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The Legacy: Coming to Terms With the Origins and Development of the Gifted-Child Movement

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ABSTRACT

The field of gifted education, historically and contemporarily, is not well-known for being equitable for underrepresented students, specifically, Black, Hispanic, Native American, among others. In this article, we present a short history of gifted education with attention to key historical figures who have significantly shaped the field; their influence continues to impact theories and measurement to this very day. We share our reservations, along with 10 assumptions that we believe need to be countered. Given the long history of tension in the field regarding issues of racism, ethnocentrism, and classism, we offer perspectives for moving forward proactively and equitably.

KEYWORDS

cultural factors; environmental effects; Francis Galton; general intelligence; genetic effects; giftedness; identification of the gifted; intelligence; legacy; Lewis Terman

We acknowledge the injustices of structural and systemic racism and recognize the field of gifted education has historically been part of the problem by promoting these injustices, even if inadvertently. Some early researchers and thought leaders who influenced the field were involved with the eugenics movement, and early gifted identification and programming practices often became vehicles for de facto segregation. The field has made tremendous strides in addressing these historical injustices in recent years, but we have not made sufficient progress (National Association for Gifted Children [NAGC] Board of Directors, 2020).

Lewis Terman, arguably the founder of the “gifted-child movement,” apparently estimated Sir Francis Galton’s IQ to be 200 (Revelle, 2015). This IQ would place Galton more than six standard deviations above the average. Even if Galton’s IQ fell somewhat short of 200, it still would be remarkable. Galton was remarkably productive during his career, authoring more than 340 papers and books. He created the concept of the correlation and coined the expression “nature versus nurture.” Two of his books, *Inquiries into Human Faculty and Its Development* (Galton, 1825/2009) and *Hereditary Genius* (Galton, 1869/2019), have become classics in the field of psychology.

Yet, Galton was a eugenicist and wrote a letter to *The Times* expressing his belief that the Chinese, a “superior” race, should move to Africa to displace Black people, whom he perceived as being of an intellectually inferior race (Galton, 1873). Given Galton’s lack

of valid empirical evidence for this conclusion, his genius did not prevent him from having racist beliefs and institutionalizing so-called “scientific racism.”

This phenomenon also has been illustrated to be prevalent in modern times, as it was earlier. One illustration of the phenomenon was the inventor of the transistor, Nobel-Prize winning William B. Shockley, whose racist beliefs and publications about intelligence became infamous (Rosenberg, 2017; Shockley, 1974). Such beliefs run contrary to current thinking in the gifted movement: “We must not endorse, support, or engage in any action that reinforces, promotes, or advances racism or racist movements, including but not limited to racial microaggressions, colorblind ideology, culture-blind policies and practices, and scientific racism in scholarship” (NAGC Board of Directors, 2020).

Not everyone with a sky-high IQ has been as positively productive as was Francis Galton. According to his Wikipedia entry, Christopher Langan has been labeled “the smartest man in America,” with an IQ somewhere between 195 and 210 (see also Sager, 2007). He is reported to have earned perfect scores on the SAT and to have taught himself many advanced subjects. As an adult, he has been a horse rancher and co-started an organization for people with IQs over 164. According to his Wikipedia entry, he has been a supporter of various conspiracy theories, such as a 9/11 Truth Movement and a white-genocide conspiracy theory arguing that various groups are trying to commit genocide against Whites.

The stories of Francis Galton, William Shockley, and Christopher Langan remind us that high IQ does not protect individuals against what euphemistically might be called strange beliefs. Brilliance does not prevent people from having destructive beliefs, whether about Black people, as in the case of Shockley, or about Jewish people, as in the case of the composer Richard Wagner (Katz, 1986), or about any of the assorted groups targeted by Christopher Langan.

These individuals all could be called “gifted,” but they also invite us to carefully assess exactly what we mean by this term. Unfortunately, the gifted-child movement’s history is shot through with brilliant, perhaps well-intentioned pioneers whose beliefs in eugenics and outright racist and ethnocentric ideology impacted the movement for years to come—starting with Lewis Terman, the one who labeled Galton as pretty much off-the-scale gifted.

A brief and selective history of the gifted-child movement

The chronological origins of the gifted-child movement can be traced back to a few key, seminal thinkers. Their influence is still felt greatly today—and not always in positive and constructive ways.

Sir Francis Galton

We begin with Sir Francis Galton, mentioned earlier. Galton was an important figure and, perhaps, *the* seminal figure in the gifted movement. In *Hereditary Genius*, Galton (1869/2019) pointed out the importance of gifted individuals to society. He showed how their contributions have changed the world. Today, this point might seem obvious, but gifted individuals have been viewed with disdain and suspicion throughout much of human history (Baudson, 2016). For example, Socrates’s brilliance got him killed in ancient Athens. In several respects, unfortunately, Galton was not the best start for the gifted field.

First, as noted above, Galton was a racist and a eugenicist. Of course, one could point to the times in which Galton lived (1822–1911) as somehow explaining and possibly excusing his deprecation of, and disdain for, people unlike himself. But Franz Boas, for many, the “father of modern anthropology,” lived in highly overlapping years (1858–1942) but was quite the opposite—arguing for a point of view that granted dignity and respect to members of diverse racial and ethnic groups—scientifically and otherwise. One might say that Boas lived slightly later, but he was younger than Lewis Terman (1877–1956), whose views on eugenics and related matters were quite similar to Galton’s.

No one has to think a certain way because of the time in which they lived. Martin D. Jenkins showed as early as 1936 that there were Black children of superior intelligence (Witty & Jenkins, 1935, 1936), a fact conveniently neglected by some of those who saw high intelligence as largely a monopoly of White (and possibly Asian) persons (Jenkins, 1936).

Second, Galton, (1825/2009) believed that intelligence comprises primarily psychophysical abilities, such as one’s ability to distinguish sounds of different pitches or loudness or to make comparable judgments regarding the brightness of visual stimuli. It is fortunate for the field that his tradition largely ended as a result of a student of James McKeen Cattell, who was Galton’s most well-known disciple in the United States. The student, Clark Wissler (1901), showed that Cattell’s tests, based on Galton’s conception of intelligence, were neither valid nor reliable. Wissler’s (1901) study was flawed, but the results stuck because his conclusions regarding the lack of validity and reliability of Cattell’s data proved correct.

Third, Galton set up an exhibit at the Kensington Museum where, for a small fee, he would measure people’s psychophysical abilities. The idea was for people to learn about their level of intelligence, but also to provide Galton with data. It is easy to miss the significance of what Galton did. He commercialized testing before he even had a valid or reliable test. Moreover, he essentially charged people for providing him with normative data that were useful to him. Commercializing testing to provide data useful for the testers started with Galton and has continued to the present day.

Lewis Terman

Lewis Terman created, in collaboration with Maud Merrill, what has come to be called the Stanford-Binet Intelligence Scales (Terman, 1916; Terman & Merrill, 1960). Terman (1925) also designed and conducted a longitudinal study of gifted children he identified using this test.

Like Galton, Terman was a believer both in innate group differences in intelligence and in eugenics. His writings, intentionally or not, provoked discriminatory race and class politics and policies that steered much of the American public to accept inaccurate conclusions about the abilities, potentials, and value to society of what we today call “underrepresented minorities,” as well as of those from economically disadvantaged backgrounds.

Asa Hilliard (1976), an eminent Black Psychologist, reminded us that Terman was President of the American Psychological Association in 1922 and conveyed demeaning views of race and intelligence, planting

them in the psyches of many psychologists, policy-makers, educators, and other professionals. In one of his writings, Terman stated:

It is interesting to note that M. P. and C. P. represent the level of intelligence which is very, very common among Spanish-Indian and Mexican families of the Southwest and also among negroes. Their dullness seems to be racial, or at least inherent in the family stocks from which they come. The fact that one meets this type with such extraordinary frequency among Indians, Mexicans, and negroes suggests quite forcibly that the whole question of racial differences in mental traits will have to be taken up anew and by experimental methods. The writer predicts that when this is done there will be discovered enormously significant racial differences in general intelligence, differences which cannot be wiped out by any scheme of mental culture.

Children of this group should be segregated in special classes and be given instruction which is concrete and practical. They cannot master abstractions, but they can often be made efficient workers, able to look out for themselves. There is no possibility at present of convincing society that they should not be allowed to reproduce, although from a eugenic point of view they constitute a grave problem because of their unusually prolific breeding. (Terman, 1916, pp. 91–92)

First, Leon Kamin (1974) pointed out how this view of intelligence permeated the thinking of many in society. Policymakers and educators got this message from Terman as well as other scholars. Unfortunately, even in nominally “desegregated” schools, educators in the gifted movement followed racially questionable intelligence testing policies and practices (Hilliard, 1994). These politics and practices have perpetuated racial discrimination by creating segregated gifted classrooms, despite legally mandated desegregated schools (Brown v. Board of Education, 1954, 1955; McFadden v. Bd. Of Ed. for 111. Sch. Dist. U-46 (n.d.111, 2013). This tradition became rather firmly embedded in the gifted-child tradition (NAGC Board of Directors, 2020).

Second, Terman started the tradition in the United States of identifying gifted children almost exclusively based on high IQ. This tradition was powerful, and, in many educational contexts, IQ is still the sole component or a major component in identifying children who are gifted. We argue later that this tradition defined giftedness much too narrowly, and that this practice is unethical and inequitable.

Third, much of Terman’s thinking about giftedness is shown, in part, by the title of his study, *Genetic studies of genius*. Terman believed that giftedness is genetic, although there was no evidence of such in his studies. He did no genetic analysis, and so the effects of the environment were largely confounded with the effects

of genes/heredity. This belief has made it too easy to exclude children of lower socioeconomic statuses and diverse socially defined racial and ethnic groups from being identified as gifted because they appeared to researchers or educators to come from genetically less endowed families.

Fourth, following Galton, Terman referred to the gifted children he identified using the term “genius.” At least today, the term is usually reserved for higher levels of ability/accomplishment rather than for an IQ of 140 or more. Someone with an IQ of 140 might be impressive in terms of performance on an intelligence test. Still, it is not clear that this score would translate into extremely unusual ability or achievement in any particular domain of human endeavor.

Fifth, Terman, unlike his predecessor Alfred Binet, upon whose intelligence test Terman’s test was based, continued with Galton’s tradition of the commercialization of his intelligence test. The tests became important commercially before the theory undergirding them, or the question of their practical usefulness, was well worked out.

Sixth, because of the correlation of IQ with socioeconomic status and of average group differences across socially defined racial and ethnic groups, and perhaps because of sampling bias, Terman’s sample proved to be largely White and trending toward the upper middle-class. Of course, if you believe in innate differences in IQ, you may well believe that differences in socioeconomic attainment are largely due to IQ differences (e.g., Herrnstein & Murray, 1994). But the causal relation almost certainly goes other ways too, with differences in educational opportunities causing differences in IQ (Ceci, 1996). And wealthier, better-connected parents just have better opportunities to educate their children through quality schooling. The COVID-19 pandemic has further exposed economic and racial inequities in schools and families (Fox, 2020).

Finally, we need to recognize that Terman was in part a product of his times. His views were unfortunately shared by many other psychologists in the early twentieth century, who were endeavoring to employ the new science of psychology to improve the human condition, albeit in what unfolded to be, in part, a terribly misguided way. Although Terman relied heavily on his own IQ test, nominations to take the test were made by teachers. He also kept fastidious records of the accomplishments of the “Termites,” as the participants in his study were later called, showing he had an interest in real-world accomplishments and not just IQ. We recognize that it is always hard to judge the motivations and accomplishments of scholars of the past, given that they were working in sociocultural and historical contexts very different from the present one.

Leta Hollingworth

The third of the important pioneers we are highlighting in the origins of the field of giftedness is Leta Hollingworth, who made many important contributions. Hollingworth's work on giftedness coincided with Terman's in many ways. However, unlike Terman, she believed that nurture played an important role in the development of giftedness. Her work was, therefore, focused on exploring educational and environmental factors that influenced giftedness. Her most notable contribution is her longitudinal study of children with IQs of 180 or greater (Hollingworth, 1942). Her minimum threshold in her study, an IQ of 180, is five standard deviations above the mean on the Stanford-Binet and, hence, extremely rare. Hollingworth, in her landmark study, thus continued the tradition of using IQ as *the* basis for identification. She was not the only woman to emphasize IQ.

Anne Roe

Anne Roe, a fourth seminal individual in the field, is most famous for her book, *The Making of a Scientist* (Roe, 1953). She gave the 64 scientists she studied a high-level intelligence test and found that their scores were way above average (e.g., above 120). The conclusion one might draw, again, is that IQ is critical for giftedness.

Julian Stanley

The fifth seminal individual we consider here is Julian Stanley (e.g., Benbow & Stanley, 1983). Stanley was interested in identifying individual children of exceptional ability and then teaching them in a special program of accelerated learning. Most relevant here was his use of the SAT to identify the gifted, with the test administered to children substantially younger than those who normally would take the test. His focus was on the mathematical section of the SAT. The SAT, like similar tests, is largely a proxy measure of *general cognitive ability* (GCA), which is highly related to IQ (Frey & Detterman, 2004; Koenig et al., 2008; Sackett et al., 2020).

Alfred Binet

Perhaps the most seminal thinker in the field of intelligence has been Alfred Binet (Binet & Simon, 1911). Binet, together with Theodore Simon, was the creator of the first of the "modern" intelligence tests. His tests outshone Galton's because they were based on judgmental rather than psychophysical skills. Binet believed that abilities are modifiable, also a departure from Galton,

who believed in a fixed-ability model. But Binet's main interest was in children with intellectual challenges rather than intellectual giftedness; therefore, Binet's influence turned out to be primarily through his test. However, his emphasis on judgment is worth noting because it set up judgment rather than quick pushes of a button as a basis for identifying gifted children.

Ten explicit and implicit assumptions of the original gifted-child movement

We suggest that much of the original gifted-child movement relied on 10 assumptions that have heavily influenced the field. We argue that these assumptions have led the gifted-child movement down a garden path. We propose what we argue are better assumptions to move the field forward. Our assumptions draw on theorists such as Howard Gardner (1983, 2011), Joseph S. Renzulli (2012), Robert J. Sternberg (2017), Martin D. Jenkins (1936), Abraham Tannenbaum (1983), Asa Hilliard (1976, 1984), Alexinia Baldwin (1977), Mary Frasier (1997), Anne Marie Roeper (1989, 2008), and Stephen J. Ceci (1996), among others. Table 1 presents an overview of the assumptions from the original gifted-child movement and our counter-assumptions. Next, we discuss each of these assumptions and proposed counter-assumptions in more detail.

Counter-assumption 1: Identification of gifted students must not be limited to narrow cognitive measures

Giftedness is broad, and IQ is only a small part of it. Most current intelligence tests were not developed for identification of the gifted. Test developers rightfully include warnings to practice caution when using their tests for gifted identification, with some even explicitly acknowledging that their test should not be the sole criterion for gifted identification (e.g., Brown et al., 2010; Raven et al., 2000). Nevertheless, intelligence tests continue to be one of the most frequently used ways of identifying students for gifted services. Contemporary views of giftedness all define giftedness as more than just cognitive abilities (For overviews, see Sternberg & Ambrose, 2020; Sternberg et al., 2021; Sternberg & Davidson, 1986, 2005), so why would we limit our identification procedures to only measures of cognitive ability?

Narrow cognitive measures, of course, are not the only cause of racial, ethnic, and socioeconomic disparities in identification of students as gifted. There are many other causes, such as the availability of special instruction for gifted children, economic resources, and societal prejudices.

Table 1. Assumptions and counter-assumptions of gifted movement.

Galton/Terman Legacy Assumptions	Our (Counter)Assumptions
1 Although giftedness may have many elements, in the end, the most objective, practical, fair, and equitable way of assessing it is through intelligence tests and their proxies (i.e., tests that measure <i>g</i> but may be called measures of something else, such as scholastic aptitude); other measures, if used, are, at best, supplementary and at worst irrelevant.	Giftedness is broad, and IQ is only a small part of it. Therefore, the identification of students with gifts and talents must not be limited to <i>g</i> -based or even strictly cognitive measures.
2 Intelligence is fully represented by IQ, as made explicit by Edwin Boring (1923).	Intelligence is much broader than what IQ tests measure. Therefore, assessments of intelligence must be made comprehensive.
3 Intelligence is largely genetic.	Intelligence is an interaction between genes and environment; epigenetic studies have made clear that one cannot cleanly separate genetic from environmental factors (Grigorenko & Burenkova, 2020). It is, therefore, exceedingly difficult to separate genetic and environmental effects.
4 Because giftedness is largely genetic, children can be identified at early ages as either gifted or not, and these identifications hold throughout life.	Because giftedness develops throughout the course of an entire lifetime, children identified at early ages may or may not end up becoming gifted adults, and gifted adults may or may not have been identified as or even been gifted children. IQ tests and their proxies exclude life circumstances that largely prevent some children from doing well on tests. Therefore, early environmental effects can be problematic for early identification.
5 Intelligence is largely non-modifiable.	Intelligence is largely, although not entirely modifiable, because people are continually developing their intelligence, as broadly conceived. Therefore, children who grow up in harsh environments are not wholly at a disadvantage; they have strengths that IQ tests and their proxies do not measure.
6 Group differences in measured intelligence are highly meaningful and highly consequential.	Group differences in intelligence are dubious because of differences in adaptive demands of different environments, folk (implicit) theories of what intelligence is and how it should be developed, and differential opportunities presented in children's (and adults') lives. Moreover, it is useful to distinguish those who are transformationally gifted from those who are transactionally gifted.
7 Intelligence tests are highly predictive of most future life outcomes that matter in life.	Intelligence tests are only modestly predictive of most future life outcomes that matter in life because high IQs have, in many ways, contributed to the demise of civilization as we have known it. We are becoming the first self-extinguishing species (Sternberg, 2019a, Sternberg, 2019b, Sternberg, 2021). Therefore, individual differences must be considered in real-world outcomes.
8 Intelligence tests, at least nonverbal ones, are equally fair for members of different cultural/ethnic/socially defined racial/socioeconomic groups, as they measure skills that all children need equally to succeed in life.	Intelligence tests, including nonverbal ones, are not equally fair or equitable for members of different cultural/ethnic/socially defined racial and socioeconomic groups. They may not measure skills that all children need equally to succeed in life. Thus, nonverbal tests have challenges and must be used and interpreted in responsible ways.
9 Intelligence tests are unbiased against any groups—after all, statistical analyses show that, if anything, they overpredict performance of minority students.	Intelligence tests are biased. The criteria often are unimportant and, in any case, generally contain the same biases as the predictors, thereby giving only an illusion of lack of bias. Intelligence tests are more likely to overestimate the intelligence of higher-income/SES, White, and Asian people and underestimate others' intelligence. Different groups view intelligence in different ways and face different adaptive demands, and these differences affect test performance.
10 Children who are gifted merit special education that caters to their particular form of gifts—namely, focus on developing the academic skills that intelligence tests predict because the intelligence tests are themselves academic.	Children who are gifted merit special education that caters to broader skills that might, in the long run, matter more to the world than school grades. The primary approaches to gifted education services are ineffective for students who faced the most challenges.

Counter-assumption 2: Assessments of intelligence must be comprehensive

One widely accepted conception of intelligence is the hierarchical structure of cognitive abilities, as posed by Carroll (1993). In this conception, intelligence is viewed as a hierarchy, where general intelligence (*g*) or general cognitive ability is at the top, and a series of broader (e.g., fluid reasoning, short-term memory, and visual processing) and narrower abilities (e.g., inductive reasoning and deductive reasoning as narrower abilities nested in fluid reasoning) sit below it. However, this is the conception of intelligence that most intelligence tests are intended to measure. This hierarchical conception

implies that intelligence is one thing, cognitive skills of different hierarchical degrees of generality, or abilities and particularly analytical thinking skills. As such, intelligence tests and their correspondent IQ scores reflect a narrow conception of what it means to be intelligent.

However, some theorists have proposed intelligence theories that reflect a multidimensional nature to intelligence that cannot be captured by a single general ability or a single IQ score. For example, Howard Gardner (2011) proposed eight different multiple intelligences, including logical/mathematical, linguistic, musical, spatial, interpersonal, intrapersonal, bodily-kinesthetic, and naturalist. More recently, Sternberg's (2020a) augmented theory of successful intelligence asserted that

successful intelligence involves creative thinking skills, analytical thinking skills, practical thinking skills, and wisdom-based skills. Sternberg (2020e, 2020f) proposed that transformational giftedness be distinguished from conventional transactional giftedness. Transformational giftedness involves the utilization of knowledge and skills to change the world for the better in a significant and meaningful way, at some level (Sternberg et al., 2021). Researchers have pointed at current events to illustrate the need to conceptualize and promote intelligence broader than only cognitive abilities that mostly reflect analytical reasoning. Karami et al. (2020) and Sternberg (2019a, 2021) have argued for the importance of leadership skills, moral reasoning, and rational, critical, and wise thinking skills to solve the types of problems we confront in the context of today's society (e.g., a pandemic, a climate crisis, and a lack of sustainable resources). Thus, we argue that intelligence is much broader than what is measured by intelligence tests that produce IQ scores.

Counter-assumption 3: It is exceedingly difficult to separate genetic and environmental effects

At one time, heredity and environment were viewed as being in opposition to each other. Scientists busily attempted to assign percentages of variance to the hereditary and environmental influences of intelligence. Two opponents, Hans Eysenck and Leon Kamin, even wrote a book arguing about the correct heritability, with Kamin believing it might well be 0 and Eysenck arguing, as did many of his colleagues, that the heritability is around .80 (Eysenck & Kamin, 1981). Bouchard (2013) was one of many who pointed out that not only is the heritability of intelligence high but that it increases with age. Some volumes even appeared on the likely heritability of intelligence (e.g., Sternberg & Grigorenko, 1997).

Then two things happened that made the extensive expatiation on the heritability of intelligence seem moot. First, epigenetic analysis showed that not only do genes shape how we adapt to, shape, and select environments, but also that environments shape the effects of our genes (Carey, 2013; Francis, 2012; Grigorenko & Burenkova, 2020). Second, Flynn (2016) argued that the environment is a silent partner in what might seem to be genetic effects. People find environments that suit them, in part, because of their genes. Then the environments take over, providing, or failing to provide opportunities for people to develop knowledge and skills to advance their work and interests. Genes thus depend on environment and vice versa. Moreover, levels of heritability are not fixed but rather depend on levels of variability of genes and environments within a population.

An example would be the development of musical talent. Genetic factors may drive some young people to seek musical opportunities more than others. So, the effect would appear as genetic in quantitative analysis. But if the environmental opportunities are not available—parents uninterested in or unwilling to provide musical training, lack of funds to pay for training and instruments, and/or religious proscription on music—the allegedly “genetic effects” would disappear.

So, some of the variation attributed to genes actually may be due to environmental effects, which are driven in part by genes, which are, in turn, driven in part by environments. In the end, it is exceedingly difficult to separate genetic and environmental effects.

Counter-assumption 4: Early environmental effects are problematical for early identification

Most identification of the gifted occurs fairly early, such as in elementary school, probably because that's where most of the early programs for the gifted are first presented. On the one hand, it is advantageous to identify children early. In this way, children receive gifted services when they first need them. On the other hand, early identification risks Type 2 errors—or missed identifications. Oddly, this is true even if one is a strong believer in the heritability of intelligence because it has become pretty much incontrovertible that the heritability of intelligence increases with age (Plomin & Deary, 2015). Thus, heritability effects will not be nearly as strong in younger people as in older ones. As Flynn (2016) and others have pointed out, early childhood is probably the period when the effects of genes *least* will be shown. Environmental effects will be greater, relative to genetic effects. They then will wear away as genes express themselves over time and start to compensate, at least in part, for early differences in environment.

Early environmental effects on intelligence are problematic for early identification because they give children who are raised in advantaged environments such a large edge over children who have less in terms of their environment. Consider this example: Some children will be born with sufficient food of high quality. Their parents will be easily conversant in the native language of their country. The parents will be educated, and their work schedules will allow them to pass on to their children what they learned in their education. The environment will be safe so that the children do not have to worry about self-protection as soon as they leave home or even when they are in the home. The air will be relatively clean. The water supply will be safe, especially from contaminants like lead and mercury that affect cognitive abilities, and so forth (recall the Flint, Michigan lead issues—Denchak, 2018). All of these

and related factors affect children's cognitive abilities (Flynn & Sternberg, 2020). Early identification may be useful to schools and for some children. Still, it inevitably will exclude access to gifted programs for many children whose early environments leave them at a disadvantage regarding factors that facilitate the early development of cognitive and academic abilities.

Counter-assumption 5: Children who grow up in harsh environments are not wholly at a disadvantage; they have strengths that IQ tests do not measure

Intelligence is largely, although not entirely modifiable, because people are continually developing their intelligence, as broadly conceived. Ritchie and Tucker-Drob (2018) performed a meta-analysis of 142 effect sizes from 42 datasets involving more than 600,000 participants. They found that 1 year of additional education was associated with an increased score on intelligence measures of one to five points. Ceci (1996) similarly reported a strong causal effect of schooling on IQ. The upshot is that children who have more, and better schooling are at an advantage on the tests typically used to identify the gifted.

The COVID-19 pandemic has highlighted a fact that has always been true but not as obvious in the past: Much of schooling and support for schooling occurs at home. Suppose one has parents who are uneducated or perhaps who have to commute several hours a day between home and various jobs. In that case, the opportunities for schooling or support of schooling at home are much reduced relative to more advantageous circumstances.

Children who grow up in harsh environments are not wholly at a disadvantage. On the contrary, harsh environments can leave them with some advantages, such as resilience (Ellis et al., 2020; Sternberg, 2004, 2020b). The problem is that typical identification procedures for the gifted do not assess any of the areas in which children from challenging environments are advantaged, as noted by Ellis et al. (2020) and Sternberg (2004), such as, for example, being hyperalert to threats in the environment or knowing how to recognize and treat exotic illnesses. Some of these skills might have helped more conventionally talented people better cope with the COVID-19 pandemic.

Counter-assumption 6: It is useful to distinguish between individuals who are transactionally gifted and those who are transformationally gifted

What is meaningful in terms of test scores depends, of course, on what is valued and what one means, in this case, by "gifted." We believe that high levels of cognitive

abilities and school achievement might be a beginning toward giftedness but are not an end. In the end, a gifted person, as an adult, will be someone who exerts a positive, meaningful, and potentially enduring difference to the world (Sternberg, 2017). The identification procedures currently in use were not designed to predict who these people will be, nor, predictably, are they effective in doing so.

It might be useful to distinguish between individuals who are transactionally gifted and those who are transformationally gifted (Sternberg, 2020e, 2020f). Transactionally gifted children are ones for whom expectations are set and who meet these expectations. In return, they deliver on those expectations, for example, by getting good grades, prestigious admissions to higher education, timely completion of education, and prestigious jobs that pay well (all of which then end up being criteria in studies, such as those of Terman, that show the usefulness of the predictors). Transformationally gifted children seek to change the world for the better; they want to use their gifts to effect positive transformation. This means working to attain outcomes of some kind of collective benefit to humanity, however small that benefit may be, rather than just beneficial to themselves, their family and friends, and the members of their ideological (political, religious, racial, ethnic) group. Identification procedures have focused on transactionally rather than transformationally gifted children (see also Sternberg et al., 2021). We believe this is a mistake. Given the enormous and pressing problems facing the world, we cannot afford to keep producing gifted children whose primary or even sole goal is to maximize the benefits of their giftedness as those benefits accrue to themselves personally (Sternberg, 2019a).

Counter-assumption 7: Individual differences must be considered in real-world outcomes

Intelligence test scores have been shown repeatedly to predict various kinds of real-world outcomes (see, e.g., Deary et al., 2009; Sackett et al., 2020). Our goal in this article is not to discount the demonstrated predictive power of general intelligence measures to a variety of real-life outcomes, such as the prestige of job, income, health-related indices, and marital stability. However, we would like to make three points about these studies showing the tests' predictive value.

The first point is that the outcomes predicted are largely individual outcomes (Sternberg, 2021). That is, one is looking at individual job outcomes, income, health-related indices, and marital stability. One is not looking at collective outcomes, such as contribution or reaction to pandemics or to global climate change. The

most recent former president of the United States and his associates—of unknown IQ—appear to have spread the novel coronavirus throughout the White House staff and have contributed to spread through maskless events with no social distancing. One well-known individual, former presidential candidate Herman Cain, died not long after attending such an event.

We do not view spreading a deadly disease as “political” and, from our point of view, one has to question what one means by “giftedness” if individuals attain some of the highest positions in a country and then actively contribute to the dispersion of a deadly virus not only to their followers but to those who come in contact with them and their followers. Similarly, individuals of presumably high IQ who are finding clever ways to contribute to global climate change through their design and sales of equipment that do not help prevent carbon emissions but instead increase them may be gifted in an IQ sense, but perhaps are not in terms of contributing to a world where humans in the current generation and future generations will be able to thrive (Sternberg, 2019a, 2021).

Counter-assumption 8: Nonverbal tests have challenges and must be used and interpreted in responsible ways

Fagan and Holland (2007) suggested that not all people have had equal opportunities to be exposed to information presented in standardized intelligence tests. This may explain some of the racial and cultural differences in intelligence scores. Thus, intelligence tests, including nonverbal ones, are not equally fair or equitable for members of different cultural/ethnic/socially defined racial groups. They do not measure skills that all children need equally to succeed in life. Nonverbal measures, in general, slightly improve equity among underserved groups when used to identify gifted youth (Carman et al., 2018, 2020). However, they do not produce equitable results; therefore, they should not be considered to be the solution to inequity problems. They fail to account for differences in the adaptive demands of different environments and socialization into different notions of what intelligence is and means in different groups (Sternberg, 2004). The Flynn effect (i.e., the observed rise in IQ scores over time) is largest for nonverbal tests that Flynn (1984) studied, suggesting that scores on such measures are environmentally influenced. Nonverbal measures ought to be included in assessment protocols but users also should be mindful of their limitations, along with those of verbal tests.

Counter-assumption 9: Different cultures view intelligence in different ways and this affects test performance

A widespread view in the psychometric literature is that intelligence tests are unbiased (Halpern & Kanaya, 2020; Jensen, 1998). The question is what it means to be “unbiased.” As Halpern and Kanaya (2020) and others have pointed out, the typical meaning is that a test predicts equally well for all groups. That is, the test neither overpredicts nor underpredicts for one group versus another. For example, what you want is that a given score on a cognitive test predicts for some Group A, the exact same criterion score as it predicts for some other Group B, at all points in the score distribution. Thus, mean-score differences between groups are not necessarily a reflection of bias. For example, on cognitive tests, one would expect 8-year-olds to score at a lower level than 16-year-olds. This difference is not a reflection of bias. Similarly, as noted often herein, any group with more or better schooling will tend to do better, on average, than another group with less or worse schooling.

However, we believe that there is a problem in the measurement of bias (Hilliard, 1984, 1994; Sternberg, 2021). The problem is that this method for assessing bias will utterly fail if the criteria have the same bias(es) as the predictor(s). In other words, if the criteria are just as biased as the predictors, statistically, it will appear that there is no bias, even though there is.

Consider, for example, grades in school. Some ethnicities perform better in school, on average, than do others. But research suggests that teachers tend to have more favorable views of the intelligence of children whose parents have folk theories of intelligence similar to the teachers’ own (Okagaki & Sternberg, 1993). Thus, the teachers tend to value more the abilities and achievements of students who come from environmental contexts sharing their view of what it means for a child to be intelligent. The criteria—evaluations by teachers—thus have the same biases as the tests.

The problem extends to cultural differences as well. Different cultures view intelligence differently (Ford, 2013; Sternberg, 2004), but the criteria used to assess the validity of intelligence tests reflect, most often, the biases of the culture that created the intelligence test. The result is that a test can appear to be unbiased because, within the closed predictive system within which it is evaluated, it actually is unbiased. However, if one goes outside that system, the bias becomes clear. For example, in work with Yup’ik Native Americans in Alaska, important criteria for adaptive intellectual skills would be hunting skills, gathering skills, medical self-treatment skills, ice-fishing skills,

and navigation skills in the tundra where there are no obvious landmarks (Grigorenko et al., 2004). These criteria, however, do not appear in evaluations of bias of intelligence tests. Rather, criteria reflect what industrialized Western cultures value as “important” for adaptation, such as school grades, time to completion of university degrees, or occupational ratings in managerial jobs. Thus, the analyses fail to pick up on sources of bias because the criteria, like the predictors, reflect the cultural views of those who validate the tests. And those who validate the tests are often from the same culture, or have the same cultural values, as those who created the intelligence tests.

Counter-assumption 10: The primary approaches to gifted education services are ineffective for students who faced the most daunting challenges

Much of gifted education today reflects one of two approaches, either acceleration or enrichment. The former approach is based on the notion that gifted children are fast learners and need to be given the opportunity to utilize their rapid learning skills, which of course, will put them ahead of slower learners in their schoolwork. The latter approach is based on the notion that gifted learners can learn in much greater depth about the topics that already are taught. Therefore, gifted education should give them a chance to explore more deeply the topics that more ordinary learners will explore at a more superficial level.

An alternative approach, reflected in programs such as Future Problem Solving (<https://www.fpspi.org/>), is to focus on how children can use their giftedness to recognize and solve the problems currently facing their communities (Grantham et al., 2016) and that often plague the world. This is also the approach of adaptive intelligence (Sternberg, 2019a, 2020d, 2021). The world faces enormous and pressing problems—pandemics, pollution, climate change, poor utilization of natural resources, violence, racial discrimination and profiling, income disparities, and the like. Who would be better to try to resolve these problems than individuals who are truly gifted, inclusive of their being ethical and wise? But teaching these individuals how to perform better in conventional academic work does not necessarily prepare them for the kinds of problem-solving the world needs now and in the future.

Pervasive and persistent outcomes of unjust identification

The assumptions underlying the origins of the gifted-child movement have contributed to decades of underrepresentation in programs for youth identified with

gifts and talents. This underrepresentation persists today, and many in the field of gifted-child education, and more broadly in education and psychology, lamented the loss of potential contribution from minds of underrepresented people because of the pandemic of pervasive and normalized racism revealed in the public murders of George Floyd, Breonna Taylor, Ahmaud Arbery, Elijah McClain, and countless other lives of Black people (Bullock, 2020; Council for Exceptional Children Board of Directors, 2020; Grantham et al., 2020; Harper, 2020; NAGC Board of Directors, 2020).

Consistent, severe, and long-standing underrepresentation of Black, Brown, and Indigenous youth are clearly shown in historical analysis (Ford, 1998, 2013; Goings & Ford, 2018; Yoon & Gentry, 2009). The same trends can be found in more recent analyses of the Office of Civil Rights’ (OCR) Civil Right Data Collection (Ford et al., 2018; Gentry et al., 2019; Peters et al., 2019). This is the only federal database that collects race and identified gifted status of students. Ford et al. (2018), studying representation trends in gifted education based on the OCR data collection, found that Black students are often underrepresented by roughly 50% and Hispanic students by 40%, relative to their overall population among students. Ford and her colleagues have suggested that deficit thinking and overreliance on traditional IQ are primary barriers to recruitment and retention.

Using the OCR data from 2000, 2012, 2014, and 2016, Gentry et al. (2019) comprehensively examined which states have laws concerning gifted education. Gentry et al. found that 38 states have laws concerning gifted education, with 30 requiring identification and services, including standardized measures as an important component of their identification systems. Whether a child gets identified for gifted programming depends, in part, on access, meaning that the child attends a school that identifies youth with gifts and talents. In 2016, 67% of students had access and they attended 58% of schools in the country. Access varies across the states from 0% (District of Columbia) to 96% (Georgia). In general, access did not differ by race, and Title I schools were more likely to identify gifted youth than were non-Title I schools; unsurprisingly, however, nationally, fewer students were identified in Title I schools (7.86%) than in other schools (13.46%). Moreover, students in Title I schools and other schools fighting for resources often have so many challenges in their lives that developing the academic skills needed to excel on tests used for gifted identification may not be a high priority in their lives. A higher priority may be just being able to travel safely to the school in which the tests will be administered.

Due in part to overreliance on tests that yield disparate results among racial groups, equity is a long-standing and persistent problem for American Indian, Black, Latinx, and Native Hawaiian students nationally and across all states. Gentry et al. (2019) examined equity using representation indices (RI), which are simply the percentage of a group identified as gifted divided by that group's percentage in the general population. An RI of 1.00 indicates perfect proportional representation; greater than 0.95 is well-represented; and greater than 0.80 shows promise. White and Asian youth are well-represented in gifted programs across the United States, whereas American Indian, Black, Latinx, and Hawaiian youth are consistently underrepresented. RI's greater than 0.95 exist in no states for Black and Latinx youth, with national RI's of 0.57 and 0.67, respectively. Imagine the loss of talent this disparity creates for the nation. Reliance on traditional measures that value kinds of thinking at odds with the kinds of thinking needed for solving real-world problems (Sternberg, 2020c) is a mistake to begin with. Even worse is then creating "gifted programs" to enhance such thinking. Such practices are detrimental to the students and the society to which they might contribute diverse thinking and ways of knowing to solve problems facing humanity.

Gentry et al. (2019) defined *missingness* as numbers of students who should have been identified as gifted, based on the percentages identified in each state. Nationally, in 2016, 3,255,232 students were identified with gifts and talents, but between 2,092,850 and 3,635,533 (39% to 52%) were missing either because they attended a school that did not identify any children as gifted or because they were a member of a group under-identified in those schools that do identify students.

With roughly as many students missing from gifted identification as are actually identified, a crisis exists concerning lost talent potential. The facts that contribute to missingness are shocking:

- In 2016, 44% of schools did not identify a single student with gifts and talents;
- Students who attend Title I schools are identified at a rate of only 58% of their counterparts in Non-Title I schools; and
- American Indian/Alaska Native, Black, Latinx, and Native Hawaiian students are less likely than their Asian and White counterparts to be identified with gifts and talents, with national representation indices of 0.83, 0.57, 0.67, and 0.62, respectively.

When examined by socially defined race/ethnicity, these missing students largely come from underrepresented socially defined races/ethnicities, with the following ranges of percentages of each socially defined race/ethnicity missing from gifted-education identification:

- Black, 63% to 74%
- Native Hawaiian/Pacific Islander, 59% to 72%
- Latinx, 53% to 66%
- American Indian Alaska Native, 48% to 63%

These statistics are a sad commentary on the equity in national identification of gifted students.

Conclusion

The origins of the gifted movement involved some good and some not so good intentions. Whatever the good intentions may have been, they did not translate all so well into action. The field ended up with a view of giftedness that is heavily slanted toward IQ. Whatever importance IQ may have for identifying gifted individuals, it has proven to be remarkably ineffective and even blind in its applicability to the resolution or at least diminution of major world problems, such as pandemics, air pollution, water pollution, excess carbon emissions, gun violence and other forms of violence, racial injustices, income disparities, hunger, etc. (Sternberg, 2019a, 2021). If gifted people are not going to solve these problems, who will? And where are the gifted individuals today in our national and international leadership? We have some political leaders functioning at the level of whether, during COVID-19, people should have the freedom not to wear masks and thus to infect and possibly kill other individuals (Groves, 2020). This is not an intellectually sophisticated question, as the science is decided (Bai, 2020). This question is at the level, we suggest, of whether people should have the freedom to drive drunk, as there is no guarantee that, in driving drunk, they will maim or kill others, or themselves, for that matter. Is this kind of thinking the best our schools can produce for those leaders whose "gifts" in political campaigning allowed them to be elected?

The assumptions of the gifted-child movement in some respects doomed it from the start. These assumptions are not only regarding identification by intelligence tests but also that the important problems are ones like whether to accelerate or enrich (always a false dichotomy) or whether to have separate classes for the gifted or integrate them fully into the classroom (another false dichotomy). These problems are nontrivial. But what society perhaps should have paid much more attention to is how to identify and then teach gifted students who would make the world a better place (Sternberg, 2017).

The tests we have used, for the most part, to identify the gifted have been wholly inadequate, favoring those who are socialized into solving the kinds of problems, and taking the kinds of tests, that cater to the largely White and Asian upper middle class (Daley & Onwuegbuzie, 2020; Sternberg, 2004; Suzuki et al., 2020). These tests are inadequate as measures of gifts in diverse populations because the types of items they contain are narrowly focused and favor socialization that emphasizes memory and analytical skills (Sternberg, 1997, 2010).

The effects of these tests result in perpetuation of American society's existing class structure and the perpetuation of the power of individuals who comprise the highest socioeconomic segments of society, along with racial and ethnic injustices that often hinder their access opportunities, and potential in school and life. The tests were invented to create a meritocracy that would wipe out socioeconomic structures and family privilege. Instead, they ended up reinforcing and, in effect, laundering that class structure. The result is a system of upbringing that creates self-fulfilling prophecies for those brought into the world with fewer resources, making it difficult for them to escape the lives to which the society seems to consign them.

The data of students identified as "gifted" reflect the value placed on intelligence testing as well as a narrow definition of what constitutes "giftedness." Giftedness as too often defined today is the ability to score well on closed-ended, standardized measures of aptitude and/or achievement. This is a type of giftedness Renzulli (1978) referred to as schoolhouse giftedness, but what society needs are wise, ethical problem solvers (Karami et al., 2020; Sternberg, 2017), those individuals whom Sternberg described as having adaptive intelligence—whose work results in what Renzulli (1978) called creative-productive giftedness.

We must strive to create access to talent development programs for all students; identify and serve students equitably; and ensure that all talented youth are nurtured and valued regardless of their skin color, family income, or location home. Educators and policymakers across the country must engage in the difficult and important work and completely overhaul gifted education so that it serves youth from all racial and income groups in programs that address important societal problems from their diverse perspectives, rather than continuing the legacy of test and serve, which is not working for the students or for society. The time for change is now.

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