

## Chapter 2

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# History of Giftedness: Perspectives from the Past Presage Modern Scholarship<sup>\*</sup>

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Across centuries and cultures, exceptional performances and performers have intrigued scholars, practitioners, and the general public. Whatever the domain, high-level achievements interest people, sometimes as a model to emulate, sometimes as an area of inquiry, sometimes as a curiosity.

Theoretically, the modern study of giftedness is related to the psychology of individual differences. In the nineteenth, twentieth, and twenty-first centuries, the psychological constructs of intelligence, creativity, and motivation provided the foundation for understanding giftedness. There are, however, earlier conceptions of extraordinary people and performances that have influenced our perspectives on giftedness as well. This chapter reviews briefly the historical interest in giftedness to the nineteenth century, shares four biographical summaries that illustrate key issues in the twentieth-century history of gifted education, offers a review of cognitive and affective variables which have historically been used to study giftedness, and concludes with attention to issues of particular interest to psychologists and mental health professionals.

### Historical Reviews: A Cross-Century Summary

Several reviews of the history of giftedness and gifted education have appeared in the literature (Gallagher, 1994; Grinder, 1985; Passow, 1988; Resnick & Goodman, 1994; Tannenbaum, 1958, 1979, 1993, 2000). They trace historical and cultural highlights in

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our understanding of giftedness from the conceptualizations of ancient cultures to recent history. While the reviews provide the individual perspectives of their respective authors, there are some recurring themes across the multiple chronicles.

Specifically, the review by Grinder (1985) divides the historical roots of the interest in giftedness into three general epochs: giftedness and divinity, giftedness and neuroses, and giftedness and the rise of mental tests. First, he traces the beliefs of the Greeks and Romans concerning talented individuals or eminent adults as people touched by divinity. For the Western ancients, to be good at something was to be divinely inspired in the tradition of muses. According to Grinder, the second epoch of preoccupation with giftedness is best captured by the connections made between giftedness and neuroses. Fueled by the rise of science and humanism in the Renaissance, thinkers increased their focus on the individual as a subject of inquiry. During this period, the practice of medicine provided a platform for observing the human body and behavior, and ultimately led to the linkage of intellectual prowess with nervous instability. Both Lombroso (1891), a criminologist and professor of psychiatry, and Nisbet (1891), a journalist, are often cited as examples of writers who described genius as a neurotic manifestation. Finally, Grinder's third epoch in the history of giftedness focuses on the importance of mental testing. Citing the rise of compulsory education and the increases in immigrant populations in the United States and Great Britain, Grinder (1985) reviews the early history of intelligence testing and connects mental testing to the study of giftedness.

An early review by Tannenbaum (1958) also notes that the scientific study of giftedness began at about the time of Darwin's and Mendel's work on the variations in species. These Victorian scientists led others (notably Darwin's cousin Francis Galton) to investigate differences among people on a number of measures. Galton has been roundly and soundly pilloried for holding views on class and racial differences distasteful to modern thinkers. Nevertheless, Galton understood the importance of collecting data to investigate his theory of genius—one that assumed a biological and genetic etiology of giftedness (Galton, 1869). To accomplish his ends, Galton collected extensive family pedigrees for British men who achieved eminence in various domains like science, politics, literature, art, and music and then demonstrated that eminence often appeared among individuals who were related. Flush with new knowledge on genetics, Galton concluded that giftedness was inherited. That related individuals also shared similar familial, community, and career opportunities did not shake his faith in the primacy of nature although he acknowledged that circumstances affected eminence and achievement. Through his involvement both in mental testing (albeit operationalized in ways that modern psychometrists would find questionable) and in the biographical studies of eminence, Galton represents two methods for investigating giftedness—prospective and retrospective studies. His focus on scientific inquiry and empiricism sets the stage for a twentieth-century interest in giftedness.

#### **Four Figures in Gifted Education: Illustrations of Recurrent Issues in the Field**

To examine key themes in the modern history of giftedness, four influential figures in the psychology and education of talented children and adolescents were selected to illustrate twentieth-century preoccupations of the field and to point the way for

future interests that may affect practices for high-ability learners. The figures, Lewis B. Terman, Leta Stetter Hollingworth, Paul A. Witty, and Martin D. Jenkins, provide both surprising similarities and distinct differences in their approach to giftedness—as scholars and as practitioners. Each of the four can be characterized as productive in both arenas; they were academic psychologists and “school people.” Two of the figures—Terman and Hollingworth—are well known to psychologists; in contrast, Witty and Jenkins are not household names. Nevertheless, their work undertaken at Northwestern University as mentor and graduate student, respectively, collectively and individually, touches on key issues important to the future of the field.

### ***Lewis B. Terman (1877–1956)***

Principal investigator of one of the most famous longitudinal studies in psychology, the multivolume *Genetic Studies of Genius*, Terman was affected by Galton’s ideas. In his remarks at a lecture series 2 years before his death, Terman (1954) recounted his entrance into the areas of research that defined his scholarship.

I have often been asked how I happened to come interested in mental tests and gifted children. My first introduction to the scientific problems posed by intellectual differences occurred well over a half-century ago when I was a senior in psychology at Indiana University and was asked to prepare two reports for a seminar, one on mental deficiency and one on genius. Up to that time, despite the fact that I had graduated from a normal college as a Bachelor of Pedagogy and had taught school for five years, I had never so much as heard of a mental test. The reading for those two reports opened up a new world to me, the world of Galton, Binet, and their contemporaries. (p. 222)

This graduate school interest blossomed into the massive, longitudinal study of 1500 high-IQ children and adolescents. As an academic at Stanford University, Terman acquired his sample in California school districts by asking teachers to nominate the two brightest children in their current classroom, the youngest child in the class, and the brightest child from their classroom in the previous academic year. These children were tested, and those with IQ scores at or above 140 were included in the sample. Beginning in the early 1920s, Terman and his colleagues collected volumes of data on these individuals over the course of over half a century. He states that the “twofold purpose of the project was, first of all, to find what traits characterize children of high IQ, and secondly, to follow them for as many years as possible to see what kind of adults they might become” (Terman, 1954, p. 223).

His main conclusions are anthologized extensively in numerous secondary sources and texts in psychology and education (Vialle, 1994). Briefly, the conclusions are that children of IQ 140 or higher are healthier, better-adjusted, and higher achievers in school subjects than unselected children. In fact, Terman’s children achieved from two to four grades beyond the one in which they were enrolled. He was further gratified that his data did not lead to the conclusion that the gifted were especially neurotic or prone to mental illness and maladjustment. Thus, in the historical context of the interest in giftedness, Terman’s work contradicted the earlier epochal beliefs that giftedness and neurosis were inevitably allied.

### ***Leta Stetter Hollingworth (1886–1939)***

Nine years younger than Terman and working on the coast opposite to Terman's California, Leta Hollingworth was a psychologist engaged in the schools of New York City. Her earliest published reports in the area of giftedness are an initial case study and its follow-up of a highly gifted boy, E (Garrison, Burke, & Hollingworth, 1917; Hollingworth, Garrison, & Burke, 1922). Her research on children with measured IQ scores of 180 and above documented extraordinary cases of development (Hollingworth, 1942). She is the author of the first textbook on gifted education, *Gifted Children: Their Nature and Nurture* (1926). Hollingworth was fully involved in the practical matters of educating gifted learners, and her work with special schools in New York has been preserved in a series of articles describing the program and curricula designed for them (Hollingworth, 1936a, 1936b, 1938). According to a recent biography, Leta Hollingworth was active in the professionalization of psychology (Klein, 2002). She systematically investigated the differences between subgroups of gifted children and concluded that there were achievement and adjustment patterns that discriminated what she called "very high" and "still higher" levels of intelligence in gifted learners (Hollingworth & Cobb, 1928).

Her research and her clinical observations of highly gifted children led her to the conclusion that the difficulty of social adjustment to one's peers increased as IQ scores increased. In a 1931 publication based on an address to the First International Congress on Mental Hygiene convened in Washington, DC, she stated, "The psychologist who is professionally acquainted with children who test about 130 IQ will be able to formulate clearly certain special problems of adjustment, observed in the case study of these children, which arise primarily from the very fact that they are gifted" (Hollingworth, 1931, p. 5). These problems included finding enough interesting work to do in school, relating to peers with whom one does not necessarily share common interests, learning to identify and develop appealing leisure activities, learning when to conform and when to argue, and being confronted with early awareness of difficult philosophical, religious, and moral issues. In addition, Hollingworth noted that gifted girls were also presented with the problem of balancing their socially circumscribed opportunities with their preferences and interests. With understatement, she summarized the adjustment challenges of the gifted child in the following way: "To have the intelligence of an adult and the emotions of a child combined in a childish body is to encounter certain difficulties" (p. 15).

### ***Paul A. Witty (1898–1976)***

Paul Witty hailed from Terre Haute, Indiana, secured master's and doctoral degrees from Columbia University, founded two psychoeducational clinics (one at the University of Kansas and one at Northwestern), and worked with the WLS radio station to establish *The Quiz Kids* show prior to World War II. In addition to his interest in gifted children, Witty was involved in the area of reading for both children and adults. During the war, he developed instructional materials for Army recruits; the materials featured a character, Private Pete, designed to motivate adults with minimal reading skills to learn to read, to write, and to do arithmetic (Sticht, 2005). In his honor, the International Reading Association gives two awards annually—one to the author of an original short story published in a children's periodical and another to

recognize original prose or poetry written by elementary and secondary students. In addition to his own achievements, Witty mentored and collaborated with one of the early African-American figures in the history of gifted education, Martin Jenkins, who will be featured in the final twentieth-century biographical summary in this chapter.

One of Witty's major scholarly achievements was a study of one hundred gifted children. According to the researcher, it partially replicated Terman's longitudinal study (Witty, 1930). He notes that

Terman expressed the desire that his data and conclusions be put to trial. This study therefore may be considered a fragmentary supplement to Terman's important investigation. The writer started this study shortly before "Genetic Studies of Genius" appeared. He was actuated to study gifted children by the work of Leta S. Hollingworth. (p. 38)

Thus, Witty acknowledges his shared interests in high-ability children with the two twentieth-century leaders who preceded him.

Witty secured a sample of 41 children with measured IQ of 140 and above from Kansas City, Missouri; an additional 9 children were located from other Kansas communities. Over the next 4 years, Witty located a second group of 50 children with IQ scores of 140 and above from Lawrence, Kansas, and surrounding towns. In addition, the first 50 gifted children were matched on gender, age, and race with a sample of children ranging in IQ from 90 to 110. Witty noted that this sample provided him with a control group of typical children (Witty, 1930). He gathered aptitude and achievement data as well as school data from records and from teachers. Like Terman and Hollingworth, Witty gathered physical measurements. In addition to these data, Witty was interested in nonintellective variables such as the variability of play interests and home information reported by the parents. These data included parent ratings of their children's "social and moral traits." Witty expressed unhappiness over the instruments to assess social and moral traits since they relied heavily on measures of school honesty. He also wished to investigate specialized aptitudes, but was not impressed by the tools available and had to rely on reports of excellence in school subjects from parents and teachers. His report is sketchy, but he is clearly interested in domain-specific talents and believes it to be "far from rare within this group" (p. 24).

In the follow-up study, Witty returned to the physical development and health measures, school records, and information on social and moral traits, and added school and out-of-school activities, interests, and future plans. Overall, he concluded that his findings corroborated Terman's—not surprising since they both selected on the basis of IQ at 140 or above and tended to examine similar variables.

Witty's perspective on giftedness is balanced by his refusal to be an extreme proponent of either nature or nurture. He was, in fact, critical of extremism from the hereditarian and environmental camps and published accordingly, taking to task both Terman's hereditarian position and J. B. Watson's behaviorist orientation (Witty & Lehman, 1928). He attempts to steer a moderate course in the debate, and while he makes use of intelligence tests in his own research, he clearly believes that giftedness is a broader construct which includes drive and opportunity as well as ability (Witty & Lehman, 1927). He states his position in a section titled, "Speculation Regarding Data," in a published manuscript from his study of 100 gifted children. "There must be, in addition to ability, the desire to achieve and a favorable environment. High I.Q.

does not necessarily mean high creative productivity" (p. 41). Witty's position on the nature and nurture of giftedness in children, including his use of the term *creative productivity*, sounds very modern to the twenty-first-century reader as does his definition of gifted: "to consider any child as 'gifted' whose performance, in a valuable line of human activity is consistently or repeatedly remarkable" (1958, p. 55). His interest in domain-specific talents and the influence of environment and opportunity on their development points forward to current concerns in the field.

He was prescient in other areas as well for he mentored one of the early African-American researchers in the field of gifted education, Martin Jenkins. Witty and Jenkins investigated very high IQ children of color and published work in this area together (Witty & Jenkins, 1934, 1935), separately (Jenkins, 1936, 1943), and with other coauthors (Theman & Witty, 1943). Witty's studies of African-American gifted children are an example of the thread of interest in diversity woven into the history of gifted education in the twentieth century; diversity has become a key area of discussion, scholarship, and practice in the field today.

### ***Martin D. Jenkins (1904–1978)***

Martin Jenkins spent much of his career in higher education as an administrator, including stints as a dean, a registrar, and ultimately a college president (Britell, 1978). He was the son of an engineer and received an undergraduate degree in engineering from Howard University, but chose not to follow his father's career path and rather turned to education. He attended Indiana State Teachers College and later began graduate work in education at Northwestern University under the guidance of Paul Witty (Kearney & LeBlanc, 1993). He received his doctorate in 1935 with a dissertation on 103 high-ability African-American children from Chicago's South Side.

Before completing his doctoral studies, Jenkins published an article with his mentor Paul Witty on 26 African-American students in grades three to eight located in a systematic search in seven public schools (Witty & Jenkins, 1934). Their screening methods were similar to those used by Terman, but, of course, in the 1930s, the schools were segregated; thus, the school population was likely to be exclusively African-American. Jenkins and Witty asked teachers to nominate three children from their classroom: the child thought to be most intelligent, the child doing the best class work, and the child underage for grade placement. An aptitude test, the McCall Multi-Mental Scale, was given to all nominees, and to any child whose McCall score was an IQ of 120 or above, the Stanford-Binet was subsequently administered. Children who received a Stanford-Binet score of 140 or above were included in the sample for the study. Witty and Jenkins noted that the schools from which their sample was drawn were attended by children from "somewhat above average" (p. 588) homes in terms of socioeconomic status when compared with other African-American families in Chicago. The children were uniformly high achieving; the "typical child in our group has attained an educational development more than three grades (3.3) in excess of the norms for children of his chronological age" (p. 588).

It was also from this sample that the collaborators found an extraordinarily gifted 9-year-old girl with a reported IQ of 200. The following year, they published a case study, "The Case of 'B'—A Gifted Negro Girl" (Witty & Jenkins, 1935). For Jenkins and for Witty, she was evidence that astonishing gifts existed in children who faced the challenges of racism and whose life experiences were substantially different from



their white counterparts. Both researchers chafed under the wave of comparative studies of black and white children on measures of IQ and stated that “[p]articularly invidious have ‘race’ comparisons proven, since tests have never sampled adequately common ‘functions’ from the life experiences of the children in the different ‘racial’ groups” (p. 117). Nevertheless, B was a remarkable case and was placed in context by the authors who noted that Terman found 15 children of IQ 180 and above and Hollingworth reported on 17 such children. Neither sample contained an African-American child, thus Jenkins and Witty believed that the identification of B was one of the major contributions of their study. B also appeared in Jenkins’s larger dissertation study of 103 gifted African-American children of IQ 120 and above. In both manuscripts, he focused on her extraordinary vocabulary and gave examples of her definitions including the phrasing of her oral responses. Her definition of mosaic was “[a] number of brightly colored stones—no, tiles—put together to form a design” (p. 118). In addition to definitions of concrete things, she supplied the definition for treasury as “[p]lace where a cooperating group keeps the money” (p. 119). And, finally, with considerable attention to nuanced differences in concepts, she defined forfeit as “[s]omething given up—not a sacrifice” (p. 119). Thus, B, at the age of 9, had tumbled to understanding that forfeit implied that one deserved one’s unfortunate fate in contrast to a sacrifice which did not imply any moral debt or wrongdoing.

B had been double promoted, was fascinated by a miniature chemistry set, did not play with dolls, and began to speak in sentences at 16 months. She was taught to read at age 4. In addition, the only child of a teacher and an electrical engineer, B was exposed to the rich cultural opportunities in Chicago. The researchers noted that B was nominated as the *best student* in the class rather than as the *most intelligent*—an honor that went to a child in the same classroom who was 4 years older than B. From B’s case, Jenkins and Witty (1935) again cautioned against extreme views by concluding,

While both the extreme hereditarian and the environmentalist can find in these data ample support for dogmatizing concerning the importance of heredity or of environment, the writers, after months of study of this child and the social setting, believe that the provenance of this child’s rare ability can be traced to a fortunate biological inheritance plus a fairly good opportunity for development. (p. 124)

Working with the Chicago sample, Jenkins’s doctoral study focused on the 103 African-American children with Stanford-Binet IQ scores of 120 and above from seven schools. His research focused on the incidence of high-ability African-American children, the age and grade levels of such children, and whether or not these children “conform to the general pattern” when compared to the samples studied by Terman, Hollingworth, and Witty (Jenkins, 1936). He concluded that his sample was very like the samples of gifted children studied by other researchers, that they could be found at every age and in every grade level, and that they were not less well adjusted than a comparison group of randomly selected agemates. He did note that he found greater numbers of girls in his sample. He reported 72 girls and 31 boys which differed from Terman’s findings of more boys than girls and from Witty’s sample which was almost evenly divided on gender.

Jenkins continued his interest in children with extremely high aptitude and expanded his search geographically to locate several cases of children with IQ scores of 160 and above (Jenkins, 1943). He must have searched purposefully by contacting

other researchers and clinicians he knew to be interested in very high IQ children. The referrals came from Chicago, Washington, DC, New York, and Cincinnati and resulted in 14 cases for whom Jenkins was able to secure data. Two additional children were suggested by Leta Stetter Hollingworth, but Jenkins noted that her death prevented him from adding them to his sample. His findings echo those from other studies of this period in history. The children were remarkably advanced, but Jenkins observed that their educational performance lagged behind their mental test performance. For Jenkins, the most important findings from his study were an admixture of method, facts, generalization, and social commentary. He found case study a valuable method for investigating extreme development. He believed that the existence of several highly gifted children of color demonstrated that African Americans were as variable as any other group of individuals. He was concerned that the children in the sample came from metropolitan areas, but that other children like them were left undiscovered elsewhere in the country. And finally, he concluded that highly gifted African-American children could have different reactions to societal limitations. His published words are a window on the twentieth-century perspective of a talented scholar. He states,

... these cases bring into sharp focus the limitations which our society places on the development of the highly gifted Negro. These children are nurtured in a culture in which racial inferiority of the Negro is a basic assumption. Consequently, they will experience throughout their lives, educational, social and occupational restrictions which must inevitably affect achievement and motivation. Wide individual differences, of course, are to be anticipated in reaction to this condition. Some of these individuals will meet frustration and draw away; others will go on to careers of high usefulness and accomplishment. (p. 165)

## **Research on Psychological Characteristics of Gifted Children**

Recent research on the psychological characteristics of gifted children reflects most of the historical issues in giftedness presented above, although with new perspectives. Regarding the early epochs, few researchers would claim that giftedness is an expression of divinity (although see recent popular media attention to the concept of “indigo children”). There is, however, a growing research literature on spirituality and giftedness, and “spiritual giftedness” in particular (Piechowski, 2003). With respect to neuroses, genius may still be equated with madness (or lesser mental health challenges) in popular culture, but the research on the social-emotional characteristics of gifted individuals is still largely positive as it was in Terman’s time. There is an emphasis on factors that might place gifted students uniquely at risk for social-emotional difficulties (Neihart, Reis, Robinson, & Moon, 2002), but as in Hollingworth’s research, many of those factors have to do with the mismatch between gifted students and their typical peer and school environments.

Regarding the epoch of mental testing, research on the intellectual characteristics of the gifted still uses IQ test scores, but has also gone beyond IQ to more microscopic investigations of specific skill differences in gifted students. There is also a relatively new and rapidly expanding body of research on the neuropsychology of intelligence and giftedness. Finally, the ghost of Galton is still with us: though no psychological



researcher would say that intelligence is purely nature or purely nurture, the debate still rages as to the relative contribution of genetics and environment to intelligence, and to the implications for education (Gottfredson, 2003).

### ***Research Challenges Related to Definitions***

Early twentieth-century research on giftedness used the newly developed tool known as the intelligence quotient, obtained at that time in this country from the Stanford-Binet intelligence test. The use of IQ tests in research on the cognitive characteristics of the gifted has remained common, but their use in identifying students for gifted education programs and services has become controversial due to concerns about test bias. This is in historic contrast to the views of Jenkins, noted above, who found IQ to be a useful tool to locate highly intelligent children of color (see Robinson, Shore, & Enersen (2007) for an extended discussion of the use of multiple criteria in identifying gifted students).

As mentioned, Terman (1925) investigated various characteristics of a high-IQ (over 140) sample, followed from childhood throughout adulthood. He found that members of his sample, who also tended to be above average on socioeconomic and physical characteristics, generally scored at average or somewhat above average levels on a wide variety of psychological characteristics. The fact that socioeconomic status was not controlled for in Terman's studies is one of the biggest hurdles in applying his research to today's gifted students. Current broadened conceptions of giftedness are more valid for the provision of educational services, but they make it more of a challenge to create a coherent picture of the psychological characteristics of the gifted. Recent debates on test bias have centered on verbal versus nonverbal measures of giftedness for the identification of underrepresented groups of gifted children. Lohman (2005), while not specifically recommending IQ tests, argues for using measures of both general reasoning and domain-specific achievement to identify majority and minority students for gifted education services. While he cautions that judgments about intellectual potential should be made taking life situations into account, he feels that sole use of nonverbal tests leaves out important aspects of reasoning.

Definitions of giftedness vary considerably in recent research on psychological characteristics. Researchers in cognitive and metacognitive areas still tend to use a high IQ definition, probably as a way of holding constant at least some general aspects of cognitive functioning within their samples. However, researchers in non-intellective areas are more likely to use whatever definition has been employed to identify gifted students by the participating school systems. There is some validity to this approach. Not only does it mean that a more diverse group of students is being studied, but also it may be that the social and emotional experience of being gifted is due as much to the labeling (however the school identifies giftedness) as to internal psychological factors.

One more complicating factor in studying the psychological characteristics of the gifted is that underachieving gifted students may be quite different from high achievers. Some authors (Ford, 1993; Luthar, Zigler, & Goldstein, 1992) address these differences in their research, but for other studies it is not always clear whether underachieving gifted students are included in the sample. Some underachievement in the gifted may be due to learning disabilities or other exceptionalities; these

“twice-exceptional” students may also be overlooked entirely, as their strengths may mask their weaknesses (Silverman, 2003).

The following overview of research on psychological characteristics of the gifted focuses on the cognitive and metacognitive aspects of intellectual giftedness, but also looks at nonintellective characteristics of the gifted. There is considerable overlap with some of the factors that Witty found so interesting, including intellectual gifts in specific academic domains as well as the social and motivational characteristics of gifted students. The review is limited to research on the intellectually and academically gifted; there is also an extensive literature on creativity and creative giftedness, and a number of researchers work in the areas of leadership giftedness and gifts and talents in the arts.

### *Cognitive Characteristics*

Most research on the cognition of the gifted has investigated the ways in which gifted individuals (usually children) are different from others in the ways they think. While there is some overlap in the literature between cognitive skills and metacognitive skills, the research can be separated into the investigation of simpler individual cognitive skills, and processes that are more complex, strategic, and executive. A new and rapidly expanding version of this research is the neuropsychology of giftedness, which typically involves assessing brain function during performance of various cognitive tasks. For a broad perspective on the structure of cognitive abilities and their relationship to a wide variety of personological variables, see Lubinski (2004).

**COGNITIVE DIFFERENCES.** In a review of the cognitive differences between intellectually gifted (high IQ) children and others, Rogers (1986) concludes that the gifted are generally different in degree, not kind, of cognition. That is, gifted students tend to acquire and process information and solve problems better, faster, or at earlier ages than other students. However, they are probably not employing qualitatively different, unique thinking abilities, at least in the high-IQ groups reviewed by Rogers. More recently, Shore (2000) notes that there is considerable fuzziness between quantitative and qualitative differences, but that gifted children do not seem to use cognitive strategies that other children never use.

Wilkinson (1993) analyzed the Wechsler Intelligence Scale for Children–Revised (WISC-R) profiles of 456 third-grade students, all of whom had full-scale IQs of 120 or above. Compared to the norm, these students showed greater variability in their profiles. There was a greater frequency of extreme subtest scores, larger verbal-performance discrepancies (in both directions), and more scatter among subtest scores. These students scored highest on subscales reflecting more complex reasoning (for example, similarities and block design) and lowest on scales measuring lower-level thinking skills (coding, digit-span). Butterfield and Feretti (1987) list several kinds of cognitive differences that various authors have shown distinguish between people of like ages but different IQs. Higher IQ persons have been found to: have larger, more efficient memories; have larger and more elaborately organized knowledge bases; and use more, more complex, and more active processing strategies.

Some authors have looked at specific cognitive skills or reasoning in particular domains. For example, van Garderen and Montague (2003) found that gifted students used more visual-spatial representations (as opposed to pictorial representations)

when solving math problems, as compared to average-achieving and learning-disabled children. Davidson (1986) measured the performance of gifted students on mathematical and verbal insight problems. Gifted upper elementary school children not only scored better than others on the insight problems, they were more likely to employ selective encoding, combination, and comparison spontaneously in solving the problems. Other children were more likely to need cues in order to use these processes.

Following in the footsteps of Hollingworth, some authors have investigated the cognition of extremely high IQ children. Lovecky (1994) focused on the cognitive differences between “moderately gifted” (IQ 140–159) and “highly gifted” (170 and above) children. From clinical testing and observation, she concluded that highly gifted children tend to make simple tasks more complex, have a need for extreme precision, understand complex patterns quickly, reason abstractly at an earlier age, and have exceptional memory. Gross (1994) adds to these characteristics of the highly gifted an early ability to transfer knowledge across domains, a verbally sophisticated sense of humor, and intuitive leaps. Silverman (2003) discusses the significant proportion of very high IQ students who may have specific learning disabilities, Asperger’s syndrome, or other cognitive processing challenges.

A review by Sternberg and Davidson (1985) lists several cognitive abilities at which the gifted are exceptional: They tend to have both high general intelligence and specific ability in their area of expertise, they capitalize on their patterns of abilities, they shape their environment, they demonstrate problem-finding ability, and they can conceive higher-order relations. Sternberg (2003) has carried these traits and others into a recent theory of “successful intelligence,” which discusses the combined contribution of many of these traits to life success.

**METACOGNITIVE DIFFERENCES.** Metacognition, or thinking about one’s own thinking, may be an important component of giftedness. Shore (2000) reports on a program of research that shows differences between gifted children and others on the types of strategies selected for various problems, and the speed and fluency with which those strategies are employed. Shore also notes that gifted students perform in ways similar to experts when it comes to metacognition, strategy flexibility, and strategy planning. A review of research in this area (Alexander, Carr, & Schwanenflugel, 1995; Carr, Alexander, & Schwanenflugel, 1996) looked at three aspects of metacognition: factual knowledge about thinking strategies, use of strategies, and cognitive monitoring. The authors conclude that gifted students show better performance than other students on only some aspects of metacognition. For instance, gifted children seem to have more factual knowledge about metacognition than other children, and this advantage seems to be present consistently across age levels. They also seem to be better at far transfer, using strategies in contexts far different from that in which strategies were learned. These authors concluded that there was limited support for the idea that gifted students are more spontaneous in their strategy use than other students, although there was some evidence for this in upper elementary age and young adolescent students. Finally, they concluded that there is no evidence that gifted children are better than other children at consistently using better strategy, monitoring their strategy use (evaluating and changing strategies as needed), or in maintenance and near transfer (using strategies in situations similar to those in which the strategy was taught).

Cheng (1993), in addition to reviewing some of the empirical research on metacognition and the gifted, notes the importance of case studies and naturalistic research in order to see more clearly the developmental path of metacognitive skills in gifted individuals. She speculates that metacognition within a particular talent domain becomes important after the early learning years, after children have learned the basics of their field and become immersed in strategy and self-analysis. Shore, Koller, and Dover (1994) illustrate the complexity of research in this area. In examining the problem-solving results of a group of gifted students, they found that some gifted students made more metacognitive strategy errors than average students, and that they seemed to be drawing on imaginary data to help solve the problem (perhaps making the problems more complex than they were). Shore et al. warn against jumping to conclusions about the overall abilities of individuals who do not perform well on specific tasks, and speculate about the role of motivation and creativity in metacognition, as did Cheng (1993).

**THE NEUROPSYCHOLOGY OF GIFTEDNESS.** Cognitive and metacognitive questions about giftedness are now being investigated with the methods and tools of neuroscience. O'Boyle and Gill (1998) discuss their findings of different functional organization of the brain between gifted and average-ability individuals, in which the main characteristic for gifted subjects seemed to be greater involvement of the right hemisphere in solving a variety of problems, including verbal tasks. Jausovec (2000) used EEG measures and found that intellectually gifted subjects, compared to average-ability subjects, showed less overall mental activity and more cooperation between brain areas when solving a "closed" problem. When solving ill-defined problems, however, they showed greater decoupling of brain areas than highly creative subjects. Not all of the neuroscientific research on giftedness involves direct brain pattern assessment, but Geake and Cooper (2003) caution against the oversimplistic adoption of brain research and some of what is presented in "brain-based education"; they recommend the active collaboration of educators with neuroscientists in developing future research agendas in this field.

### ***Social-Emotional Characteristics***

While the emphasis of this chapter is the history of investigation of the nature of giftedness and high intelligence and the intellectual characteristics of the gifted, there is also a body of research on the nonintellective characteristics of gifted individuals. Social relationships, emotional and personality characteristics, and motivation have all been studied with respect to gifted individuals. Most of this research agrees with the early findings of Terman and Hollingworth, contradicting the stereotyped view of a maladjusted child with poor social skills. An author and editor of a book on these issues published by the National Association for Gifted Children (NAGC) notes that the book was undertaken "...not because these youngsters sustain any inherent vulnerability associated with their giftedness *per se*, but because their needs are so often unrecognized and unmet, with predicable negative consequences" (Robinson, 2003, p. xii). Some of the research on nonintellective characteristics compares gifted and other students; other approaches describe these characteristics in various subgroups of the gifted. In general, the research indicates that the stereotyped view is far from the truth. In an earlier review of the literature on psychosocial development, Janos

and Robinson (1985) conclude that "[b]eing intellectually gifted, at least at moderate levels of ability, is clearly an asset in terms of psychosocial adjustment in most situations" (p. 181).

How do gifted students see their own noncognitive characteristics? Kunkel, Chapa, Patterson, and Walling (1995) used a concept-mapping technique. This involved asking gifted students about their experience of being gifted, developing questionnaire items from the responses, and presenting graphically the main themes that emerged. The strongest noncognitive themes that emerged included receiving respect from others, feeling a sense of social stress, and generally feeling satisfied with themselves. These themes are found in other studies as well.

**SOCIAL SKILLS AND RELATIONSHIPS.** How do gifted students get along with their peers? Mayseless (1993) reports on several studies indicating that preadolescent and adolescent gifted students tend to be at least as popular as other students their age, but that gifted adolescents may self-report lower popularity than others. Kline and Short (1991a, 1991b) found that both gifted girls and gifted boys scored very high on a self-report measure of "relationship with peers." However, while girls found relationships to be more important as they developed through the school-age years, boys seemed to value relationships less as they grew older.

What factors serve to assist gifted students in their social relationships? In an investigation of the social support of gifted adolescents (VanTassel-Baska, Olszewski-Kubilius, & Kulieke, 1994), students of higher socioeconomic status reported higher levels of support than students of lower socioeconomic status. There were significant differences between these groups on support from friends, classmates, parents, and teachers. In a factor-analytic study of social coping strategies, Swiatek (1995) found three statistically reliable strategies used by highly gifted adolescents that helped them deal with the social consequences of being gifted: denial of giftedness, popularity/conformity, and peer acceptance. She found no gender differences in the strategies, but did find that the most highly gifted students were those most likely to deny being gifted.

**EMOTIONAL CHARACTERISTICS.** Research on the affect of gifted students has investigated finer distinctions within types of variables such as self-concept, and has highlighted some of the gender differences in gifted students with respect to emotion and personality. In a review of the literature on personality and gifted children, Olszewski-Kubilius, Kulieke, and Krasney (1988) found that gifted students were generally at least as well adjusted as norm groups and comparison groups, and possessed more personality characteristics ordinarily considered to be favorable than comparison groups. They also found that gifted children can display personality functioning, in some domains, similar to that of older students. Gifted adolescents scored within normal ranges or higher on almost every scale of major personality inventories. The authors note that the generalization of research comparing gifted and other students is hampered by lack of information on socioeconomic status and other demographic information.

Research on the self-concept and self-esteem of gifted children has presented conflicting results. Some studies using global measures indicate that gifted students score higher than other students, whereas other studies show no difference between groups or, occasionally, that gifted students score lower (Olszewski-Kubilius et al., 1988). Some of these results can be explained by looking at specific domains of self-concept and at



gender differences. Hoge and McSheffrey (1991), using the Self-Perception Profile for Children (Harter, 1985), found that gifted students scored slightly lower than a norm group on perceptions of their social and athletic competence, but higher on scholastic and global self-worth. They also found that academic performance seemed to be a more important factor in global self-worth for girls than for boys. Similarly, Pyryt and Mendaglio (1994) administered a multidimensional self-concept measure and found that gifted students scored higher, on average, than their age peers, with academic self-concept contributing most to the difference. However, the gifted students scored slightly higher on social, athletic, and evaluative subscales as well.

In a study of the psychological adjustment of gifted early adolescents (Luthar et al., 1992), these students were found to be more similar to college students (matched to the gifted students on cognitive maturity) than to students their own chronological age. Measures of cognitive ability, depression, anxiety, locus of control, and real and ideal self-image were administered. Gifted students were generally high on psychological adjustment and had less depression and better self-image than same-age students. The authors speculate that previous inconsistencies in the research on the adjustment of the gifted may be due to differences in achievement: that is, that underachieving gifted students may be less well-adjusted than both achieving gifted students and an unselected group of same-age students.

In contrast to most of the research presented above, Roberts and Lovett (1994) found that after experimentally induced scholastic failure, gifted adolescents demonstrated more negative emotional reactions than did two groups of their age peers: high academic achievers who had not been labeled gifted, and a randomly selected group of students. After failing to solve extremely difficult anagrams, gifted students showed greater irrational beliefs and self-oriented perfectionism, greater negative affect, and more physiological stress than students in the other two groups.

**MOTIVATIONAL CHARACTERISTICS.** Research on the motivational characteristics of the gifted has compared gifted students to the norm on motivation, described motivation patterns of gifted students, and investigated motivational differences between achieving and underachieving gifted students. Siegle and McCoach (2005) focus on four factors from the broader research on motivation in education (task value, self-efficacy, perceptions of the environment, and self-regulation). From their own research and that of others, they offer a number of recommendations for increasing these factors in gifted students and preventing underachievement.

Several researchers have found that gifted students score more “intrinsic” than average on measures of motivation. Olszewski-Kubilius et al. (1988) reviewed several studies showing that gifted students score higher on measures of motivation that reflect intrinsic reasons for learning, including internal locus of control and measures of intrinsic motivation and autonomy. They also found that gifted students are more likely to demonstrate positive attributions for success and failure, for example, attributing success to their own ability and effort, and attributing failure to bad luck or inappropriate strategy choice. Csikszentmihalyi, Rathunde, and Whalen (1993) conducted a longitudinal study of intellectually talented adolescents, and found that when compared with average students, they showed more intrinsic motivation for reading, thinking, and solitude.

Many studies have looked at motivation for achievement and underachievement in gifted students. Benbow, Arjmand, and Walberg (1991) investigated correlates of



educational achievement in a sample of mathematically precocious youth. They found that motivation (as measured by quantity of academic activities and participation in optional contests and exams in high school) was the third most useful predictor of educational achievement and aspiration at age 23, behind quality of instruction and home environment. Ford (1993) found that several motivational factors distinguished between achieving and underachieving gifted black students. Achievers were less concerned with peer pressure and reported high effort and no test anxiety, while underachievers had a more external locus of control, were more ambivalent about trying hard, and reported that they felt test anxiety. Emerick (1992) identified motivational factors that led to the reversal of underachievement in a case study of several gifted adolescents. Factors related to intrinsic motivation included a strong intellectual or creative interest pursued outside of school, classes that allowed for advanced and independent study, and an ability to relate school success to personal goals.

Finally, a unique approach to motivation and giftedness is taken by Gottfried, Gottfried, and Guerin (2006), who are engaged in a longitudinal study of intellectual and motivational giftedness. They have investigated high academic motivation as a form of giftedness in itself, psychometrically distinct from the intrinsic or extrinsic motivation variables investigated in earlier research.

The NAGC book mentioned at the beginning of this section is titled *The Social and Emotional Development of Gifted Children: What Do We Know?* (Neihart, Reis, Robinson, & Moon, 2002). The editors of the volume note that despite a somewhat limited research base, several major conclusions can be drawn from what we know. Among these conclusions are that serious maladjustment appears no more or less often in this group than in the general population (with some exceptions for some highly creative writers and artists), that social-emotional problems are most often due to a mismatch between the individual's intellectual and personal characteristics and their environment, and that there are within-group differences similar to those in the general population related to gender, age, ethnicity, and other variables. A number of recommendations for parents, educators, and mental health professionals are offered, centered on prevention of difficulties through the provision of appropriate educational placements and acceptance of the inherent asynchronous development of gifted children.

## Conclusion

In what ways do the history of interest in giftedness and its accompanying research base presage current issues in the field? Some historical preoccupations are constant, but they are generally examined from different perspectives and with more sophisticated methods.

First, the issues of definitions of giftedness or of gifted persons remain questions of central importance to the field (Pfeiffer, 2003). For example, Galton's and Terman's legacies of giftedness as measured high intelligence or as adult eminence are to be found in theoretical positions and in empirical investigations in the current literature. We no longer study finger tapping as a measure of intelligence, but we are increasingly interested in neuropsychological and neuroscientific studies of brain function. We do not pore over histories of eminent British men of science as Galton did, but we do examine through extended case study an eminent individual's thinking about

a crucial scientific theory as an exemplar of creative productivity (see Gruber on Charles Darwin).

Second, our keen interest in the social and emotional lives of gifted children, adolescents, and adults endures. In fact, Hollingworth's insights on social and psychological adjustment from decades ago led to a follow-up study of the original attendees of her school for highly gifted children (White & Renzulli, 1987). Nonintellective variables such as intrinsic motivation, social relationships, and self-esteem appear in the modern literature with regularity. For example, the emerging field of positive psychology which focuses on "well-being, contentment, and satisfaction (past), hope and optimism (future), and flow and happiness (present)" (Seligman & Csikszentmihalyi, 2000) views giftedness as one model for the development of personal excellence.

Finally, the interests of Witty and Jenkins on the discovery and development of talents among African-American children are early expressions of our enduring concern for the under-representation of low-income and ethnic minority children in specialized programs (Pfeiffer, 2003). While most educators are aware of the need to identify and nurture giftedness among members of underrepresented populations, we have begun to focus on the retention of culturally diverse and low-income high-ability learners in rigorous and creative curricular experiences in our schools.

The major historical issues and research presented in this chapter have practical implications for professional psychologists today. With regard to mental testing, psychometrists and school psychologists still need to be able to provide and interpret intellectual assessments for gifted children and their parents, and to weigh the pros and cons of various identification instruments for diverse populations. Psychologists are also needed to provide advice on appropriate educational placements for gifted children, from those whose needs may be met in a regular classroom to those who are so highly gifted that no school placement is ideal. Finally, clinicians and counselors may be able to help gifted children understand their own characteristics, to prevent social and emotional problems due to inappropriate placements, and to intervene effectively when social and emotional difficulties do arise.

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