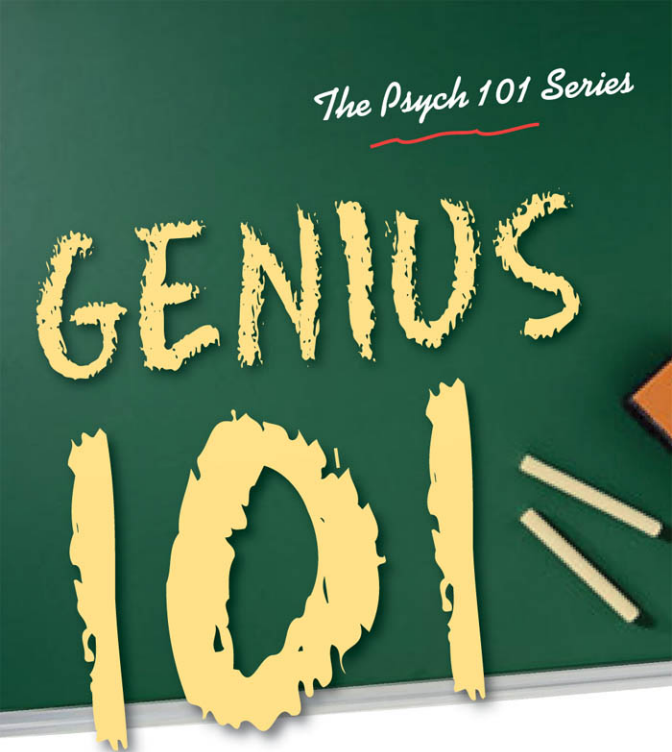


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Preface

When I was in kindergarten, my dad and mom purchased an edition of the *World Book Encyclopedia*. As it was specifically designed for school-age children and adolescents, my parents thought that it would constitute a good educational investment for me and my three younger sisters. The volumes were especially critical in a working-class home that had very few books of any kind. To me the encyclopedia was a wonder. Although I could not yet read, I loved to thumb through the pages, attracted by the plentiful supply of photographs, paintings, and drawings. At the time, it was my favorite picture book. What especially provoked my curiosity were the many photos and paintings of exotic people—dressed in odd costumes and sporting strange hairdos and facial hair. The volumes also included no pictures of anybody I knew, and certainly none of my parents, grandparents, or other relatives. Not even my kindergarten teacher! So I became very curious about what these folks had done for their portraits to be so honored. Of course, once I was able to read the entries associated with these faces, I gradually learned their secret. They had all done something important. In one way or another, they had left a lasting imprint on history through one or more notable achievements. I would now say that many if not most could be considered as *geniuses* in their chosen fields.

All that happened over half a century ago. By a circuitous series of serendipitous events that I have already narrated elsewhere (Simonton, 1990a, 2002c), I eventually found myself conducting

PREFACE

scientific research on genius and the related topics of creativity, leadership, talent, and aesthetics. Over the past one-third of a century, I have published hundreds of articles and chapters, plus several books. Many of these contributions have been successful in shedding light on the phenomenon of genius. But almost all my publications were highly technical as well. For the most part, their primary audience was other scientists who were also studying phenomena associated with genius. Since my colleagues are most impressed with mathematical equations, statistical tables, and complex graphs, I naturally complied with their desires.

It is for this reason that I welcomed the chance to contribute this volume to the Springer Psychology 101 series. According to the invitation, the writing style was to be “scholarly light.” The volumes should be scientifically accurate without being academically ponderous—providing a lively introduction rather than a plodding monograph. Such an opportunity was especially inviting given the stage I had reached in my career. Having published so much myself, and having read so much terrific work by my numerous colleagues, it seemed that the time was ripe for writing an accessible volume that would convey the essentials of what we know. So I have sat down to write chapters that give you the gist on genius. Better yet, you’ll view the general picture without a single mathematical equation, statistical table, or complex graph. Don’t believe me? Go ahead, thumb through the book’s pages from cover to cover. Nothing but words, words, words, all arranged in intelligible English sentences (and sometimes even sentence fragments, as in the present instance!). A special bonus: absolutely no footnotes either! Just appropriate citations to the researchers who have contributed so much to our knowledge of genius, with the citations dutifully listed in the book’s reference section—the only feature reminiscent of a scientific publication. The citations and references provide the “scholarly” in “scholarly light.”

In previous books, I have acknowledged the many persons who have helped me reach the point where I could be asked to write a book like this. I need not repeat their names here. However, I am grateful to the series editor, James Kaufman, for offering me

this opportunity, and to the acquisitions editor, Phil Laughlin, for a positive response to my prospectus and for his comments on the first draft. While I'm expressing public gratitude, I might also thank Phil for successfully nominating my 1999 *Origins of Genius*—when he was an acquisitions editor at Oxford University Press—for the William James Book Award.

I am also grateful to my wife, Karen Horobin, for providing me with an environment supportive of my writing activities. As a fellow university professor who works just as hard as I do, Kazie respects my career goals as much as I do hers. So we do our utmost not to interrupt each other's work. Yet when it's time for play, we really play!

I would like to add a word about the dedication. Back in 1990, I published *Psychology, Science, and History: An Introduction to Historiometry*. The book was dedicated to my toddler daughter, Sabrina Dee Simonton. Unfortunately, as the most technical and specialized of all my books, it was eventually remaindered—the only one of my books ever to suffer that horrid fate. I resigned myself to buying some excess copies to give to students and colleagues who expressed a special interest in the esoteric and difficult methods it so thoroughly describes. (Anybody else out there want a copy? Must I really save them for my grandchildren?)

In the meantime, my daughter has grown into a talented woman who had just completed her first year of college at the time that I began writing this book. As she grew bigger, her name got smaller. So she now deserves a new book dedication. Given all the 101-type courses she took in her first two years, this dedication seems singularly appropriate. My only regret is that I did not complete the book in time for her to have it assigned in one of her classes!



Who First Studied Genius?

Geniuses have been around for a very long time. In fact, perhaps the oldest identifiable genius is the Egyptian Imhotep, the architect who built the Step Pyramid at Saqqara sometime before 2600 B.C.E. Within a few generations, his architectural design evolved into the Great Pyramid of Giza, the only one of the Seven Wonders of the Ancient World that survives to the present day. Moreover, it is difficult to imagine the history of world civilization without the contributions of specific geniuses. Within the confines of the West, for example, just think of Greece without Aristotle and Alexander the Great, Italy without Dante and Michelangelo, Spain without Cervantes and Goya, France without Descartes and Napoleon, Germany without Goethe and Beethoven, the Netherlands without Rembrandt and Vermeer, England without Shakespeare and Newton, the United States without

Jefferson and Whitman, and Russia without Tolstoy and Lenin. Each culture would suffer a major loss, not just in prestige or influence but in recognizable identity besides. An English literature without Shakespeare's plays and poems would be like a London without the Tower of London, Westminster Abbey, St. Paul's Cathedral, or Big Ben.

Rather than conceive of the impact of geniuses in terms of national heritage, we can contemplate their significance with respect to particular domains of human achievement. Where would philosophy be without Plato, mathematics without Euclid, astronomy without Copernicus, physics without Einstein, chemistry without Lavoisier, biology without Darwin, medicine without Pasteur, art without Picasso, technology without Edison, or film without Bergman? Rather different, no?

Given the prominence of geniuses throughout the world's history, it should not surprise us that they have often become the subjects of biographers. Examples include Diogenes Laertius's *The Lives of the Eminent Philosophers*, written in the early 200s C.E., and Giorgio Vasari's *Lives of the Artists*, published in about 1550. These biographies obviously focus on creative geniuses. Yet other biographers have concentrated on exemplars of genius in other domains, such as politics and war. Plutarch's *Lives of the Noble Grecians and Romans*, written around 100 C.E., is a case in point. And almost two centuries earlier there appeared the biographies included in Sima Qian's (*Ssüma Ch'ien*) *Records of the Grand Historian*, the classic history of early Chinese civilization.

These biographical contributions are all substantial. They often provide the only information we have about the geniuses they describe. But these biographies are humanistic—literary and historical—rather than scientific. They certainly are not examples of psychological science. Genuine scientific inquiries into the psychology of genius came much later. Indeed, such investigations did not appear until the 19th century. The investigators engaged in these inquiries adopted two main approaches: *psychometrics* and *historiometrics* (Simonton, 1999c).

PSYCHOMETRICS

Probably everyone who is reading this book has taken a psychological test—and most likely many such tests. Maybe you took a vocational interest test in junior high or a scholastic achievement test in high school. Perhaps you have visited Web sites that allow you to understand what makes you tick by assessing your personality or motives. You may even have taken an IQ test on the Internet or in the office of some school psychologist. Although these quantitative instruments vary greatly in what they measure and how they measure it, they have certain features in common. They consist of a series of questions focusing on one or more psychological variables. These variables may involve abilities, aptitudes, interests, values, dispositions, well, you name it. In some tests, the questions may follow a true/false format, others are multiple choice, and still others provide ratings along some scale, like a 7-point Likert scale that goes from “strongly agree” to “strongly disagree.” Psychometrics is the subdiscipline of psychology devoted to the creation and application of such tests (Rudy, 2007). The word literally means “mind measurement.”

The British scientist Francis Galton was a pioneer in this field. For instance, he devised various tests that assessed how people vary in reaction times, visual and auditory acuity, and color perception as well as height, weight, arm span, and strength. These *anthropometric* (or human measurement) assessments were thought to gauge important individual differences in abilities (Galton, 1883). Galton also invented the questionnaire and quickly applied the new method to the study of eminent scientists and artists. For example, one questionnaire asked great scientists—including Galton’s cousin Charles Darwin—about their attitudes toward school and education (Galton, 1874).

Not only was Galton the first psychometrician to study genius, but he himself was a genius. Most psychologists today have to struggle to recruit research participants. Either they have to pay participants in hard cash or else they have to offer them extra

credit in an introductory psychology course. Probably many of my readers have served as subjects in laboratory experiments in this way—as I did when I became a psychology major. In contrast, Galton was able to convince participants to *pay him* for subjecting them to anthropometric instruments. At the 1884–1885 International Health Exhibition, 9,337 visitors paid him 3 pence each for the privilege!

Unfortunately, Galton's early psychometric measures were either inaccurate or irrelevant. In the former category was his assessment of mental imagery. The potential utility of the measure was undermined by its highly qualitative rather than quantitative nature. In the latter category was his measure of the highest pitch that a person can hear. Although this trait can be assessed with much more accuracy than mental imagery, it is, unlike mental imagery, not pertinent to anything particularly interesting—and certainly not to anything germane to genius.

Hence, psychometric research did not make much headway until instruments emerged that provided fairly accurate assessments of highly relevant variables. In this area the real pioneer was Lewis M. Terman, a professor at Stanford University. Terman's starting point was an early version of an intelligence measure developed in France by Alfred Binet and Theodore Simon (1905). In 1916, Terman revised and extended this test to produce the Stanford-Binet Intelligence Scale. A few years later he began a long-term study of 1,528 children who received very high IQ scores (mostly 140 and above) on the Stanford-Binet test. The results of this longitudinal inquiry were published in a series of volumes, the first appearing in 1925. The title of this series was *Genetic Studies of Genius* (Terman, 1925–1959). Terman studied his young geniuses from every possible aspect, including their family background, scholastic performance, physical health, personality traits, interests and values, and later their achievements in adulthood.

Although Terman conducted the first classic psychometric study of genius, he was by no means the only psychologist to employ this specific approach. Perhaps most notable among other contributors was Leta Stetter Hollingworth. She began her career

making significant contributions to the psychology of women, but her interests eventually turned to young budding geniuses. In 1922, she began a 3-year study of 50 children with IQs that surpassed 155, publishing her findings in the 1926 work, *Gifted Children*. In 1916, she had actually begun investigating children with even higher IQs, starting with a child with an IQ of 187! Her conclusions, based on a dozen extremely bright kids, were published posthumously in a book entitled *Children Above IQ 180* (1942). Hollingworth's two works have become minor classics in the field. In any case, by the middle of the 20th century, psychometric studies of genius had become well established.

HISTORIOMETRICS

Psychometric research represents the most common way that psychologists investigate genius. Yet it's not the only method available. The principal alternative is a technique known as historiometrics. In this method, biographical and historical information is first quantified and then subjected to statistical analysis (Simonton, 2007d). The first bona fide historiometric study was published in 1835 by Adolphe Quételet, the Belgian mathematician and physicist who established that individual differences in physical traits were distributed according to the normal or bell-shaped curve. In his historiometric investigation, Quételet examined how creative productivity in eminent English and French dramatists—such as Shakespeare and Molière—changed across the life span. Unfortunately, because his inquiry was hidden deep within a much larger work on a more general subject, this contribution had very little immediate influence on the study of genius.

Quite the contrary can be said regarding the next major example of historiometric research. In 1865, Galton published a magazine article titled "Hereditary Talent and Character," which he subsequently expanded into the 1869 *Hereditary Genius: An Inquiry Into Its Laws and Consequences*. Because this book reports

research that was conducted prior to Galton's psychometric investigations, it can be considered the first major scientific study of genius. It has also become a classic in the history of psychology. Because it deals with the question of whether genius is born or made, I will devote part of chapter 4 to discussing its contents. At that time I will also discuss the fascinating historiometric study by Alphonse de Candolle (1873), which offered a different take on the origins of genius. Right now I would like to mention some other early figures in the development of this distinct methodology.

Among the first psychologists to follow up Galton's research was James McKeen Cattell, an American psychologist. Cattell had even studied under Galton shortly after receiving his PhD. Much of Cattell's work is psychometric, and even more specifically anthropometric. He was the very one who introduced the term *mental test* (Cattell, 1890). Yet he also published several historiometric studies. Perhaps the most remarkable investigation was Cattell's first, a 1903 study in which he ranked the 1,000 most eminent geniuses of Western civilization. At the top of his list were Napoleon, a military genius, and Shakespeare, a literary genius. Just a year later came *A Study of British Genius* by Havelock Ellis, a British psychologist far better known for his revolutionary research on human sexuality. In his 1904 book, Ellis investigated over a thousand geniuses, looking at such variables as precocity, birth order, social class, education, pathology, marriage, and life span.

I hasten to point out that none of the above researchers—Quételet, Galton, Cattell, or Ellis—expressly referred to their research as historiometric. That was because the term hadn't been coined yet! In truth, the word was concocted by a geneticist, not a psychologist. His name was Frederick Woods. In 1909, he published "A New Name for a New Science," an article in which he says the method is used when "the facts of history of a personal nature [are] subjected to statistical analysis by some more or less objective method" (p. 703). In 1911, Woods published another article, in which he defended the approach as an *exact science*. In addition, he argued that the method was well suited to studying the "psychology of genius" (p. 568). Besides conceiving the term,

Woods also conducted historiometric research of his own. In 1906, he had studied the inheritance of intellectual and moral genius in royal families, and in 1913 he examined the influence of political genius on the welfare of the nations ruled. Yet in the long run, his primary contribution may be a single word: historiometrics.

The first psychologist to make it explicit that she was conducting historiometric research was Catharine Cox (1926). Cox was a graduate student of Lewis Terman at Stanford. Looking for a topic for her doctoral dissertation, she decided to do for historiometrics what her mentor had done for psychometrics. Terman had already begun his ambitious longitudinal study of high-IQ children. Terman's goal was to follow his subjects—affectionately called “Termites”—from childhood through adolescence to adulthood with the aim of showing that intellectual giftedness becomes adulthood genius. Yet this plan had to face an awkward fact: The average age of Terman's children at the beginning of the study was about 11 years. So Terman had a very, very long wait before he could find out how the story would turn out. In fact, Terman died before the final volume was published (Terman & Oden, 1959).

That's where Cox's dissertation came in. Terman (1917) had also explored a method of calculating IQ scores using historiometric methods. In particular, he examined biographical information on one of his heroes, Francis Galton. Terman took advantage of the fact that the Stanford–Binet IQ was then defined as a ratio of mental age (MA) to chronological age (CA) multiplied by 100 (i.e., $IQ = 100 * MA / CA$). Consequently, Terman could estimate IQ scores on the basis of Galton's precocious intellectual development. For instance, by the end of his first year of life, Galton knew his capital letters and 6 months later knew both the upper- and lowercase alphabets; he could read at age 2 1/2 and could read any English book before he was 5 years old (and what, may I ask, were you doing at the same ages?). In general, Galton was achieving things that most children do not achieve until they are almost twice his age. Galton's IQ must have approached 200—a very brilliant guy to be sure.

So what Cox did was to estimate IQ scores not just for one genius but for 301. She then examined the correlation between these IQ scores and the eminence that each individual had achieved, using the rankings done by Cattell (1903). She concluded that the greatest adult geniuses had been high-IQ children and adolescents. If there had been IQ tests hundreds of years ago, they would've been singled out as Termites! Cox's dissertation was accordingly published as the second volume in Terman's *Genetic Studies of Genius*, just one year after the first volume (Cox, 1926). If I had to identify the most monumental historiometric study of genius ever published, Cox's would be it. It may also count as one of the most ambitious doctoral dissertations ever published. In print, the study took up 842 pages filled with biographical data and intriguing statistics! Where else can you find the IQs of such diverse notables as Simón Bolívar, Benjamin Franklin, Carolus Linnaeus, Baruch Spinoza, George Sand (Aurore Dupin), Diego Velázquez, and Johann Sebastian Bach?

I'd like to close this section by honoring one last early proponent of historiometric methods: Edward L. Thorndike. This American psychologist was much better known for his classic experiments on animal learning—especially his puzzle boxes from which cats were obliged to escape. Yet later in his career he acquired psychometric interests, and in 1927 he published a book on the measurement of intelligence. This was just a year after the appearance of Hollingworth's *Gifted Children*, and in fact Hollingworth had earned her PhD under Thorndike in 1916, the year in which Terman produced the Stanford-Binet Intelligence Scale. A decade after his book on intelligence, Thorndike expanded his tool kit to include historiometrics. Specifically, he published a follow-up study of Woods' (1906) assessment of intelligence and morality in royalty (Thorndike, 1936). Finally, at the very end of his life he conducted a historiometric study that was published posthumously by his son (Thorndike, 1950). In this investigation, he calculated intellectual and personality scores for 92 geniuses. The study was his swan song. Despite all

of his experimental and psychometric work, his final contribution to psychology was historiometric.

Thorndike illustrates a very useful point. Even though psychometric and historiometric methods are very different, psychologists may use both techniques if they choose. After all, several of the leaders in the study of genius felt comfortable with both approaches. Galton, Cattell, Terman, and Thorndike certainly did. Furthermore, the two methods, however divergent in technique, often lead to compatible results—a convergence that will become more apparent in later chapters. But before moving on, I would just like to acknowledge a third methodology in the psychological study of genius.

WHAT ABOUT PSYCHOBIOGRAPHY?

At this point some psychologists will stand up and shout: Wait! Aren't you overlooking something? Psychology must have more than just two ways to study genius! Well, yes, to say there are just two ways to study genius is both true and false. In the first place, other methods are used, but extremely rarely. A case par excellence is the laboratory experiment, the very method favored by the overwhelming majority of research psychologists. Laboratory experiments have many advantages—especially in the area of causal inference—but they also have major disadvantages. One drawback is the difficulty of getting world-renowned geniuses to subject themselves to such intrusions. People of the caliber of an Albert Einstein seldom sign up to participate. Perhaps some day the theoretical physicist Stephen Hawking might volunteer to spend a few days in an MRI machine, but that seems very unlikely. Such people don't need the extra credit.

Nonetheless, there is another method that is frequently applied to geniuses of every variety. That's psychobiography. A classic example is Sigmund Freud's (1910/1964) psychoanalytical study

of Leonardo da Vinci. Later, the noted psychoanalyst Erik Erikson published two notable psychobiographies, one on Martin Luther (Erikson, 1958), the founder of the Protestant movement, and the other on Mahatma Gandhi (Erikson, 1969), the most important practitioner of civil disobedience. Moreover, it is difficult to think of a single major genius who has not become the subject of at least one psychobiographical investigation. Examples include Socrates, Emily Dickinson, Fyodor Dostoevsky, Friedrich Nietzsche, Richard Wagner, Mary Baker Eddy, Adolf Hitler, and Abraham Lincoln. Indeed, one could almost define a genius as someone famous (or notorious) enough to attract the attention of a psychobiographer!

So why isn't psychobiography listed along with psychometric and historiometric research? The answer is simple: Psychobiography uses very different methods to answer very different questions (Simonton, 1999c). Unlike psychometrics and historiometrics, psychobiography constitutes a single-case qualitative approach. The whole study is devoted to a psychological interpretation of the life and work of a single genius. Most often the focus is on a peculiar event or idiosyncratic trait. For example, many psychobiographers have tried to fathom why Vincent Van Gogh cut off part of his left ear (Runyan, 1981). No doubt this is a captivating question. Yet the answer—if one is ever possible—would only tell us something about Van Gogh as an individual. It would not give any insights into the nature of genius as a universal phenomenon. Not every genius, artistic or otherwise, engages in self-mutilation. And not all self-mutilators are geniuses. Our goal throughout this book is to discuss the psychology of genius in general rather than the psychology of specific geniuses. For that reason, psychobiographers offer us little guidance. Our goal can only be reached by conducting investigations that subject multiple cases to quantitative analyses. Psychometric and historiometric inquiries provide the optimal methods for achieving our end.