978). The moralistic fallacy. *Nature*, 272(5652), 390. doi:10.1038/272390a0.
- Dennett, D. C. (2003). *Freedom evolves*. New York: Viking.
- Dennett, D. C. (2006a). *Breaking the spell: Religion as a natural phenomenon*. New York: Viking.
- Dennett, D. C. (2006b). Edge: The reality club. An edge discussion of BEYOND BELIEF: Science, religion, reason and survival. *Edge*. Retrieved from <http://www.edge.org/discourse/bb.html#dennett>.
- Diamond, J. (1997). *Guns, germs, and steel: The fates of human societies*. New York: Norton.
- Edwards, A. W. F. (2003). Human genetic diversity: Lewontin’s fallacy. *BioEssays*, 25(8), 798–801. doi:10.1002/bies.10315.
- Feldman, M. W., & Lewontin, R. C. (1975). The heritability hang-up. *Science*, 190(4220), 1163–1168. doi:10.1126/science.1198102.
- Flynn, J. R. (1999). Searching for justice: The discovery of IQ gains over time. *American Psychologist*, 54(1), 5–20. doi:10.1037/0003-066X.54.1.5.
- Flynn, J. R. (2012). *Are we getting smarter? Rising IQ in the twenty-first century*. New York: Cambridge University Press.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Gardner, H. (2001). The ethical responsibilities of professionals. *The good project: Ideas and tools for a good life*. Retrieved from <http://thegoodproject.org/wp-content/uploads/2012/09/GoodWork2.pdf>.
- Gardner, H. (2006). *Multiple intelligences: New horizons in theory and practice*. New York: Basic Books.
- Gardner, H. (2009). *Intelligence: It’s not just IQ*. New York: Rockefeller University. Retrieved from <http://www.youtube.com/watch?v=cP4CBpLNEyE&feature=related>.
- Gardner, H., Feldman, D. H., & Krechevsky, M. (Eds.). (1998). *Project spectrum: Early learning activities*. New York: Teachers College Press.

- Gottfredson, L. S. (2005). 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. (2010). Lessons in academic freedom as lived experience. *Personality and Individual Differences*, 49(4), 272–280. doi:10.1016/j.paid.2010.01.001.
- Gottfredson, L. S. (2013). Resolute ignorance on race and Rushton. *Personality and Individual Differences*, 55(3), 218–223. doi:10.1016/j.paid.2012.10.021.
- Gould, S. J. (1981). *The mismeasure of man*. New York: Norton.
- Gould, S. J. (1994). Curveball. *The New Yorker*, pp. 139–148.
- Gould, S. J. (1996). *The mismeasure of man* (Rev ed.). New York: Norton.
- Hacker, A. (1992). *Two nations: Black and white, separate, hostile, unequal*. New York: Scribner.
- Haggbloom, S. J., Warnick, R., Warnick, J. E., Jones, V. K., Yarbrough, G. L., Russell, T., et al. (2002). The 100 most eminent psychologists of the 20th century. *Review of General Psychology*, 6(2), 139–152. doi:10.1037/1089-2680.6.2.139.
- Herrnstein, R. J., & Murray, C. (1994). *The bell curve: Intelligence and class structure in American life*. New York: Free Press.
- Holcomb, H. R. I. I. (2005). Buller does to evolutionary psychology what Kitcher did to sociobiology. *Evolutionary Psychology*, 3, 392–401.
- Hunt, E. (2011). *Human intelligence*. New York: Cambridge University Press.
- Jensen, A. R. (1969). How much can we boost IQ and scholastic achievement? *Harvard Educational Review*, 39(1), 1–123.
- Jensen, A. R. (1980). *Bias in mental testing*. New York: Free Press.
- Jensen, A. R. (1998). *The g factor: The science of mental ability*. Westport, CT: Praeger.
- Kamin, L. J. (1974). *The science and politics of I.Q.* Potomac, MD: Erlbaum.
- Kanazawa, S. (2008). Temperature and evolutionary novelty as forces behind the evolution of general intelligence. *Intelligence*, 36(2), 99–108. doi:10.1016/j.intell.2007.04.001.
- Kaufman, J. C., Kaufman, S. B., & Plucker, J. A. (2013). Contemporary theories of intelligence. In D. Reisberg (Ed.), *The oxford handbook of cognitive psychology* (pp. 811–822). New York: Oxford University Press.
- Kitcher, P. (1985). *Vaulting ambition: Sociobiology and the quest for human nature*. Cambridge, MA: MIT Press.
- Kitcher, P. (1997). An argument about free inquiry. *Noûs*, 31(3), 279–306. doi:10.1111/0029-4624.00047.
- Kitcher, P. (2004). Evolutionary theory and the social uses of biology. *Biology & Philosophy*, 19(1), 1–15. doi:10.1023/B:BIPH.0000013273.58226.ec.
- Krauss, L. M. (2012). *A universe from nothing: Why there is something rather than nothing*. New York: Free Press.
- Krebs, J. (2010). *We might err, but science is self-correcting* (p. 19). London: The Times 19.
- Lane, C. (1994). The tainted sources of ‘The bell curve’. *The New York Review of Books*, 41, 14–19.
- Lewis, J. E., DeGusta, D., Meyer, M. R., Monge, J. M., Mann, A. E., & Holloway, R. L. (2011). The mismeasure of science: Stephen Jay Gould versus Samuel George Morton on skulls and bias. *PLoS Biology*, 9(6), e1001071. doi:10.1371/journal.pbio.1001071.
- Lewontin, R. C. (1972). The apportionment of human diversity. *Evolutionary Biology*, 6, 381–398. doi:10.1007/978-1-4684-9063-3_14.
- Lewontin, R. C. (1974). *The genetic basis of evolutionary change*. New York: Columbia University Press.
- Lewontin, R. C. (2000). *The triple helix: Gene, organism, and environment*. Cambridge, MA: Harvard University Press.
- Longino, H. E. (1990). *Science as social knowledge: Values and objectivity in scientific inquiry*. Princeton, NJ: Princeton University Press.
- Luzzatto, M. C. (1998). [*Derech Hashem*] *The way of God* (6th ed., A. Kaplan, Trans.). Jerusalem: Feldheim. (Original work published 1735).
- Lynn, R. (2006). *Race differences in intelligence: An evolutionary analysis*. Augusta, GA: Washington Summit.
- Mackintosh, N. J. (2011). *IQ and human intelligence* (2nd ed.). New York: Oxford University Press.
- [*Majjhima Nikāya*] *The middle length discourses of the Buddha: A new translation of the Majjhima Nikāya*. (1995). (Bhikkhu Bodhi, Trans., Bhikkhu Nanamoli, Ed.). Boston: Wisdom Publications.
- [*Manusmṛiti*] *The laws of Manu*. (1986). (F. M. Müller, Trans.). Oxford: Clarendon Press.
- Michael, J. S. (1988). A new look at Morton’s craniological research. *Current Anthropology*, 29(2), 349–354. doi:10.1086/203646.
- Montagu, A. (1997). *Man’s most dangerous myth: The fallacy of race* (6th ed.). Walnut Creek, CA: AltaMira Press.
- Newby, R. G., & Newby, D. E. (1995). The bell curve: Another chapter in the continuing political economy of racism. *American Behavioral Scientist*, 39(1), 12–24. doi:10.1177/0002764295039001003.

- Plato. (1997a). *Apology* (G. M. A. Grube, Trans.). In J. M. Cooper (Ed.), *Plato: Complete works* (pp. 17–36). Indianapolis, IN: Hackett.
- Plato. (1997b). *Euthyphro* (G. M. A. Grube, Trans.). In J. M. Cooper (Ed.), *Plato: Complete works* (pp. 1–16). Indianapolis, IN: Hackett.
- Plucker, J. A. (2000). Flip sides of the same coin or marching to the beat of different drummers? A response to Pyryt. *Gifted Child Quarterly*, 44(3), 193–195. doi:10.1177/001698620004400306.
- Plucker, J. A., Callahan, C. M., & Tomchin, E. M. (1996). Wherefore art thou, multiple intelligences? Alternative assessments for identifying talent in ethnically diverse and low income students. *Gifted Child Quarterly*, 40(2), 81–91. doi:10.1177/001698629604000205.
- Puma, M., Bell, S., Cook, R., Heid, C., Broene, P., Jenkins, F., et al. (2012). *Third grade follow-up to the head start impact study final report* (OPRE Report #2012-45). Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Retrieved from http://www.acf.hhs.gov/sites/default/files/opre/head_start_report.pdf.
- Rushton, J. P. (1995). *Race, evolution, and behavior: A life history perspective*. New Brunswick, NJ: Transaction.
- Rushton, J. P. (2010). Brain size as an explanation of national differences in IQ, longevity, and other life-history variables. *Personality and Individual Differences*, 48(2), 97–99. doi:10.1016/j.paid.2009.07.029.
- Rushton, J. P., & Jensen, A. R. (2005). Thirty years of research on race differences in cognitive ability. *Psychology, Public Policy, and Law*, 11(2), 235–294. doi:10.1037/1076-8971.11.2.235.
- Sesardic, N. (1992). Science and politics: Dangerous liaisons. *Journal for General Philosophy of Science*, 23(1), 129–151. doi:10.1007/BF01801799.
- Sesardic, N. (2005). *Making sense of heritability*. Cambridge, UK: Cambridge University Press.
- Sesardic, N. (2010). Nature, nurture, and politics. *Biology & Philosophy*, 25(3), 433–436. doi:10.1007/s10539-009-9159-9.
- Singer, P. (1996). Ethics and the limits of scientific freedom. *The Monist*, 79(2), 218–229. doi:10.5840/monist199679215.
- Snyderman, M., & Rothman, S. (1987). Survey of expert opinion on intelligence and aptitude testing. *American Psychologist*, 42(2), 137–144. doi:10.1037/0003-066X.42.2.137.
- Snyderman, M., & Rothman, S. (1988). *The IQ controversy, the media and public policy*. New Brunswick, NJ: Transaction.
- Spearman, C. (1904). “General intelligence,” objectively determined and measured. *The American Journal of Psychology*, 15(2), 201–292. doi:10.2307/1412107.
- Spearman, C. (1927). *The abilities of man: Their nature and measurement*. London: Macmillan.
- Sternberg, R. J. (2005). There are no public-policy implications: A reply to Rushton and Jensen. *Psychology, Public Policy, and Law*, 11(2), 295–301. doi:10.1037/1076-8971.11.2.295.
- Sternberg, R. J., & Kaufman, S. B. (2012). Trends in intelligence research. *Intelligence*, 40(2), 235–236. doi:10.1016/j.intell.2012.01.007.
- Talmud Bavli. Megillah*. (2001). New York: Mesorah.
- Templer, D. I., & Arikawa, H. (2006). Temperature, skin color, per capita income, and IQ: An international perspective. *Intelligence*, 34(2), 121–139. doi:10.1016/j.intell.2005.04.002.
- Turkheimer, E. (2007). The theory of innate differences. *Cato Unbound*. Retrieved from <http://www.cato-unbound.org/2007/11/21/eric-turkheimer/race-iq>.
- Visser, B. A., Ashton, M. C., & Vernon, P. A. (2006). Beyond g: Putting multiple intelligences theory to the test. *Intelligence*, 34(5), 487–502. doi:10.1016/j.intell.2006.02.004.
- Wade, N. (2011). *Scientists measure the accuracy of a racism claim*. New York: The New York Times. D4.
- Wechsler, D. (1958). *The measurement and appraisal of adult intelligence* (4th ed.). Baltimore, MD: Waverly Press.
- Woodley, M. A. (2011). The cognitive differentiation-integration effort hypothesis: A synthesis between the fitness indicator and life history models of human intelligence. *Review of General Psychology*, 15(3), 228–245. doi:10.1037/a0024348.

Nathan Cofnas received a B.A. in philosophy from Columbia University in 2011. He is currently a doctoral candidate in the philosophy department at Lingnan University, Hong Kong. His research focuses on the philosophy of biology and cognitive science.