

DANIEL GOLEMAN'S *EMOTIONAL INTELLIGENCE: WHY IT CAN MATTER MORE THAN IQ* (1995)¹

False facts are highly injurious to the progress of science, for they often long endure. But false views, if supported by some evidence, do little harm.
(Charles Darwin, *The Descent of Man and Selection in Relation to Sex*, 1871)²

Since its publication in 1995, Daniel Goleman's *Emotional Intelligence: Why It Can Matter More than IQ* has been the flagship of a fleet of books that Goleman has authored or co-authored, and the foundation text of a world-wide movement that claims that what has been universally regarded as intelligence is merely one type of intelligence – cognitive intelligence – and is not as important as another type of intelligence – emotional intelligence. As the dust jacket of *Emotional Intelligence* proclaims, it is, “The groundbreaking book that redefines what it means to be smart.”

In this document, I will analyze every book and article that Goleman adduced to denigrate the importance of cognitive intelligence, and even more, the tests that measure it. I will demonstrate that not one of them says what Goleman claims it says, and many say the opposite.³

No one denies that emotional strengths and social abilities often contribute to social and occupational success. But Goleman knew two crucial facts about them that he did not tell his readers. In the introduction to *Emotional Intelligence*, Goleman wrote (pages xi-xii),

This mapping [of emotional intelligence] offers a challenge to those who subscribe to a narrow view of intelligence, arguing that IQ is a genetic given that cannot be changed by life experience ... That argument ignores the more challenging question: What *can* [Goleman's italics] we change that will help our children fare better in life? What factors are at play, for example, when people of high IQ founder and those of modest IQ do surprisingly well? I would argue that the difference quite often lies in the abilities called *emotional intelligence* [Goleman's italics], which include self-control, zeal and persistence, and the ability to motivate oneself. And these skills, as we shall see, can be taught to children, giving them a better chance to use whatever intellectual potential the genetic lottery may have given them.

In the beginning of this passage, Goleman described genetic determinism of intelligence as a mere view; but at its end he acknowledged that it is an irrefutable fact, and he used that fact to argue that education should concentrate on developing emotional intelligence. What Goleman knew but did not tell his readers is that the personality traits that constitute emotional intelligence are also genetically

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² The beginning of the last chapter (21) of Part II; page 385 in the reprint by the Princeton University Press, 1981

³ I will ignore the errors of fact that pervade Goleman's book but are unrelated to his main purpose. I will here give just one example. On page eleven, he says, “Species that have no neocortex, such as reptiles, lack maternal affection: when their young hatch, the newborns must hide to avoid being cannibalized.” This is clearly nonsense. There is no way that most newborns could hide from their mothers. It is true that most reptiles do not devote as much care to their young as most birds or mammals. For example, mother crocodilians dig a shallow hole near the water; bury their eggs in it; and cover them with mud, sand, and/or weeds. They then stay nearby to protect the eggs from predators. When the eggs are about to hatch, the mother uncovers them and then leads the newborns to the water. After that, in some species, mothers continue to protect their young; in others, they do not. However, many species of insects, which have a much lower level of brain development than reptiles,

determined. In the *New York Times* of December 2, 1986, Goleman wrote an article, which was printed on the front page of the Science Section (Section C) with the title “Major Personality Study Finds That Traits Are Mostly Inherited.” Its first words were, “The genetic makeup of a child is a stronger influence on personality than child rearing.” Goleman was reporting the extensive study by Thomas Bouchard Jr. and his team at the University of Minnesota, which found that identical twins who are raised from infancy by different families in different social environments develop the same personalities and the same emotional strengths and weaknesses.

The significance of this study is illustrated by comparing the discussion of the relative importance of genetics and social environment in the third and fourth editions of Walter Mischel’s standard psychology textbook, *Introduction to Personality*.⁴ In the third edition, which was published in 1981, Mischel wrote (page 311), “Imagine the enormous differences that would be found in the personalities of twins with identical genetic endowments if they were raised apart in two different families. ... Through social learning, vast differences develop among people.”

In the fourth edition, published in 1986, Mischel wrote (pages 183-4),

To separate the role of genetics and environment, it is especially interesting to examine identical twins who have been reared apart, preferably in extremely different environments. A large scale project now underway at the University of Minnesota ... is now beginning to provide much information. The subjects include thirty pairs of identical twins who had been separated on the average before the end of the second month of life ... The twins remained totally separated for many years and in some cases did not meet until the research project united them ... Preliminary reports suggest instances of dramatic psychological similarities within the twin pairs, even for twins who grew up in radically different environments.

The fact that personality traits are genetically determined has profound importance for the role and nature of education. No one is born with a knowledge of history, science, literature, mathematics, or other any academic subject. Cognitive intelligence, as measured by IQ, is, as Goleman observed in the passage quoted above, “intellectual potential” to learn these subjects. Nearly all children can learn them to a rudimentary level; some can learn them to an advanced level. However, genetic inheritance controls the personality traits that people develop, not just their potential to develop them, which puts narrow limits on the degree to which education can alter them.

It is true that later in *Emotional Intelligence*, especially in Chapter Fourteen (pages 215-28), Goleman did concede that temperament is biological determined; for example (pages 217): “The timid children seem to come into life with neural circuitry that makes them more reactive to even mild stress – from birth, their hearts beat faster than other infants’ in response to strange or novel situations.” And (page 221):

The tendency toward a melancholy or upbeat temperament – like that toward timidity or boldness – emerges within the first year of life, a fact that strongly suggests that it too is genetically determined. Like most of the brain, the frontal lobes are still maturing in the first few months of life, and so their activity cannot be reliably measured until the age of

are attentive and protective parents. In fact, among some species of spiders, the mother lets her newborns devour her for their first meal.

⁴ Both were published by Holt, Rinehart and Winston.

about ten months or so. But in infants that young ... the activity of the frontal lobes predicted whether they would cry when their mothers left the room. The correlation was virtually 100 percent.

However, Goleman entitled the chapter in which he presented these and similar facts “Temperament Is Not Destiny.” In it, Goleman argued (page 224), “innate emotional patterns can change to some degree.” However, with one exception, the examples he outlined involved young children because (page 221), “The great plasticity of the brain in childhood means that experiences during those years can have a lasting impact on the sculpting of neural pathways for the rest of life.” The one example (page 225) that Goleman provided of modified emotional behavior among adolescents or adults was of intensive, repetitive therapy to cure obsessive-compulsive disorders; and that also is totally inappropriate for a school.⁵

⁵ Although this subject is not relevant to the purpose of my analysis, it is worth pointing out that the supposed plasticity of the brain in early childhood, on which Goleman’s argument in this chapter relies, is nonsense. John Bruer, in his book *The Myth of the First Three Years* (New York: Free Press, 1999), documented the glowing media reports of the positive effects of early childhood stimulation. These included a cover story in *Time* (“Fertile Minds” (February 3, 1997): 48-56) and an entire special edition of *Newsweek* (Spring/Summer 1997: *Off to a Good Start: Why the First Three Years Are So Crucial to a Child’s Development*). Bruer also pointed out that there is absolutely no evidence to support these claims; for example (202-5):

The special *Newsweek* issue published some stunning PET [positron emission tomography] images of a normal child’s brain beside an image of a severely neglected child’s brain. These images were picked up and published by newspapers [and television] around the country. ... I eventually learned that the *Newsweek* brain scans had come from Dr. Harry Chugani’s laboratory ... I contacted Dr. Chugani ... in early 1998 to find out where the brain images had been published in the scientific literature so that I could read his study. He told me that they had not yet been published ... At a May 22, 1999 scientific meeting ... Chugani ... told the meeting participants that subsequent statistical analysis of his data revealed no significant differences between the brains of the neglected children and the brains of children in his “normal” comparison group. ... Unfortunately, it is unlikely that *Newsweek*, *The Boston Globe*, or ... *Chicago Tribune* will ever report the final outcome of Chugani’s ... study.

On pages 146-52, Bruer discussed what is probably the most quoted evidence for the positive effect on the brain of early childhood stimulation, the increase in the size of the brains of rats who were raised in “enriched” environments. He pointed out that the reporting of this study has been completely misleading. (Goleman’s outline, on page 225, is even more erroneous than most.)

Because Chapter 14 of *Emotional Intelligence* is not pertinent to the relative importance of emotional and cognitive intelligence, I checked only one of Goleman’s references in it. On its first page (215), Goleman wrote, “Does biology fix our emotional destiny, or can even an innately shy child grow into a more confident adult? The clearest answer comes from the work of Jerome Kagan.” Goleman discussed Kagan’s work on pages 215-19 and 221-23. On page 332 (note 1), Goleman wrote, “The fullest description of the biology of temperament is Kagan’s *Galen’s Prophecy*” (London: Free Association Books (1994)). Only once did Goleman cite specific pages in *Galen’s Prophecy*. On page 223, he wrote, “Kagan’s conclusion: ‘It appears that mothers who protect their highly reactive infants from frustration and anxiety in the hope of effecting a benevolent outcome seem to exacerbate the infant’s uncertainty and produce the opposite effect.’” He cited (page 332, note 8) “*Galen’s Prophecy*,: 194-5” as the source of this statement. Nothing that remotely resembles this statement occurs on those pages. They describe two examples that illustrate Kagan’s discussion in the previous two sections (pages 182-93), in which he emphasized the constancy of temperament from early infancy through childhood, and in which the only causes he mentioned for the few changes that occur had nothing to do with child-rearing practices (page 193): “The small number of low reactives who became inhibited had experienced stress during the second year (for example, a parent had a serious illness, a parent lost a job, a mother went to work for the first time).”

The second fact that Goleman did not tell his readers is that since the 1960s, and with great intensity since the middle 1980s, psychometricians have developed, refined and validated tests that measure a wide range of social abilities and emotional strengths: leadership, social insight, sense of responsibility, recognizing one's own emotions and inferring other people's emotions, honesty, altruism. *Scores on these tests correlate very closely with scores on tests of cognitive ability – IQ tests, SATs, etc.*⁶

Fortunately, Goleman was careless enough to put great emphasis on a study that illustrates the remarkable ability of cognitive intelligence tests to measure emotional intelligence. He stated several times that self-control is the key to emotional health; for example (page 285; cf. 27, 56), “The bedrock of character is self-discipline; the virtuous life is ... is based on self-control.” The title of the chapter he devotes to it (pages 78-95) is “The Master Aptitude.” There he says (page 81), “There is perhaps no psychological skill more fundamental than resisting impulse.” (Despite the “perhaps,” Goleman never says anything like this about any other ability.) Goleman makes this assertion while describing what he clearly regards and expects his readers to regard as a crucially important experiment, which he calls “The Marshmallow Test” (pages 80-83). An experimenter put a marshmallow in front of each of a group of four-year old children. He told them that he was going out on an errand and that on his return he would give another marshmallow to those who had not eaten the marshmallow in front of them. Goleman reported,

The diagnostic power of how this moment of impulse was handled became clear some twelve to fourteen years later ... The emotional and social difference between the grab-a-marshmallow preschoolers and their gratification-delaying peers was dramatic. Those who had resisted temptation at four were now, as adolescents, more socially competent: personally effective, self-assertive, and better able to cope with the frustrations of life. They were less likely to go to pieces, freeze, or regress under stress, or become rattled or disorganized when pressured; they embraced challenges and pursued them instead of giving up ... they were self-reliant and confident, trustworthy and dependable; and they took initiative and plunged into projects.

The third or so who grabbed for the marshmallows ... in adolescence ... were more likely to be seen as shying away from social contacts; to be stubborn and indecisive; to be easily upset by frustrations; to think of themselves as “bad” or unworthy; to regress or become immobilized by stress; to be mistrustful and resentful ... prone to jealousy and envy; to overreact to irritation with a sharp temper...

[W]hen the tested children were evaluated again as they were finishing high school, those who had waited patiently at four were far superior *as students* [Goleman's italics] to those who acted on whim.... [T]hey were ... better able to put their ideas into words, to use and respond to reason, to concentrate, to make plans and follow through on them, and more eager to learn.

Goleman assigned great importance to another difference between those who waited for two marshmallows and those who did not:

Most astonishingly, they [the impulse-resisters] had dramatically higher scores on their SAT tests. The third of children who at four grabbed for the marshmallow most eagerly

⁶ Brand 1996 (page 318) provides an extensive bibliography of studies going back to 1962; see also Zeidner and Matthews 2000: 591; Walker *et al.* 2002; Legree 1995; Mussen *et al.* 1970: 174; Jensen 1980: 476.

In this document, I often cite books and articles by their author's last name and date. I provide full information on them in the Bibliography.

The fullest and most accessible source for the correlation between IQ and social abilities and emotional strengths is Herrnstein and Murray's *The Bell Curve* (1994), which I will discuss at length.

had an average verbal score of 524 and quantitative (or “math”) score of 528; the third who waited longest had average scores of 610 and 652, respectively – a 210 point difference in total score.

Anyone familiar with SAT scores knows that these are extremely large differences. Before 2005, there were only two SAT tests: verbal and mathematical reasoning. The combined score of the marshmallow-grabbers, 1052, was in the top 44 percent of all those who take the SAT; while the combined score of the impulse-resistors, 1262, was in the top 13 percent of those who take the SAT.⁷

Despite denials from the Educational Testing Service, which administers the SAT, it is intelligence test and scores on it correlate closely with IQ (Jensen 1985: 203). Goleman himself pointed out, “the SAT [is] ... highly correlated with IQ” (page 86) and “SAT scores” are “a surrogate measure” “for IQ” (page 315, note 15). So how did Goleman use these SAT scores to attack IQ? He stated (page 82), “At age four, how children do on this test of delay of gratification is twice as powerful a predictor of what their SAT scores will be as is IQ at age four; IQ becomes a stronger predictor of SAT only after children learn to read.” Goleman gave no source for this claim. The source that he cited for the marshmallow test (Shoda *et al.*, 1990) does not mention an IQ test. However, even if this claim were true, it would be irrelevant. Except for experiments conducted by psychologists, standard IQ tests begin to be used after children start school; and the odds are two to one that an adult’s IQ will be within three points of his IQ at eight.⁸

As I have observed, Goleman attached great importance to the marshmallow test, and with good reason. It is by far the clearest, most cogent proof of his thesis that he provides. His summary of it demonstrates that what he calls “the master aptitude” – self-control – and every other social and emotional characteristic of any value are measured with great accuracy by the SAT, which he knew is an IQ test. These emotional and social qualities were also predicted by the marshmallow test, but that can be used only at one age, can differentiate only between those who take a marshmallow and those who do not and provides no indication of different types of abilities (e.g., verbal and mathematical). SATs and IQ tests do what the marshmallow test does and everything it does not do. They indicate many levels of many types of abilities. Also, SATs require a short time to take, with one person watching a room of forty or fifty test-takers. SATs and IQ tests are, in fact, among the most useful inventions of all time.

The reviewers of *Emotional Intelligence* saw how important the marshmallow test was to its thesis. For example, the review in the (London) *Times Educational Supplement* (February 9, 1996: 12) was entitled “Cleverness Is Two Marshmallows.” The beginning of the review in *Time* (“The EQ Factor” (October 16, 1995): 68-75) was, “It turns out that a scientist can see the future by watching four-year-olds interact with a marshmallow.” *Time* then summarized the experiment and the differences in adolescence between those who took the marshmallow and those who did not, including, “And when ... students in the two groups took the Scholastic Aptitude Test ... the kids who had held out longer scored an average of 210 points higher.” On the last page of *Time*’s review, it quoted with approval the recommendation “to junk the

⁷ The reason why the averages of both groups were above the average of all SAT-takers is that most of the children in the experiment were the children of professors and students at Stanford University. (Goleman says they were children of faculty, graduate students “and other employees” at Stanford; but his source (Shoda *et al.*, 1990: 980) says only faculty and students.)

⁸ Levin 1997: 62; cf. Herrnstein and Murray 1994: 396

SAT completely. 'Yes, it may cost a heck of a lot more money to assess someone's EQ [emotional quotient] rather than using a machine-scored test to measure IQ,' he says." Here, correctly, the SAT is called an IQ test. If the reviewer had read what she wrote at the beginning of her review, she would know that the SAT is an excellent measure of EQ.

In containing a blatant self-contradiction, the *Time* review imitated one of *Emotional Intelligence*'s most pervasive characteristics. For example, Goleman sometimes stated,

[A]chievement as measured by grades ... tells nothing about how they [students] react to the vicissitudes of life (pages 35-6).

[Academic] achievement tests ... [and] SATs ... are based on a limited notion of intelligence, one out of touch with the true range of skills and abilities that matter for life over and above IQ (page 38).

[S]ocial intelligence is both distinct from academic abilities and a key part of what makes people do well in the practicalities of life (page 42).

[There] is little or no relationship between grades or IQ and people's emotional well-being (page 57).

In keeping with findings about other elements of emotional intelligence, there was only an incidental relationship between scores on this measure of empathetic acuity and SAT or IQ scores or school achievement tests (page 97).

However, Goleman more frequently stated that emotional health and ability are crucial for attaining high grades in school and college and on achievement and intelligence tests. That means that grades in school and college and on achievement and intelligence tests measure emotional health and ability, and for that reason, if no other, are excellent predictors of personal and occupational success and extremely reliable criteria for hiring and promoting employees and admitting applicants to universities. As we saw, when Goleman outlined the marshmallow experiment (page 82) he italicized that the marshmallow-resisters were "far superior *as students*" on a wide range of academic abilities. In fact, nearly every time that he extolled an emotion, he said that it was crucial for academic success and was measured with extreme accuracy by school grades and performance on academic intelligence and achievement tests:

[T]he more prone to worries a person is, the poorer their academic performance, no matter how measured – grades on tests, grade point average, or achievement tests. When people who are prone to worry are asked to perform a cognitive test such as sorting ambiguous objects into one of two categories [a typical problem on IQ tests] ... it is the negative thoughts ... that are found to most directly disrupt their decision making. ... Good moods, while they last, enhance the ability to think flexibly and with more complexity, thus making it easier to find solutions to problems, whether intellectual or interpersonal (pages 83-5).

As with hope, optimism predicts academic success (page 88). [This is part of an argument that optimism and hope are vital for success.]

Students who get into flow [a crucial virtue in *Emotional Intelligence*] do better ... as measured by achievement tests (page 93).

[S]uccess in school depends to a surprising extent on emotional characteristics (page 193).

[W]hen depressed children have been compared to those without depression, they have been found to be more socially inept ... Another cost to these children is doing poorly in school; depression interferes with their memory and concentration (page 243).

Dropping out of school is a particular risk for children who are social rejects. The dropout rate for children who have been rejected by their peers is between two and eight times greater than for children who have friends (page 250).

[E]motional literacy programs improve children's *academic* [Goleman's italics] achievement scores and school performance. This is not an isolated finding; it recurs again and again in such studies (page 284).

If these facts are correct, they help to explain the massive evidence that measures of academic achievement predict with remarkable accuracy not only occupational success, but also whether a person becomes a criminal, has a successful marriage, has an illegitimate baby, is a good mother, etc.; in other words, emotional intelligence.

The Bell Curve (1994) is the most accessible source for the predictive accuracy of IQ tests in particular for occupational and social success. Among the evidence that Herrnstein and Murray (1994: 72-85) outlined was the performance of 472,539 military personnel; the two most extensive meta-analyses ever done of civilian job performance (one of a mammoth compilation of job performance studies, mostly from 1900-1950; the other of 425 more recent studies of job proficiency as predicted by the General Aptitude Test Battery of the U.S. Department of Labor), and an extremely intensive ongoing study of over 12,000 people.

It must be emphasized that *The Bell Curve's* main purpose was to present the massive evidence for the predictive accuracy of IQ tests. The issue of genetic determinism of intelligence was secondary; and the few serious reviewers who questioned Herrnstein and Murray's arguments for genetic determinism still acknowledged the manifest incontrovertibility of their demonstration of IQs predictive accuracy. For example, because the review by the Black social scientist Thomas Sowell questioned genetic determinism of intelligence, it was reprinted in an anthology of articles that attacked *The Bell Curve* (Fraser 1975) But Sowell also observed in his review (Fraser 1975: 71-2):

Herrnstein and Murray establish their basic case that intelligence test scores are highly correlated with important social phenomena, ranging from academic success to infant mortality, which is far higher among babies whose mothers are in the bottom quarter of the IQ distribution. Empirical data from a wide variety of sources establish that even differing educational backgrounds or socioeconomic levels of the families in which individuals were raised are not as good predictors of future income, academic success, job performance ratings, or even divorce rates, as IQ scores are. ... Even in non-intellectual occupations, pen-and-pencil tests of general mental ability produce higher correlations with future job performance than do "practical" tests of the particular skills involved in those jobs. ... In terms of logic and evidence, the predictive validity of mental tests is the issue least open to debate. On this question, Murray and Herrnstein are most clearly and completely correct.

The Bell Curve created a tremendous uproar the year before the publication of *Emotional Intelligence*. Obviously if Goleman wanted to convince scholars who are familiar with this subject, he had to prove that there are major defects in Herrnstein and Murray's evidence and/or that his own evidence is more cogent. However, Goleman mentioned *The Bell Curve* only twice. On page 34 he quoted a statement

from it that the relationship between IQ and making a million dollars or becoming a senator is weak. No one has ever thought that being successful in politics requires mental or emotional ability; but Herrnstein and Murray present massive, unequivocal evidence that childhood IQ scores correlate closely with adult income. Goleman cited *The Bell Curve* again on page 80, this time as evidence.

The added payoff for life success from motivation, apart from *other innate abilities* [italics added], can be seen in the remarkable performance of Asian students in American schools and professions. One thorough review of the evidence [Goleman cites *The Bell Curve*] suggests that Asian-American children may have an average IQ advantage over whites of just two or three points. Yet on the basis of the professions, such as law and medicine, that many Asians end up in, as a group they behave as though their IQ were much higher ... The reason seems to be that from the earliest years of school, Asian children work harder than whites. ... While most American parents are willing to accept a child's weak areas and emphasize the strengths, for Asians, the attitude is that if you're not doing well, the answer is to study later at night, and if you still don't do well, to get up and study early in the morning ... – an emotional edge.⁹

However, anyone who has read *The Bell Curve* knows that Oriental-white differences in academic and occupational success are to be expected from a three-point difference in IQ, which is what Herrnstein and Murray (1994: 276) estimate, not “two or three points,” which is what Goleman says they estimate. The reason is that when attributes are distributed along a bell curve, small differences in averages produce great differences at the curve's extremes. For instance, thirty times more American men than women are five feet, ten inches tall (1.78 meters); but two thousand times more American men than women are six feet tall (1.83 meters). (Pinker 2002: 344) On pages 364 to 368 of *The Bell Curve*, Herrnstein and Murray provide a detailed description of the immense differences in economic and social outcomes between two groups of people whose average IQs are three points different from each other. With regard to IQ, Herrnstein and Murray point out that if population A has an average IQ of 100 and population B of 97, then 31% more of the former have IQs over 120 than the latter and 42% more over 135.

Typically, Goleman's argument about the cause of Oriental success contradicts what he says elsewhere in *Emotional Intelligence*. On pages 35 to 36 he outlined a study which showed that high school valedictorians and salutatorians got excellent grades in college but were not particularly successful professionally ten years later. He explained that the reason is that their academic achievement indicates that they are merely “the ‘dutiful’ – the people who know how to achieve in the system.” Yet, according to Goleman, “the remarkable performance of Asian[s] ... in [the] professions” is caused by their extraordinary dutifulness.

On page 94, in the same chapter in which Goleman provided the above-quoted explanation of Oriental academic and professional success, he quoted with approval Howard Gardner, who is *the* hero of *Emotional Intelligence*:

“We should use kid's positive states to draw them into learning in the domains where they can develop competencies,” Gardner proposed to me. ... The strategy ... revolves around identifying a child's profile of natural competencies ... [A]chieving mastery of any skill or body of knowledge should ideally happen naturally, as the child is drawn to the areas that spontaneously engage her – that, in essence, she loves.

⁹ I discuss this at length in the Appendix at the end of this document.

This is the opposite of the way Goleman says Orientals obtain their “remarkable” success.

Clearly, not one newspaper or magazine reviewer of *Emotional Intelligence* read it with any care, knew anything at all about this subject or was willing to remedy his ignorance by, for instance, looking through *The Bell Curve*. The reviewer for *Time* (October 16, 1995: 68-75) was worse than ignorant and lazy. She informed *Time*'s readers (page 71), “Among the ingredients for success, researchers now generally agree that IQ accounts for about 20%.” No other statement in *Time*'s review could have more influenced the 98% of its readers who have no knowledge of this subject besides what the media tell them. *Time*'s review was by someone named Nancy Gibbs, and at its end four people are listed as having reported it. Its readers undoubtedly assumed that when *Time* devoted a large part of an issue to a subject whose importance it emphasized, then at least one of the five people whom its editors chose to report it would have some acquaintance with this subject or took a day or two to acquire it.

When I read the *Time* review I wondered what its source could be for IQ accounting for only 20% of success. It seemed to refer to occupational success. Herrnstein and Murray (1994: 74) point out that the lowest estimate ever arrived at by a meta-analysis for the accuracy with which IQ and IQ-like tests predict work productivity is 35-40% (adjusted for restriction of range), and the explicit purpose of the panel that made this estimate was to warn against using intelligence tests to exclude blacks from employment.

Moreover, when enemies of intelligence tests cite correlations with job performance, they rely on the public's ignorance of statistics. Even a correlation of .40 is much more significant than a person unfamiliar with statistics would think. If an employer has thirty or more applicants for a job and he hires on the basis of a criterion that has a validity of only .40, the use of that criterion will increase occupational productivity by 75%. (Herrnstein and Murray 1994: 84)

However, as I have pointed out, .40 is an extremely low estimate for the predictive accuracy of intelligence tests. In 1998, Frank Schmidt and John Hunter (1998) summarized the evidence for the predictive accuracy of nineteen criteria that have been used to predict job performance in an article entitled “The Validity and Utility of Selection Methods in Personal Psychology: Practical and Theoretical Implications of 85 Years of Research Findings.”¹⁰ They concluded, (page 264),

GMA [General Mental Ability, as measured by intelligence tests] occupies a special place for several reasons. First, of all procedures that can be used for all jobs, whether entry level or advanced, it has the highest validity and the lowest application cost. ... Second, the research evidence for the validity of GMA measures [i.e., IQ tests] for predicting job performance is stronger than that for any other method. Literally thousands of studies have been conducted over the last nine decades. ... Third, GMA has been shown to be the best available predictor of job-related learning. It is the best predictor of acquisition of job knowledge on the job and of performance in job training programs.

However, *Time* seems to have been talking not about success at performing a job, but success as measured by the status of one's job. Accurate as IQ is at predicting job performance, it is much more accurate at predicting status of occupation; that is, there is an extremely close correlation between a child's score on intelligence tests and his occupational status as an adult. Status of occupations has been

¹⁰ *Psychological Bulletin* 124, 2: 262-74

determined by many surveys from 1920 until the present in the USA, Britain, the Netherlands and the Soviet Union. In some surveys people were asked to rate occupations on the basis of how much intelligence is needed to perform them; in others on the basis of how much prestige they have; in others on the basis of which are the most desirable. The results of these surveys “are amazingly consistent with one another and are highly stable throughout the industrialized world and from one decade to another.” The overall rank-order correlation between the studies ranges from .95 to .98. The correlation between an occupation’s status and the rank order of the average IQ of its members is .90-.95. The average IQ of the members of high-status professions has also remained remarkably constant over decades.¹¹ For example, the average IQ of doctors has remained at about 125 for four decades. (Gordon 1997: 204)

So I was mystified about where *Time* got a 20% correlation between IQ and occupational success. But I read *Time*’s review before I read *Emotional Intelligence*. When I read *Emotional Intelligence* I found *Time*’s source. On page 34, during a discussion of occupational success, Goleman stated, “at best, IQ contributes about 20% to the factors that determine life success.” The *Time* reviewer took that figure and added to it “researchers now generally agree.”

Goleman cited one source for his 20% figure, an article by Howard Gardner called “Cracking Open the IQ Box,” which was reprinted in the anthology of articles attacking *The Bell Curve* (Fraser 1975: 23-35). Gardner is a professor at Harvard’s Graduate School of Education, and as I said, the hero of *Emotional Intelligence*. For example, on page 37, Goleman stated, “If anyone sees the limits of the old ways of thinking about intelligence, it is Gardner.” This homage is easy to understand. Gardner is the most influential academic in the world whose ideas parallel Goleman’s.

In the article that Goleman cited, Gardner said (Fraser 1975: 26-7), “Nearly all the reported correlations between measured intelligence and societal outcomes explain at most 20 percent of ... the factors contributing to socioeconomic status [SES].” Gardner did not mention a source for a single one of these “reported correlations,” even though he was attacking *The Bell Curve*, which never makes a statement without citing and discussing the extremely extensive and intensive studies on which it is based. In fact, in the thirteen pages of Gardner’s article, he did not cite a single article and only two books, neither of which pertains to correlation between IQ and SES.

One of the books he cited was Lisbeth Schorr’s *Within our Reach* (New York: Doubleday, 1988), in which I could find no mention of the validity of IQ tests or the genetic determinism of intelligence and only two references to the content of education, both of which are antithetical to what Goleman and Gardner champion. On pages 226-7 Schorr pointed out that there is “wide agreement on the attributes that various researchers found crucial to making schools effective.” The first is “an emphasis on academics.” On page 243 she praised a program in which “[h]eavy emphasis is put on reading.”

Gardner rested his case on the other book he mentioned (Fraser 1975: 31).

To understand the effects of culture [rather than genetics], no study is more seminal than Harold Stevenson and James Stigler’s book *The Learning Gap: Why Our Schools Are Failing and What We Can Learn from Japanese and Chinese Education* (1992) [New York: Summit Books]. In an analysis that runs completely counter to *The Bell Curve*, Stevenson and Stigler show why Chinese and Japanese students achieve so much more in school than do Americans.... Genetics, heredity, and measured intelligence play no

¹¹ Jensen 1980: 339-41; 1998: 292-3; Slosberg and NesSmith 1983: 159-60

role here. East Asian students learn more and score better on just about every kind of measure because they attend school for more days, work harder in school and at home after school and have better prepared teachers ... As a Japanese aphorism has it, "Fail with five hours of sleep, pass with four.".... Americans score near to last on almost all measures.

This is a bizarre criticism. Herrnstein and Murray stated (pages 440-45) that how hard a student works and/or how well he is taught affects how much he learns, up to a level determined by his innate intelligence; and they offer the same recommendations that Stevenson and Stigler made to improve American education. Moreover, Stevenson and Stigler were concerned only with elementary education. Herrnstein and Murray knew that most elementary school children can learn more than they now do; but as the educational level rises, fewer and fewer people have the innate ability to profit from it, no matter how hard they try or how well they are taught.

The relative intelligence of Orientals and whites is irrelevant to Stevenson and Stigler's book. It was in an article written in 1985 that they argued that Orientals do not have higher average IQs than whites. This was based on the only study that ever obtained this result. Herrnstein and Murray¹² and Lynn (1997) pointed out obvious defects in it. The most serious is that its American data is from the city of Minneapolis, whose white population has an average IQ several points higher than the average white American. Stevenson and Stigler have never answered these objections, nor did Gardner, in an article attacking *The Bell Curve*. (If someone used IQ tests done at Jewish schools as typical of whites, he could prove that whites have higher average IQs than Orientals.)¹³

Furthermore, Stevenson and Stigler's explanation of Oriental success is antithetical to the ideal of guiding education by "flow," for whose merits Goleman quotes (page 94) Gardner, and is the exact opposite of the type of education that Goleman and Gardner champion.

I will briefly outline Stevenson and Stigler's book. The total lack of any arguments or evidence that support the anti-IQ, pro-emotional-intelligence case is illustrated by the fact that its most distinguished academic supporter had to rely on and praise fulsomely a book that attacked everything he (and Goleman) champions. Stevenson and Stigler pointed out that Chinese and Japanese elementary school children excel American children academically and enjoy school more; although American students and their parents rate their academic ability and achievement higher than do Oriental students and their parents (pages 28-31, 48, 66-7, 70, 117-18). Stevenson and Stigler cited the latter fact in order to criticize the emphasis in American education on building self-esteem and self-confidence, an emphasis that Gardner in this article (pages 30-31) and Goleman (pages 86, 192-4, 243-4) want increased, since they argue that high self-esteem is essential for effective learning. However, Stevenson and Stigler pointed out (page 111, cf. 166),

For the Asian cultures that we have studied, the goal of elementary education is unambiguous: to teach children academic skills and knowledge. ... As an alternative, many Americans place a higher priority on life adjustment and the enhancement of self-esteem than on academic learning. They assume that positive self-esteem is a necessary precursor of competence.

¹² 1994: 274-6, 287, 717, note 15. (Note 15 is on page 741 of the 1996 edition.)

¹³ The average Jewish IQ is approximately 13-15 points higher than the average white Gentile IQ (Herrnstein and Murray 1994: 275; Storfer 1990: 314-23).

Another superiority of Oriental over American education that Stevenson and Stigler praised concerned the preparation of teachers (pages 158-9).

[T]he number of years ... in formal education [is] more than eighteen for the Americans we interviewed, compared to about fifteen for teachers in Sendai and Taipei. Some American teachers had master's degrees; none of the Asian teachers had received more than a bachelor's degree. In fact, some of the teachers in [Communist] China had no more than a high school education, and many of the teachers in Taiwan had only five years of schooling after ... grade ... nine. ... Asian teachers-to-be are more likely than Americans to major in liberal arts and to take courses in substantive disciplines – for instance, mathematics or literature – rather than in methods for teaching these subjects. American teachers-in-training generally major in education, and take many courses in teaching methods. [Remember that Gardner is a professor at Harvard's Graduate School of Education.]

Stevenson and Stigler praised Asian education not only for not wasting prospective teachers' time on education courses, but also for spending much less money on schools in general; for example (page 133), "China devotes 3.7% of its gross national product to education – a modest amount compared to the 6.8% of the much larger GNP of the United States." Some of this saving is achieved through less well equipped school buildings (page 131): "[W]e have yet to encounter an elementary school in Japan with ... central heating, spacious classrooms, a school library, comfortable cafeterias, well-equipped gymnasiums, and computer rooms." Other savings are achieved by having many more students in each class (page 62), from "thirty-eight to fifty children." Stevenson and Stigler also praised Oriental education for not throwing money away on non-teaching personnel. Oriental schools (page 133) have "no assistant teachers, school psychologists, counsellors, or social workers. ... Is not the family, the Asian parent asks, responsible for handling children's emotional problems rather than the school?" Stevenson and Stigler also reported (page 57) that children in Asian schools have fewer emotional disorders than American children. But one of Goleman's main theses is that American schools do not devote enough time and attention to students' emotional education, and he quoted with approval (page 42) Gardner's assertion, "We need to train children in the personal intelligences in school."

Stevenson and Stigler attributed (pages 107-109) the superiorities of Chinese and Japanese over American education to the fact that in the United States,

The anti-intellectualist position has gradually dominated.... Between 1910 and 1950, the proportion of academic subjects in American high school curricula fell by almost 60 percent ... The old academic curriculum was virtually replaced by the so-called life-adjustment curriculum. ... Asian educators ... proceeded to develop educational systems in which students had to adapt to the unwavering standards of excellence in demanding academic curricula.

Predictably, Gardner is the one American educational theorist whom Stevenson and Stigler named as epitomizing what they argued is wrong with American education (page 134).¹⁴

¹⁴ Goleman advanced his educational proposals in Chapter 16 (pages 261-87) of *Emotional Intelligence*. He began by outlining the Self Science Curriculum, which he said (page 268), "stands as a model for the teaching of emotional intelligence." He quoted with approval Self Science's developer (page 262): "Being emotionally literate is as important for learning as instruction in math and reading." Goleman also anticipated opposition (page 281): "Teachers may be reluctant to yield yet another part

I will now outline, as they occur, every book and article that Goleman cited as anti-IQ evidence. When I read *Emotional Intelligence* my first reaction was amazement how few studies Goleman cited and what small samples they involved. Anyone who is familiar with this subject would immediately realize that even if every one of those studies were conducted with impeccable rigor and Goleman reported their results accurately, the fact that he could find so few anti-IQ studies and that they all involved minute sample sizes would itself be nearly irrefutable proof that the pro-IQ position is unassailable.

I mentioned some of the huge databases on which Herrnstein and Murray relied in *The Bell Curve* for their conclusions about the predictive accuracy of intelligence tests. They also explained (1994: 69-71) why individual studies of small samples are unreliable. It is a basic statistical principle and obvious to common sense that the size of a database is an extremely important component of a study's reliability and that meta-analyses of many studies are much more reliable than individual studies. (Rushton (2000: 18-24) provides several excellent illustrations of this principle.)

On page 27 of *Emotional Intelligence*, Goleman wrote, "These deficits ... are not always tapped by IQ testing ... In one study, for example, primary school boys who had above-average IQ scores, but nevertheless were doing poorly in school were found ... to have impaired frontal cortex functioning." The article that Goleman cited to support this assertion was by Philip Harden and Robert Pihl, on pages 94-103 of the *Journal of Abnormal Psychology* 104, 1995. It was entitled, "Cognitive Function, Cardiovascular Reactivity, and Behavior in Boys at High Risk for Alcoholism." Harden and Pihl began the article with a summary of its content: "Boys ... from families with an extensive history of paternal alcoholism differed from controls of similar age and IQ on measures of cognitive function, cardiovascular reactivity, and parent-rated conduct problems. High risk boys performed most poorly on neuropsychological frontal lobe function." They added (page 100), "However, the generalizability of this study is restricted by the small sample size and limited data." (The study involved only fourteen sons of alcoholic fathers.)

On the same page and the next Goleman wrote, "In a work of far-reaching implications for understanding mental life, Dr. Antonio Damasio ... has made careful studies of [people whose]... decision-making is terribly flawed – and yet they show no deterioration at all in IQ or any cognitive ability." Goleman also cited Damasio's book elsewhere (pages 28, 52-3) as an authoritative source for his thesis. This book, *Descartes' Error*¹⁵, is three hundred pages, excluding its index. The index has no entry for "IQ," "intelligence," or any related term. I read the book twice and found only three examples of intelligent people making calamitous decisions, one of whom made his disastrous mistake in 1848 (page 3 ff.). For only one of them does Damasio say he had a high IQ (page 40). He does not discuss any evidence or refer to any studies of any of these cases, so the reader has no way of finding out any more about them than what Damasio tells him. It is easy to see why this book is close to Goleman's heart.

On page 35 Goleman stated,

IQ offers little to explain the different destinies of people with roughly equal promises, schooling, and opportunity. When ninety-five Harvard students from the classes of the 1940s ... were followed into middle age, the men with the highest test scores in college were not particularly successful compared to their lower-scoring

of the school day to topics that seem unrelated to the academic basics ... and all will need specific training to do so [teach emotional intelligence]."

¹⁵ New York: Putnam Books, 1994.

peers in terms of salary, productivity, or status in their field. Nor did they have the greatest life satisfaction, nor the most happiness with friendship, family, and romantic relationships.

Ninety-five people is a tiny sample to oppose to the huge samples in the studies that have found that cognitive tests are extremely accurate predictors of later success. Even more seriously, the 396 pages of the book that Goleman cited for this study, *Adaptation to Life* by George Vaillant¹⁶, do not contain a single statement that resembles Goleman's conclusion from it. I read it twice looking for something that even remotely approximates Goleman's claim. (It has no index.) Then I reread Goleman's reference to this book (page 314, note 4). I discovered that after citing this book, Goleman said, "The average SAT score of the Harvard group was 584 ... Dr. Vaillant ... told me about the relatively poor predictive value of test scores for life success in this group of advantaged men." The reason I missed that statement when I first read this reference is that among all the books and articles on this subject and others that I have read, I have never seen a personal communication or other unpublished (and therefore uncheckable) source cited even as corroborating evidence, let alone as the sole evidence for an assertion. Yet this is what Goleman opposed to the massive evidence, the many carefully controlled studies of huge numbers of people, that have found that intelligence tests predict success with great accuracy. Moreover, before SATs were renormed in 1995, if every eighteen-year-old took them, 584 was in the upper one-percent of scores on the Verbal part.¹⁷ It is improbable that ninety-five people, all in that extremely high range, would contain subgroups large enough for their differences to be statistically significant. However, all ninety-five together might form a statistically significant sample of people, all of whom are characterized by high SAT scores. So I will outline what the book that Goleman recommends says about a group of people whose average SAT score was in the upper one percent of the American population.

The study involved was called the Grant Study, after the philanthropist who financed it. The subjects were all men who graduated from Harvard College between 1942 and 1944. They were chosen on the basis of academic achievement and being unaffected by physical or psychological disturbances (pages 30-32). Their socioeconomic background was not particularly privileged. Half of their parents were not college graduates and half depended on their own earnings for a substantial proportion of their educational expenses. "Significantly, at the end of thirty years, the relatively broad socioeconomic differences among the subjects upon college entrance had *no* correlation with any of the outcome variables" (page 33, Vaillant's italics). Their most distinguishing characteristic was superior academic performance. Sixty-one percent were graduated with honors, compared with twenty-six percent of their classmates (page 33). And this was at Harvard. The Grant men, who were characterized by extremely high SAT (= IQ) scores and university grades, were much more successful than the average American by every measure of professional and personal success that Vaillant discussed. For example (pages 31, 34-8),

Most ... rose to the rank of officer and made distinguished records for themselves in the less academic atmosphere of World War II. There they were judged for skills other than intellectual achievement.... Over ninety percent have founded stable families. Virtually all have achieved occupational distinction. ... The subjects have become bestselling

¹⁶ Boston: Little, Brown and Company, 1977.

¹⁷ Herrnstein and Murray 1994: 767, note 3. (Note 3 is on page 792 of the 1996 edition.)

novelists and cabinet members, scholars and captains of industry, physicians and teachers of the first rank, judges and newspaper editors (pages 4-5).

[In World War II] a third of the men were in sustained combat for ten days or more ... [T]he men reported far fewer symptoms of nausea, incontinence, palpitations, tremor, and giddiness than ... other men under acute battle conditions. ... Only ten percent went into the army with commissions, but seventy-one percent were officers when discharged. ... Many more [of the Grant men than their classmates] described their work as “extremely satisfying.” At age forty-seven only eighteen percent of the men were even twenty pounds over their optimum weight, and only thirteen percent of the men averaged five days or more of sick leave a year. These figures are much lower than ... the general population. ... Every man in the Grant Study enjoyed some measure of occupational success ... [C]riminal convictions were nonexistent ... At an average age of forty-five, roughly eight percent of the Grant Study men were in *Who's Who in America*. ... By age fifty, twelve percent ... were in *American Men of Science* (pages 34-8).

Vaillant also discussed the Terman Study (pages 37-8). It would be strange if he did not. Few studies of IQ omit the Terman Study. Even Goleman must have known about it, if he read Vaillant's book, which he cited as an important source. That he made no attempt to challenge it must indicate that he could not.

The Terman Study “was one of the truly great social-science research projects of the twentieth century” (Seligman 1992: 44). Between 1921 and 1928, Professor Lewis Terman of Stanford University selected 857 boys and 671 girls in California public elementary and high schools solely on the basis of their IQs. All had IQs of 135 or above, over 95% were above 140; their average IQ was 151 and their median IQ was 147. (An IQ of 135 is in the upper 1% of the general population, 140 in the upper 0.4%, 150 in upper 0.1%.) Terman then kept systematic records of their lives. By all criteria, they were much more successful than most Americans. Among the men, 86% became professionals, proprietors, managers, or executives, compared with 20% of men in the American population. Not only was their average occupational level remarkably high, but they were much more successful than other men at the same occupational level. Their average income was 61% higher than the average income of American professionals, proprietors, managers, and executives. This financial success was correlated purely with IQ, not level of formal education. The average income of those who had not gone beyond high school was comparable with those who graduated from college. Of the six with the highest incomes, only one was a college graduate. By their late 50s, 7% were in *Who's Who in America*, 10% were in *American Men of Science*; and they had published collectively 200 books, 2500 articles and been granted 350 patents. Among the women, about half were housewives, which was normal for the time; but 11% were professionals, 8% were business executives, and seven were in *American Men of Science* (which was renamed *American Men and Women of Science* in 1971). They also had a lower mortality rate and many fewer accidents than most Americans of their age. These patterns confirmed the judgement of their teachers that they were considerably more socially mature, honest, and emotionally stable than most children.¹⁸

¹⁸ Lewis Terman and Melita Oden, *The Gifted Group at Midlife*. Stanford University Press, 1959: 11, 29, 74, 85-8, 93, 97; Carole Holahan and Robert Sears, *The Gifted Group in Later Maturity*. Stanford University Press, 1995: 45, 48, 64, 84-7, 219-20.

Seligman (1992: 44-6) provides a summary.

Every subsequent study of children chosen for high scores on intelligence tests has found that they are also superior socially and emotionally (Zeidner and Matthews 2000: 591). The most recent study, which was based on an intelligence test that was given to all Scottish schoolchildren in 1932, when they were eleven years old, found, “Each standard deviation decrease in IQ results in a 12% increase in the risk of developing a mental health problem requiring contact with psychiatric services” (Walker *et al.* 2002: 242).

Immediately following his citation of the Grant Study, Goleman stated (page 35),

A similar follow-up in middle age was done on 450 boys ... who grew up in ... a “blighted slum” ... A third had IQs below 90. But again IQ had little relationship to how well they had done at work or in the rest of their lives ... To be sure, there was a general link (as there always is) between IQ and socioeconomic level at age forty-seven. But childhood abilities such as being able to handle frustrations, control emotions, and get on with other people made the greater difference.

Again, 450 people is a trivial sample to oppose to the huge databases that show the opposite. But, also again, even this evidence does not exist. Goleman misrepresented the source to which he referred for this information.¹⁹ On page 297 of the source he cited is a table of the correlations between scores on six measures of the subjects’ childhood strengths and weaknesses and their socioeconomic status (SES) at age 47. These measures were Boyhood Competence (how well the subjects coped as boys with part-time work, household chores, school activities, etc.); Childhood Environmental Strengths (frequency of childhood problems with physical, social, and mental health; quality of relationships with parents and siblings; school/social adjustment); Childhood Emotional Problems (childhood emotional problems, how “good-natured” and sociable the subjects were as children); childhood IQ tests; Childhood Environmental Weakness (lack of family cohesion, being raised apart from parents, lack of paternal affection and supervision); and parental SES.

Of these childhood variables it was IQ that correlated by far the most closely with SES at the age of 47, with a correlation of .35. (A correlation of 1.00 means that two entities are identical; a correlation of 0 means that they have nothing in common.) But that figure understates what the correlation would have been in a random sample because the range of scores for these subjects was smaller than for the general population. The authors of the study point out (page 290), “Sampling bias included the exclusion of the severely delinquent [and] the intellectually gifted.”²⁰

On pages 290 and 292 of the article which Goleman cited, its authors mentioned another distorting factor: 61% of the subjects’ families were foreign born, which probably diminished the reliability of the verbal subtests of the IQ test they took. For that reason, the only other table of correlations in the article (page 301) added to the other factors scores on the block design subtest of the IQ test that these boys took, since the block design test is nonverbal. That table compared the thirteen of the children from multiproblem families who turned out the best and the thirteenth who turned out the worst as adults. As in most studies of this type, parental SES had no effect; but the average IQ of the worst outcome group was

¹⁹ J. Kirk Felsman and George Vaillant, “Resilient Children as Adults: A 40-Year Study.” In *The Invulnerable Child*, edited by E. James Anthony and Bertram Cohler, 289-314. New York: The Guilford Press, 1987.

²⁰ I discuss below how the restriction of range of a sample diminishes correlations among its members.

88 and of the best outcome group 101. That would be a large difference for any sample. It is especially large for this group, whose range was restricted. But the difference between the best and worst outcome groups was even greater on the block design subtest of the IQ test they took: 11.2 and 7.5. Since the block design subtest usually correlates closely with overall scores on intelligence tests, we must assume that if most of this sample had been raised by English-speaking parents, the difference in IQ between its most and least successful members would have been much greater than thirteen IQ points.

I will now remind the reader that on page 34 of *Emotional Intelligence* Goleman stated, “at best, IQ contributes about 20 percent to the factors that determine life success” and *Time* added “researchers now generally agree” to that assertion. Of the sources that Goleman cited to prove the unreliability of IQ, the study I have been outlining is the only one that provides a correlation between childhood IQ and adult success. Even with the serious distortions that its authors point out, the correlation between childhood IQ and adult success was nearly twice .20.

On the rest of page 35 (and 36), Goleman adduced a study of high school valedictorians and salutatorians. They got excellent grades in college also. “But ... by their late twenties they had climbed to only average levels of success.” Goleman provided one reference for this study (page 314, note 6): “Karen Arnold, who did the study ... was quoted in *The Chicago Tribune* (May 29, 1992).” I managed to find the article.²¹ It reported on the results of “an ongoing [i.e., unpublished] study.” The only source it cited was what Karen Arnold and her co-researcher, Terry Denny, both of whom are professors of education, said they found. However, even the article’s summary of what they claimed to have found clearly contradicts the conclusion that high school grades are unimportant. They found that of 81 valedictorians in 1981, who were in their late twenties at the time of the article, “just one-quarter ... were at the highest level of young professionals in their fields.” In fact, one quarter is an extremely high proportion of any group of people to be at the highest level of young professionals. (Goleman misrepresented this. He wrote, “only one in four were at the highest level of young people ... in their chosen profession.” A *profession* can refer to many types of work, but a *professional* is someone with a post-baccalaureate degree.)

The *Chicago Tribune* article then observed, “the 46 women were doing much less well, by careerist standards, than the men, primarily because they placed greater importance on the family.” So it seems probable that nearly half of the men, who composed only 43% of the valedictorians and salutatorians, were in the highest level of young professionals.

There is undoubtedly another reason, besides less professional ambition, for the lower correlation between high school grades and occupational success for the women in this study than for the men. Teachers give higher marks to girls/women than to boys/men in subjects in which boys/men attain higher marks on standardized achievement tests. This is true even in college, professional and graduate school.²²

²¹ Steven Johnson and Matthew Murray, “Valedictorians Stay Levelheaded about Being No. 1,” page 1 of the section “Chicagoland.”

²² Caldwell and Hartnett 1967; Camara *et al.* 2003: 13-14; Benbow 1988: 174, 190; Benbow 1992: 57-8.

Of students who took the SAT in 2004, 39 percent of those who had an A+ average in high school were boys, as were 38 percent of those who had an A average; but 58 percent of those who had high school averages of C and below were boys. Yet, the average Verbal and Math SAT scores of boys were 512 and 537; the average of girls were 504 and 501. Moreover, 6 percent of the boys who took the SAT in 2004 and 5 percent of the girls scored above 700 on the Verbal section; on the Math section, 9 percent of the boys and 4 percent of the girls scored above 700; and 3 percent of the boys but only 1 percent of the girls scored above 750 on the Math.

Teachers also overestimate the IQs of girls relative to boys. Lewis Terman chose high-IQ children for the study that I outlined by first asking teachers to choose the three brightest children in their classes. He then gave them an IQ test. Of the children that the teachers chose, nearly twice as many of the girls than the boys had IQs below 140 (Jensen 1980: 627). The reason is that girls tend to be better behaved, readier to follow instructions without questioning them, neater, more pleasant and better at routine aspects of subjects. For example, in mathematics, girls make fewer errors in arithmetic computation (addition, multiplication, etc.), but boys are better able to solve problems that require mathematical reasoning.²³

Another factor that diminishes correlations between school performance and occupational success is the tremendous difference in academic standards among schools. A study by the U.S. Department of Education in 1994 found that students who got A's in English in some schools had, on average, the same reading scores as students in other schools who got C's or D's (Camara, et al. 2003: 3).

These are among the reasons why standardized intelligence tests, like IQ and SAT, and academic achievement tests are better predictors of adult success than high school grades; even though high school grades are also good predictors of adult success, as is shown by the article that Goleman cited to denigrate them.

On pages 37 to 39, Goleman first praised "Project Spectrum, a curriculum that intentionally cultivates a variety of kinds of intelligences." He then quoted with approval attacks by his hero, Howard Gardner, on the narrowness of the abilities tested by IQ tests and SATs and asserted that Gardner's "multifaceted view of intelligence offers a richer picture of a child's ability and potential for success than the standard IQ." His only evidence for these claims was, "When Spectrum students were evaluated on the Stanford-Binet Intelligence Scale – the gold standard of IQ tests – and again by a battery [of tests] designed to measure Gardner's spectrum of intelligences, there was no significant relationship between the children's scores on the two tests." Goleman here, as always, misrepresented the source he cited: Chapter 6 of *Multiple Intelligences: The Theory in Practice*, which Gardner edited.²⁴ This chapter was written by Gardner and Mara Krechevsky. They reported (page 102) that the three children who did the worst on the Spectrum test were among the five lowest in IQ, and the child who had the lowest IQ did worst on the Spectrum test.

However, whether the Spectrum test correlated with IQ or not is irrelevant because only nineteen children, all pre-school, took the Spectrum test, and of those only seventeen also took the IQ test. Gardner and Krechevsky warned repeatedly that this small number precluded drawing reliable conclusions: "Given the limited scope of our sample population, we are not prepared to draw general conclusions about four-year old children" (let alone anyone else) (page 93); "Of course, without a much larger sample, no firm

In 1980, in the extensive High School and Beyond database, of tenth-grade students who were in the top 5 percent in IQ, 14 percent of the boys but 33 percent of the girls got mostly A's; even though 22 percent of the boys and only 20 percent of the girls did ten or more hours of homework a week (Roznowski et al. 2000: 97-8).

²³ Benbow 1988: 170, 173, 198. Ability at arithmetic computation has little connection with mathematical reasoning ability or general intelligence. Albert Einstein had difficulty balancing his check book. Conversely, Mrs. Shakuntala Devi, who can multiply two 13-digit numbers in 28 seconds and compute the eighth root of a 14-digit number in ten seconds, has an above average but not exceptional IQ (Coren 1994: 80; Jensen 1990).

²⁴ Published in 1993 by HarperCollins in New York.

conclusions can be drawn” (page 102); “Because of the small sample ... the study should be regarded as generating hypotheses rather than as conclusive in any sense” (page 105).

Even if the sample was large enough to be reliable and there was no correlation between scores on both tests; what would that indicate? Innumerable carefully conducted studies involving huge numbers of people have found, without exception, that IQ scores are remarkably accurate predictors of academic, occupational, social, and emotional success decades after the tests were taken. Gardner and Krechevsky’s proof that scores on the Spectrum test are significant is that one year later some (but not all) of the nineteen children who took it exhibited the same strengths as they showed on the test. Even this pathetically trivial claim of predictive power is contradicted by their own analysis. For twelve of the nineteen subjects the criterion was that the parents or teachers of eleven of them said that they had “abilities consistent with those identified by Spectrum” the year before (page 103). But four pages earlier Gardner and Krechevsky said that one of the greatest advantages of the Spectrum test is that it “identified twelve strengths that had not been identified by *either parent or teacher*” (italics in the original).

Gardner and Krechevsky also pointed out (page 106), “Of course, the Stanford-Binet Intelligence Scale [IQ test]... is a standardized measure, with excellent internal consistency and high reliability. The measure is easily and efficiently administered.”

On pages 86 to 89 Goleman stated that optimism and a high level of hope are better predictors of college freshmen’s grades than are SAT scores or high school grades. This is a stunning claim. For generations the world’s psychometricians have used databases of hundreds of thousands of people to study the predictive power of all sorts of factors for university performance. The only question that remains is the relative predictive power of standardized academic aptitude tests (SATs, ACTs, etc.) and high school grades for different types of students and different types of colleges. Other information (letters of recommendation, biodata, essays written by students, interviews, etc.) have invariably been found not to add significantly in predicting college grades (Klitgaard 1985: 108). Goleman claimed that hope and optimism boost academic performance by increasing persistence and motivation. However, Gagné and Pèrè (2002) studied the effect of motivation and persistence and found (page 91) “no significant contribution of intrinsic or extrinsic motives ... to the prediction of academic achievement.” More importantly (page 95), “The nonsignificant contribution of motivation in the prediction of school achievement found in the present study corroborates results from many past investigations in both school and work settings.”

By contrast, as Winton Manning and Rex Jackson observed (1984: 196-7) about SATs,

It is doubtful that any other kind of test or even any other body of test validation research approaches the number of studies in which college admissions test scores are related to future academic performance. The studies have been repeated thousands of times, and the results consistently support the conclusion that ... the higher the test scores the more successful, on average, the students are in college and graduate study.

In fact, the SAT scores of even thirteen-year-olds are highly predictive of undergraduate and post-graduate performance, with regard to grades, awards and articles published (Benbow 1992).

Moreover, as Goleman observed in this section (page 86), “scores on the SAT ... [are] highly correlated with IQ,” and, “In a survey of close to 3,000 empirical studies of school learning ... various IQ

measures ... emerged as the most powerful determinant, by far, among the dozens of factors examined” (Gagné and Pèrè 2002: 72). In fact,

The *Psychological Abstracts* contains some 11,000 citations of studies on the relation of educational achievement to IQ. If there is any unquestioned fact in applied psychometrics, it is that IQ tests have a high degree of predictive validity for ... scores on scholastic achievement tests, school and college grades, retention in grade, school dropout, number of years of schooling ... probability of receiving a bachelor’s degree (Jensen 1998: 277).

In opposition to this massive body of evidence, which is accepted by every serious student of this subject, Goleman adduced two studies. One is (page 86), “When C.R. Snyder ... compared the actual academic achievement of freshman students high and low on hope, he discovered that hope was a better predictor of their first semester grades than were their scores on the SAT.” Goleman cited two sources for Snyder’s study. One (page 318, note 20) is an article that Goleman himself wrote in the *New York Times*²⁵ in which he told the *Times*’ readers, “Dr. Snyder and his colleagues found that the level of hope among freshman ... was a more accurate predictor of their college grades than were their S.A.T. scores or the grade point average in high school.” The other source that Goleman cites (page 318, note 19) was page 579 of the article by Snyder and his colleagues in which they reported the results of their study.²⁶

When I read Goleman’s assertions, two objections immediately occurred to me. One is that if optimism correlates with college grades and success in life, then college grades should predict success in life. The second is that if optimism correlates with freshman college grades, it should also correlate with high school grades, which consequently should be good predictors of college grades. In fact, the only statement concerning this subject on the page that Goleman cited from Snyder *et al.*’s article stated that high school grades correlate more closely (.17) with “Hope Scale scores” than college grades do (.13). (The correlation of .13 that Snyder *et al.* found between their Hope Scale and college performance is only barely significant.) On page 582 Snyder *et al.* reported, “Higher Hope Scales correlated -.10, .17, and .49 with better [*sic*] reported high school performance.” The difference among these correlations is immense, clearly indicating statistical unreliability, which the authors acknowledged (page 582): “one must be cautious in drawing conclusions too quickly on the basis of these scant data.”

Nowhere in their report of their study did Snyder et al. mention SATs.

The second study Goleman cited was (page 88) “of five hundred members of the incoming freshman class of 1984 at the University of Pennsylvania, the students’ scores on a test of optimism were a better predictor of their actual grades freshman year [*sic*] than were their SAT scores or their high-school grades.” Attacking the massive evidence for the predictive power of SATs and high school grades with a study of five hundred students is like attacking an entire army with a butter knife. However, again, even this evidence does not exist. Goleman seriously misrepresented the reference he cited (page 318, note 23) which was his own account of this experiment in the *New York Times*²⁷. There he wrote that the study

²⁵ “Hope Emerges as Key to Success in Life” (December 24, 1991): C1.

²⁶ “The Will and the Ways: Development and Validation of an Individual-Differences Measure of Hope.” *Journal of Personality and Social Psychology* 60, 1991: 570-85.

tested 500 members of the incoming freshman class of 1984. Using a composite of the students' high school grades and college entrance exam scores [i.e., SATs], the dean's office is able to predict what each student's freshman year grades should be. The test of explanatory style, however, was able to predict which freshmen would do better than expected and which would do worse.

So this test merely fine-tuned the predictive power of SATs and high school grades among a risibly small sample. Moreover, Goleman's *New York Times* article provided no reference to an article or book by which his account can be checked.

Incidentally, the title of the subchapter in which Goleman argues for the importance of optimism is "Pandora's Box and Pollyanna: The Power of Positive Thinking." In it (pages 86-7), he provided an extremely inaccurate account of what he calls "the familiar legend" of Pandora.

Goleman's next attack on IQ tests is on page 97, where he extolled the importance of empathy and stated, "[T]here was only an incidental relationship between scores on this measure of empathetic acuity and SAT or IQ scores or school achievement tests." Goleman, typically, provided only one reference (page 319, note 3) to support this claim. That is a not an article or book, but a conference paper. It is not in any university library in South Africa, where I live, nor in the renowned New York City Fifth Avenue Library, nor in the library of Columbia University. Conference papers are usually hard to find. They provide preliminary reports on research, with little supporting evidence. After his reference to this conference paper, Goleman stated, without citing any evidence at all, that children with an aptitude for reading feelings nonverbally "did better in school, even though, on average, their IQs were not higher than those of children who were less skilled at reading nonverbal messages."

On page 122, Goleman stated, "as tests of children's nonverbal sensitivity have shown, those who misread emotional cues tend to do poorly in school compared to their academic potential as reflected in IQ tests." His referred the reader (page 321, note 11) for this fact to Stephen Nowicki and Marshall Duke's *Helping the Child Who Doesn't Fit In*. He gave no page numbers and the book has no index. I read it twice and could find no mention of IQ or school performance. It is Goleman's practice not to provide page numbers for books he cites, making them useless for the 99% of readers who do not have the time or interest to look through an entire book for each citation.

Goleman called Chapter 10 "Managing with Heart." He began it with a discussion of airplane crashes because (page 148), "The [airplane] cockpit is a microcosm of any working organization." So it is a crucially important fact that, "In 80 percent of airline crashes, pilots make mistakes that could have been prevented, particularly if the crew worked together more harmoniously." Goleman provided no reference to support this assertion, which is *a priori* so improbable as to border on impossible. He did, however, supply the source for the next statistic he cited (page 149): "A study of 250 executives found that most felt their work demanded 'their heads but not their hearts.'" Most of these executives spent their entire adult lives in business organizations, and they were successful in them. Goleman's proof that they are wrong is a statement that was made to him and never published (page 149; and page 323, note 3).

There follow ten pages of anecdotes about the harm that social insensitivity can cause to an organization. Finally, at the end of the chapter (pages 160-63), Goleman summarized two studies that he

²⁷ "Research Affirms Power of Positive Thinking" (February 3, 1987): C1.

claimed showed that emotional and social intelligence contribute more than cognitive intelligence to organizational effectiveness. He stated (pages 160-61) that one of these studies found,

Whenever people come together to collaborate ... there is a ... group IQ ... And how well they accomplish their task will be determined by how high that IQ is. The single most important element in group intelligence, it turns out, is not the average IQ in the academic sense, but rather in terms of emotional intelligence. The key to a high group IQ is social harmony. ... The idea that there is a group intelligence at all comes from Robert Sternberg ... and Wendy Williams ... [who found that] [t]he single most important factor in maximizing the excellence of a group's product was the degree ... of internal harmony.

The evidence Goleman cited is an article by Sternberg and Williams on pages 351 to 377 of *Intelligence* 1988 entitled "Group Intelligence: Why Some Groups Are Better Than Others." Sternberg and Williams began (pages 352-3) by observing that past research on this subject had found that "groups seldom perform better than their best member would alone;" and "Past research has uncovered a *small* [italics added] relationship between personality measures and measures of group performance."

The groups that Sternberg and Williams studied had three members in each. On page 369 they recorded the correlations between Group Product Quality and the scores of each member on an IQ test. The correlation for both the best and next-to-best members was .65, for the third .43. These are high correlations, but lower than they would have been in a random sample, since the average IQ of the entire sample was 109, well above the national average (page 365). So the range was narrower than the general population, which reduces correlations, as I will explain when I discuss Goleman's next example. On the last page, when Sternberg and Williams summed up, they said, "And finally, IQ [of each member] was an essential component of group intelligence; not only is a lot of IQ on average desirable, but also, one group member particularly high in IQ."²⁸

On page 161, Goleman mentioned the other study that he claimed showed the greater importance of social and emotional intelligence than cognitive intelligence for the effectiveness of an organization:

Many things people do at work depend on their ability to call on a loose network of fellow workers. ... Just how well people can "work" a network ... is a crucial factor in on-the-job success. Consider, for example, a study of star performers at Bell Labs, the world-famous scientific think tank.... The labs are peopled with engineers and scientists who are all at the top on academic IQ tests. But within this pool of talent, some emerge as stars while others are only average in their output. What makes the difference is not their academic IQ, but their *emotional* [Goleman's italics] IQ.

In the article Goleman cited for this study,²⁹ Robert Kelley and Janet Caplan outlined what star performers, whom they also called "experts," thought was important for effective job performance and what non-stars, called "middle performers," thought was important. ("Middle" is a euphemism since there was no third group.)

²⁸ A correlation of even .65 is much more significant than a person who is ignorant of statistics would assume. If a college admits 10% of its applicants and 20% of its applicants would fail if admitted; if it admits applicants at random, then 20% of its students would fail. If it uses a test with a .65 correlation with academic performance, then only 1% of its students would fail.

²⁹ "How Bell Labs Creates Star Performers." *Harvard Business Review* (July-August, 1993): 128-39.

Goleman claimed (page 162) that Kelley and Caplan found that among the “interpersonal strategies ‘stars’ used ... [o]ne of the most important turned out to be a rapport with a network of key people ... they put time into cultivating good relationships with people whose services might be needed.” However, Kelley and Caplan’s description of how stars network has nothing to do with rapport or cultivating good relations. On the contrary, they quoted (page 132) a representative star performer, who

explained that networking was a barter system in which an engineer needed to earn his or her own way. ... [T]hat meant first becoming a technical expert in a particularly sought-after area ... Once an engineer has developed his or her bargaining chip, it’s possible to gain access to the rest of the knowledge network. But once in the network, you have to maintain a balance of trade to stay in.

Moreover, on page 131 of their article, Kelley and Caplan represented what the stars thought is important in the form of a three concentric circles. Networking was in second circle, that is, of secondary importance. The central circle of crucial abilities was, “Core Skills and Strategies: Taking Initiative, Technical Competence, Other *Cognitive* [italics added] Abilities.”

Kelley and Caplan also reported (page 133) that the stars and non-stars had a completely different conception of what taking initiative meant:

As for describing work strategies, the differences between stars and middle performers [i.e., all non-stars] were ... striking. One middle performer ...for instance, told us of gathering and organizing source materials ... Another described writing a memo to his supervisor about a software bug. Both engineers believed they showed a great deal of initiative Yet when we described these examples to the Bell Labs experts [stars], they ... thought these engineers were barely doing their job, let alone taking initiative. For example, one expert explained that by the time the software bug is documented, it is often impossible for the software developers to re-create the problem in order to fix it. For the experts, fixing a bug yourself ... is what’s expected of you in your job.

At the conclusion of his outline of what he claimed Kelley and Caplan wrote, Goleman summarized it (page 163) in this way:

Beyond a mastery of these essential networks, other forms of organizational savvy the Bell stars had mastered included effectively coordinating their efforts in teamwork, being leaders in building consensus, being able to see things from the perspective of others ... persuasiveness; and promoting cooperation while avoiding conflict.

However, Kelley and Caplan did not mention a single one of these examples of “organizational savvy” except persuasiveness. That and the words “organizational savvy” occur on page 133 of their article as important differences between the two groups. The star performers regarded persuasiveness and “organizational savvy” as the two *least* important abilities. They described them as “icing on the cake.” But “middle performers inverted the expert model’s ranking ... According to these engineers, show-and-tell and organizational savvy were the core strategies.”

Goleman did, however, quote the article accurately that there was no difference in IQ between the two groups; but he did not quote the reason Kelley and Caplan give (page 132): “all Bell Labs engineers score at the top in IQ tests.” Everyone who explains the importance of IQ emphasizes that the more important intelligence is for an activity, the narrower is the range of the IQs of the people doing it and,

consequently, the lower the correlation between IQ and successful performance among them. So the correlation between SAT scores and college grades is highest at colleges with open admission and lowest at MIT and Caltech. Since only extremely academically able students go to graduate school, the average correlation between scores on the Graduate Record Examination (GRE), which is taken for applicants to graduate school, and grades in graduate school is only .30. Scores on the quantitative section of the GRE do not correlate at all with the grades of graduate students of mathematics at Berkeley. (Jensen 1993: 151-2) The reason is that their scores on the quantitative section of the GRE are all in the upper 2% of applicants to graduate schools.³⁰

Similarly, as the article Goleman cited points out, the reason that IQ does not correlate with performance at the Bell Labs attests to the paramount importance there of what IQ measures for success. Everyone working in the Bell Labs has an extremely high IQ.

Before proceeding with Goleman's anti-IQ evidence I will quote from two articles that reported comprehensive studies of the importance of emotional intelligence. One is "Models of Emotional Intelligence," in which John Mayer, Peter Salovey, and David Caruso argued that emotional intelligence has some importance.³¹ But they conceded about the relationship of emotional intelligence to occupational success (pages 412-13),

Extravagant claims as to the power of emotional intelligence to predict success in the workplace appear to fly in the face of our existing research base. For instance, Barrick and Mount conducted a meta-analysis of 117 criterion-related validity studies of how the Big Five personality dimensions predict job behaviour. The 117 studies yielded 162 samples with a total of 23,994 individuals. The Big Five dimensions include emotionality, extraversion, openness, agreeableness, and neuroticism. ... Many of these factors overlap with what Goleman and Bar-On described as emotional intelligence.

For example, agreeableness ... is not an important predictor of job performance, even in those jobs containing a large social component (e.g., sales or management) ...

The overall correlations [of the Big Five together] topped out at $r = .15$, or 2% or 3% of the variance – rather less than the 20 to 80% suggested in popular writings.³²

In the second article, Manfred Amelang and Ricarda Steinmayr reported on two studies.³³ One examined whether emotional intelligence could predict the school grades of high school students. The other examined whether emotional intelligence was correlated with the educational level, occupational status,

³⁰ Jensen 1980: 332. Robert Klitgaard (1985: 94, 235, note 24) illustrated reduction of correlations by restriction of range through an analogy from American football. In 1982, the correlation between the order in which wide receivers were selected by professional football teams and their running speed was .35. That is a significant correlation, but it does not reflect the fact that running speed is the most important consideration in selecting wide receivers. The reason that the correlation is not greater is that scouts consider only wide receivers who run fast.

³¹ In the standard textbook *Handbook of Intelligence*, edited by Robert Sternberg, New York: Cambridge University Press, 2000: 396-420. Another article in the same book (pages 360-63) refutes even the claims that Mayer, Salovey, and Caruso make for the importance of emotional intelligence.

³² The London *Times*' 1184-word review of Goleman's *Working with Emotional Intelligence* ("How to Be a Good Boss" (September 29, 1998) told its readers, "Research has shown that emotional competence makes the crucial difference between mediocre leaders and the best. Indeed, emotional competence makes up about two thirds of the ingredients of star performers in general, but for outstanding leaders emotional competencies ... make up 80 to 100 per cent."

and income of a sample of employed adults. They found (page 459), “In both studies, EI [emotional intelligence] could not explain any variance in the criteria.”

Goleman’s next attack on IQ is on the bottom of page 236 and top of 237. It concerns juvenile delinquency. Goleman stated, “impulsivity in ten-year old boys is almost three times as powerful a predictor of their later delinquency as is their IQ.” The source Goleman cited (page 335, note 18) for this fact is an article by Jack Block.³⁴ On page 397 of that article, Block provided four sets of figures for the relative predictive power for delinquency of IQ and impulsivity: for Blacks when impulsivity is entered into the equation before Verbal IQ, for Blacks when it is entered after Verbal IQ; and for Whites when impulsivity is entered before and after Verbal IQ. Block recorded that only in the first case, ‘Impulsivity is almost three times more influential than Verbal IQ as a predictor of delinquency.’ In the second case, ‘Impulsivity is more than half again [i.e., 50%] as influential as Verbal IQ.’ In both cases involving Whites, impulsivity and Verbal IQ are about equally correlated with delinquency. (The ratios are 11/10 and 6/5). Since American whites outnumber blacks by eight to one, the ratio for the entire American population is close to the ratio for whites.

Not only did Goleman blatantly misrepresent Block’s article, but he also did not tell his readers about the article that immediately follows it, in which Donald Lynam and Terrie Moffitt³⁵ argued against Block’s conclusions and against Block’s contention, which Goleman repeated on page 335 (note 18), that impulsivity causes low IQ. Goleman must have seen Lynam and Moffitt’s article, and he must have known that anyone who checked his references would see it. If he could have refuted it, he would have done so. Goleman also must have known that anyone with even a slight interest in this topic would be aware of the studies that Herrnstein and Murray outlined in *The Bell Curve* (pages 242-51) that found that childhood IQ is by far the most significant predictor of criminality. These studies are all based on much larger samples than the one Block used. Some of them are also mentioned in the standard criminological textbook, *Handbook of Juvenile Delinquency*,³⁶ which observed, “We know of no current research findings contrary to this conclusion.”

So, as always, Goleman ignored massive studies and meta-analyses, which are universally accepted by experts, and based a sweeping conclusion on a single, idiosyncratic study, which he grossly misrepresented.

The last evidence Goleman adduced to denigrate IQ was during his argument that popularity with one’s peers is crucially important for young children. He stated (page 251), “In fact, how popular a child was in third grade has been shown to be a better predictor of mental-health problems at the age of eighteen than anything else – teachers’ and nurses’ ratings, school performance and IQ, even scores on psychological tests.” Again, Goleman cited only one source to substantiate this sweeping claim, and he

³³ “Is There a Validity Increment for Tests of Emotional Intelligence in Explaining the Variance of Performance Criteria?” *Intelligence* 34.5 (2006): 459-68. (This article is available online at www.sciencedirect.com.)

³⁴ “On the Relation between IQ, Impulsivity, and Delinquency: Remarks on the Lynam, Moffitt, and Stouthamer-Loeber (1993) Interpretation.” *Journal of Abnormal Psychology* 104 (1995): 395-8.

³⁵ “Delinquency and Impulsivity and IQ: A Reply to Block (1995).” *Journal of Abnormal Psychology* 104 (1995): 399-401.

³⁶ Edited by Herbert Quay. New York: John Wiley & Sons, 1987; 106-7.

totally misrepresents the article he cited.³⁷ The article he cited has nothing to do with popularity. It argued that third-grade children's evaluations of their peers' mental problems are the best predictors of future mental problems. They offered the analogy (page 445) that "chronic mental hospital patients ... [are] more sensitive in picking up bogus patients living in hospital wards than mental health professionals, nurses, or attendants." Moreover, they constantly acknowledged that their conclusions conflict with previous studies, which found that teachers' and parents' judgements are the most accurate predictors of later mental health.

Goleman cited no later study that supported the conclusions of this article, which was published in 1973. He probably did not bother to look for any. It has no relation to popularity; and even if it did, he had no reason to try to substantiate it. I have pointed out that anyone who is at all familiar with this subject would immediately realize that even if every anti-IQ study that Goleman cited was conducted with impeccable rigor and Goleman reported their results accurately, the fact that he could find so few anti-IQ studies and that they all involved minute sample sizes would itself be nearly irrefutable proof that the pro-IQ position is unassailable. Goleman clearly relied on the reviewers of his book being totally ignorant of this subject, not expending the slightest effort to alleviate that ignorance, not reading his book carefully enough to see that it is riddled with blatant, irreconcilable contradictions on fundamental issues and not checking a single reference. If they had checked only one reference, they would have found it disturbing enough to check more. Goleman also must have realized that subsequent readers would assume that reviewers did everything they did not do and, consequently, would be predisposed to accept what he says.

The reader may have noticed that there seems to be one exception to Goleman's practice of grossly distorting every article and book to which he referred. That is the crucial Marshmallow Test. But that is not an exception. Goleman outlined it in a chapter entitled "The Master Aptitude" (self-control) and a section entitled "Impulse Control: The Marshmallow Test," in which he stated (page 81) that the Marshmallow Test showed that, "There is perhaps no psychological skill more fundamental than resisting impulse. It is the root of all emotional self-control."

However, the article Goleman cited for the Marshmallow Test (Shoda, *et al.*, 1990) reported that the results Goleman outlined were not for self-control. The children were exposed to various desirable objects, only one of which were marshmallows. They were divided into four groups, distinguished by whether the rewards were exposed or hidden and whether the children were advised as to how to distract themselves or were not. The remarkable correlations between adolescent emotional, social, and academic strengths and SAT scores that Goleman emphasized did exist, but only for those children who were exposed to the rewards and resisted them without having been advised on how to distract themselves. In the outline of their article, on its first page, Shoda *et al.*, summed up the study as, "Experimental analyses of the cognitive-attentional processes that affect waiting in this situation helped to identify conditions in which delay behaviour would be most likely to reflect cognitive and attentional competencies." So the adolescent strengths, which Goleman said were predicted by children's ability to resist temptation, were in fact predicted by their ability to devise cognitive strategies, not by any emotional factor. Moreover, this article, like nearly every other article Goleman

³⁷ Emory Cowen *et al.*, "Long-Term Follow-Up of Early Detected Vulnerable Children." *Journal of Consulting and Clinical Psychology*, 41 (1973): 438-46.

cited, warned on its last page, “We must emphasize the need for caution in the interpretation of the total findings ... given the smallness of the sample.”

Besides blatantly distorting every articles and book he cited, Goleman also relied on misleading general observations to denigrate the importance of IQ. For example, he quoted (page 41) with approval Howard Gardner’s claim, “many people with IQs of 160 work for people with IQs of 100.” Gardner did not cite a single study to support this assertion. But it is not completely incorrect, just extremely misleading.

I pointed out that every study of the average IQ of people in different occupations has found that the correlation between an occupation’s status and the rank order of the average IQ of its members is between .90 and .95. I will add here that the lower the average IQ of an occupation is, the greater the range of the IQs of the people in it. In the most extensive study of this kind, the United States Department of Labor gave the General Aptitude Test Battery (GATB) to a representative sample of 39,600 Americans employed in 444 different occupations. Scores on the GATB are highly correlated with scores on IQ tests, but it magnifies differences. A score of 140 on the GATB equals a score of 130 on the Wechsler IQ tests, and 60 on the GATB equals an IQ of 70. The average scores of the members of occupations ranged from 55 for potato peelers to 143 for mathematicians.

However, in this study, as in every study of the IQs of the members of different occupations, the higher the average IQ of the members of an occupation is, the smaller the range of IQs of people in that occupation is. For example, a study conducted by the U.S. Army of the correlation between scores on the Army General Qualification Test (an intelligence test with the same scoring pattern as the GATB) found that the difference between the lowest score of the members of low-IQ occupations and the lowest score of the members of high-IQ occupations was 86 points, while the difference between the highest scores was only 12.³⁸

People with high IQs can peel potatoes, but people with low, or even normal IQs, cannot be mathematicians. But the average scores for the low-IQ occupations show that extremely few high-IQ people are doing them. Most they are students, or between jobs.

The average IQ of high school graduates is 105-106. That means that a person with a 100 IQ has to struggle to finish high school; but only 7% of people with only high school diplomas have as high an IQ as the median average college graduate and only 1% as high as the average person with a PhD, MD, or LLB (Herrnstein and Murray 1994: 49, 151-2). (Those people with IQs of 85 and below who have obtained high school diplomas score no higher than fifth or sixth grade level on standard achievement tests (Jensen 1998: 553))

So a few businesses are owned by people with IQs of 100, but they must be either exceptionally simple, like booths in flea markets, or businesses they inherited and allow other people to run.

The last of Goleman’s arguments that I will discuss is for increasing the orientation of American education towards emotional and social skills. Goleman presented his main argument for why this orientation is necessary in the penultimate chapter of *Emotional Intelligence*, entitled “The Cost of Emotional Illiteracy.” There (pages 231-3, 240-1, 333, notes 3-5) he quoted statistics that illustrate

³⁸ Jensen 1980: 341-4; also Mackintosh 1998: 48-9.

the enormous increase in juvenile crime, illegitimacy, narcotics use, depression, suicide, and sexually transmitted disease over the past several decades. In his Preface, Goleman stated (pages xiii-xlv),

Perhaps the most disturbing single piece of data in this book [is that] the present generation of children ... [is] more troubled emotionally than the last.... One solution is ... education [that] will routinely include inculcating essential competencies such as self-awareness, self-control, and empathy, and the arts of listening, resolving conflicts, and cooperation.

Yet, clearly the emotional collapse of American adolescents in the past decades are extremely powerful evidence that Goleman's position is nonsensical. Between 1960 and 1990 the average American class size decreased by a third. Expenditure on American public education, *per student* and *adjusted for inflation*, rose 58% in the 1960s, 27% in the 1970s, 29% in the 1980s. Then, between the academic year 1989-1990 and 1994-95, when Goleman's book was published, expenditures of all educational institutions in the USA increased from 381 billion dollars to 508 billion dollars.³⁹

In return for this vast sum of money, the American people certainly have not received improved academic performance (D'Souza 1995: 337, 649, note 3). What they have received is a vast expansion in the non-academic content of the education for which they pay. Between 1960 and 1991, the proportion of the staff of American schools who were not teachers rose from 25% to 47%. In 1994, only 41% of the average American school day was spent on academic subjects; and American high-school students spent less than half the number of hours studying academic subjects as French or Japanese high-school students and less than a third as German students. Outside of school, American high school students spend an average of four hours a week doing homework, as opposed to an average of four hours a day in other economically advanced countries. Yet adolescents in other countries have much lower rates of emotional problems than American adolescents have (Sykes 1995: 16, 228; Thernstrom 1997: 382).

The non-academic orientation of American education is the result of a process that has been in progress for many decades. At the end of World War II, the U.S. Department of Education adopted the educational goals of "life adjustment" and "personal satisfaction." The crusade to fulfil these goals has been led by the National Education Association (NEA), which is a professional association, trade union and "the only union that owns its own cabinet department." Its immense power has been exercised despite the fact that most teachers do not agree with it on key issues. Among the NEA's positions is that standardized tests are "similar to narcotics" in "maiming" children. In 1947 the influential yearbook of the NEA's Association for Supervision and Curriculum Development stated, "Far too many people in America, both in and out of education, look upon the elementary school as a place to learn reading, writing and arithmetic." Schools must put "human relationships first." "It is the responsibility of the schools to be alert to the symptoms of strong emotions, to assist children in working out socially acceptable ways of expressing emotions." Consequently, "We are going to have to change our ideas about the things we expect of teachers ... She will help the children learn how to work together ... She will listen to each child ... and will help find what he needs ... to grow." The same demands were expressed in nearly every publication on education of the 1940s. The new approach required not only a reorientation of what teachers do, but also

an army of non-teachers to minister to children's emotional and social needs and problems (Sykes 1995: 197-201, 205-7, 215, 228-33).

Not only were many non-academic subjects introduced after World War II, but the vocabulary and sentence structure in school texts was radically simplified. For example, the average sentence-length in sixth, seventh and eighth grade readers declined from twenty words before World War II to fourteen in 1993 (Sykes 1995; 128-30; Zajonc and Mullally 1997: 696).

The 1947 NEA yearbook promised that the reward for following their approach would be, "Poverty, malnutrition, economic injustice, intolerance, ignorance will all yield to a dynamic program of education in the hands of socially literate teachers" (Sykes 1995: 197-8). As Goleman showed so convincingly, it was when American schools were converted to teaching emotional and social skills that the emotional and social health of American adolescents began their precipitous decline.

It is difficult for most people today to comprehend how thoroughly American education has been re-routed away from academics. At the beginning of the twentieth century, in order to graduate from the *eighth grade* in Kansas, students had to pass an examination which included defining words such as "zenith" and "panegyric" and solving mathematical problems such as finding the interest on a \$900 note, at 8 percent, after 2 years, 2 months, and 6 days. Questions of similar difficulty were asked in geography and history (Sowell 1993: 7). Following are typical questions on an examination required for *admission* to Jersey City *High School* in 1885:⁴⁰

Define Algebra, an algebraic expression, a polynomial.
Write a homogeneous quadrinomial of the third degree.
Divide $6a^4+4a^3x-9a^2x^2-3ax^3+2x^4$ by $2a^2+2ax-x^2$.
Write a sentence containing a noun used as an attribute, a verb in the perfect tense potential mood, and a proper adjective.
Name three events of 1777. Which was the most important and why?
Name the four principal ranges of mountains in Asia, three in Europe, and three in Africa.
What are the principal exports of France? Of the West Indies?
Name the capitals of the following countries: Portugal, Greece, Egypt, Persia, Japan, China, Canada, Tibet, and Cuba. [It is interesting that these questions are not at all American-European-centric.]

As for the courses that were taken in high school, Thornton Wilder assumed in *Our Town* (beginning of Act II) that in 1904 every senior in a high school in a small town in New Hampshire, nearly none of whom would attend college, studied solid geometry and Cicero's orations in Latin. By contrast, in 1983 less than a third of high school graduates had taken a course in intermediate algebra (Sykes 1995: 238).

The children who passed these tests were taught by teachers who had studied academic subjects, not education. Since the 1970s, many American states have required prospective public school teachers to pass standardized qualifying examinations. The core of these tests are reading comprehension,

³⁹ Sowell 1993: 12, 270, and *passim*; *US Digest of Educational Statistics*.

⁴⁰ The complete test is in "Sharpen Your Pencil, and Begin Now." *Wall Street Journal* (June 9, 1992): A16.

solving mathematical problems, identifying main ideas and sequential steps, drawing inferences, etc. In other words, they are intelligence tests, and teachers' scores on them correlate with their SAT scores.⁴¹

Numerous careful studies have found no significant positive correlation between student performance and class size, educational expenditure, student motivation, post-high school educational intention, self-esteem, teachers' degrees or any other factor except one: their teachers' scores on these competence examinations.⁴²

The most extensive study, of 105 school districts in North Carolina, found that among students of all races and socioeconomic backgrounds, a difference between school districts of only 1% in their teachers' average performance on the National Teacher Evaluation examination produced a 5% lower failure rate of high school juniors on standardized reading and mathematics tests. Only one other factor had any effect. Students in districts with more students per class did slightly *better* than students in districts with smaller classes (Strauss and Sawyer 1986).

So in teaching, as in every other occupation, success is correlated with a score on tests of general intellectual ability, not of specific job performance, let alone enthusiasm, emotional health or social skills.

The facts above are well known and have been much discussed. There can be only two reasons for Goleman ignoring them: either he is ignorant of even the most elementary facts and controversies in the subject on which he is pontificating; or he could not refute their obvious implications and knew that he did not have to because his book would be reviewed by ignoramuses, and later readers would assume that the reviewers' evaluations were based on knowledge of this subject.

APPENDIX

The most careful and comprehensive study ever conducted of a group of people over a period of time is the National Longitudinal Survey of Labor Market Experience of Youth (NLSY), which has studied 12,686 nationally representative participants since 1979, when they were aged between fourteen and twenty-two. Detailed records have been kept for the participants' education, work history, family formation, childhood environment, parental socioeconomic status, and other factors. In 1980, almost ninety-four percent of the participants took the Armed Forces Qualification Test (AFQT), which is an intelligence test whose scores correlate closely with scores on standard IQ tests.⁴³ In order to avoid controversy, the armed forces do not call the AFQT an IQ test. However, that is what it is, and I will follow the practice of researchers who study it and refer to its scores as IQ scores.

In *The Bell Curve*, Herrnstein and Murray (1994) reported the results of the NLSY through 1990. In 1998, Charles Murray⁴⁴ used NLSY data available through 1993. He divided its participants into five cognitive classes: *Very Bright* (whose childhood IQs were in the upper ten percent of the American population; i.e., IQs of approximately 120 and above), *Bright* (percentiles between 75 and 90; IQs between 110 and 120); *Normal* (percentiles between 25 and 75; IQs between 90 and 110); *Dull*

⁴¹ Ferguson 1991: 471-6, 482; Basinger 1999.

⁴² Thernstrom 2003: 206, 217-18, 306, notes 55, 56; Ferguson 1991; Hanushek 1991.

⁴³ Herrnstein and Murray 1994: 584-5; pages 608-9 of the 1996 edition.

⁴⁴ *Income Inequality and IQ*. Washington, DC: American Enterprise Institute.

(percentiles between 90 and 75; IQs between 80 and 90), and *Very Dull* (the lowest ten percent; IQs below 80).

Murray used these IQ classes to reconsider the question of the relative influence of social background and IQ, but he employed a more stringent criterion of social background than *The Bell Curve's* criteria of parental education, occupation, and income. He examined only full biological siblings in the NLSY who lived in the same home with both their biological parents through at least the younger sibling's seventh year and among whom one sibling had an IQ in the Normal range and one in another range. This involved 1,074 sibling pairs (pages 12-13).

In this group, in 1993, when they were between the ages of 28 through 36, less than 1 percent of the Normals were professionals (lawyers, doctors, professors, engineers, scientists, accountants). Of their siblings, who were raised in the same family, 12 percent of the Very Brights, 3 percent of the Brights, 0.3 percent of the Dulls, and none of the Very Dulls were professionals (pages 15-19).

In 1993, the median earned income (i.e., not derived from investments) of the Normals was \$22,000 (in 1993 dollars). Of their siblings, who were raised in the same family, the Very Brights already earned \$11,500 more in that year; the Very Dulls, \$9,750 less. Each IQ point for siblings raised in the same family corresponded with a difference of \$453 in earned income in 1993 (pages 21-5).

Murray also used another sample from the NLSY (pages 32-3). He examined all those who were raised by both their biological parents until the younger sibling was at least seven years old and whose parents were not in the lowest 25 percent of income in 1978-79. So, the lowest income of this sample in 1978-79 was \$28,500 (in 1993 dollars). This left 3,908 people, whom Murray called a "utopian sample," since they were raised in conditions that "we ideally want to achieve through social policy": unaffected by illegitimacy, desertion, early divorce, or poverty.

By 1993, when these people, all of whom were raised by their biological parents in non-poor homes, were 28-36 years old, 49 percent of the Very Dull women, 33 percent of the Dull women, 14 percent of the Normal women, 6 percent of the Bright women, and 3 percent of the Very Bright women had had an illegitimate child (pages 39-40). Since the average IQ of the children of the Very Dull women will be considerably lower than the children of the Very Bright women, they will have a much higher crime rate. It is for this reason that illegitimate children have a much higher crime rate than children who were raised by both their biological parents.

Also in this utopian sample, nearly all of whose parents must have wanted their children to go to college and could afford to pay for it, 80 percent of the Very Brights were college graduates, 57 percent of the Brights, 19 percent of the Normals, 4 percent of the Dulls, and 1 percent of the Very Dulls. The median earned income of the Very Brights was \$38,000; of the Brights, \$27,000; of the Normals, \$23,000; of the Dulls, \$16,000; and of the Very Dulls, \$11,000 (pages 34-7).

People have a strong tendency to marry people with a similar IQ. Consequently, the difference in family income between people of different intelligence levels is greater than the difference in individual income. Among the people in the NLSY who were raised by both their biological parents in non-poor families, the median income of the employed spouses of the Very Brights was \$30,500; of the employed spouses of the Very Dulls, \$15,500. This factor is magnified by the facts that the higher a person's IQ, the more likely he is to marry, the less likely to divorce and the more likely a married woman is to work. In the

utopian sample, 58 percent of the Very Brights and 61 percent of the Brights had employed spouses, compared with 53 percent of the Normals, 38 percent of the Dulls, and 30 percent of the Very Dulls. The result is that in 1993 the median family income of the Very Brights was \$53,000; of the Brights, \$47,000; of the Normals, \$37,750; of the Dulls, \$25,000; of the Very Dulls, \$17,000 (pages 37-9). I will remind the reader that this is a difference in a population all of whom were raised by both their biological parents, who had at least a lower middle class income.

However, even this income difference is merely the beginning of a gap that will widen greatly in the future, since the correlation between childhood IQ and adult income increases with age. Murray (1998: 7) provides a chart of the year-by-year median income of each of the five cognitive classes. It widened every year between 1984 and 1993. But in 1993, the people in the NLSY were still only between 28 and 36; and the correlation between IQ and income increases the fastest after the middle 30s. (Mackintosh 1998: 51-2) The average income of lawyers, corporate executives, and accountants rises constantly, but the average income of laborers, waiters, and clerks does not. In twenty years after 1993, the difference in income between the members of these cognitive classes will be enormous; the difference in family income will be much greater than the difference in individual income; and the difference in net worth will be much greater than the difference in family income.

Even the projected difference in net worth understates the difference in success between these cognitive classes, since, as Murray pointed out (1988: 2), many of the highest status occupations are not the most lucrative. The public's rating of the status of occupations has been remarkably consistent for generations, and scientists and professors are invariably among the five occupations with the highest status. Consequently, the correlation between IQ and occupational status is closer than between IQ and income.⁴⁵

The High School and Beyond database, which was begun with 12,630 tenth grade students in 1980, illustrates why. In 1986, of those who had an IQ in 1980 that was in the upper 5 percent of the IQ range, 73 percent were in college; of those with an IQ between the 20th and 5th percentile, 63 percent were in college. Of all those who began the study, including those who did not go to college, 16 percent with an IQ in the upper 5 percent intended to get a PhD, and 61 percent intended to get an MBA. Of those with an IQ between the 20th and 5th percentile, 8 percent intended to get a PhD and 49 percent intended to get an MBA. So, twice as high a proportion of those in the upper 5 percent in IQ intended to get a PhD than those between the 20th and 5th percentile, but only 22 percent more intended to get an MBA. (Of those in the lowest 80 percent in IQ, less than 25 percent were in college (Roznowski, *et al.* 2000: 106).)

As with income, socioeconomic background has little or no effect on the status of a person's occupation. By far the most extensive data for occupational mobility consists of every child born in the United Kingdom between March 3 and March 9, 1958. They were studied six times since then, most recently in 2000. At the age of eleven, they took the General Ability Test (GA), which resembles a standard IQ test. The results were analyzed by Daniel Nettle (2003), who divided occupations into five categories, the highest being professional and the lowest unskilled. He found (pages 557-9) that in 2000, the difference in GA scores between the men in the highest and lowest occupational status was 24.1 points, or 1.55 of a standard deviation. "[A]s other studies have also found, attained social class in adulthood is more strongly related to GA score than parental social class is." Moreover, "There is no

⁴⁵ Jensen 1980: 339-41; 1998: 292-3; Mackintosh 1998: 51; Slosberg and NesSmith 1983: 160.

tendency for men who have moved up into higher occupational classes to have higher [GA] scores than those who have reached them by staying put or moving down. ... This finding accords with those of other studies." This means that it is no more difficult for the son of a laborer to become a professional than it is for the son of a professional if they have the same IQ. In fact, "The relationship of parental social class to attained social class was weak ... only 3 percent of the variation ... [can be] explained by direct effects of parental class on occupational opportunities."

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