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Article

**EXCEPTIONALLY AND PROFOUNDLY GIFTED STUDENTS: AN UNDERSERVED POPULATION**

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Paula is a happy successful student, popular with her classmates and appreciated by her teachers. Her teachers readily acknowledge her abilities, even if they find it difficult to respond with appropriate curriculum interventions.

Paula learned to read before her 5th birthday. Now at age 9, she has the reading abilities of a 12-year-old and shows a definite talent for math problem solving. Although she prefers the companionship of children two or three years older, she is not "different" enough to be rejected by her classmates. Aware that Paula is highly able, the school arranged for her to be tested in 1st grade, and her IQ was assessed at 133. Paula finds classwork somewhat boring, but overall she enjoys school, especially the pullout program for mathematically gifted students in which she participates for four hours each week.

Children of IQ 133 appear in the population at a ratio of approximately 1:40. In general, an elementary school teacher could expect to encounter a child like Paula every couple years.

Like Paula, Alex is intellectually gifted. He taught himself to read, write, and count before age 3. By age 3 he had read *The Lion, the Witch and the Wardrobe* and was entranced by the world of Narnia, the relationships between the characters, and the battle between good and evil. "By the time he entered school, he was capable of 4th grade math and was reading *The Hobbit*, which his teacher promptly took from him, stating that he should not be looking at his older brother's books as they would give him nightmares. Alex has no older brother, but he was so bemused by the teacher's comment that he lost the opportunity to tell her this.

The most important lesson Alex learned in his first few weeks at school was that it would teach him nothing that he did not already know. His teacher insisted that he work through the reading readiness program with the rest of the class and placed him on a math program which involved recognizing the numbers 1 through 10. He was so astonished that he complied without protest.

The compliance did not last long, however. In 2nd and 3rd grades he was angry, frustrated, and rebellious and made life difficult for himself, his teachers, and his classmates. Finally, to the relief of his teacher, his protests ceased. Alex is now in 6th grade. Most of the time he is apathetic and withdrawn. He refuses to complete the simplistic and repetitive work that is presented to him, and because of this, nothing in the way of enrichment or extension is offered to him. His teachers are quite unaware that he has developed an expertise in Nordic mythology, which underpins the "middle earth" works of Tolkien. A professor of literature at the local university has called this expertise "astounding." Alex relates happily to the undergraduate students his professor friend has introduced to him, but at school he is a social outcast. The other children reject him because his speech, his interests, and the way he thinks are so different from theirs that there is virtually no point of contact between them.

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In 2nd grade Alex's parents had him tested by a private psychologist who assessed his IQ at 169. Alex attends the same school as Paula, but ironically, because he does not display "gifted behavior" in class, he was not selected for the math pullout program. (The school has no pullout for children talented in language, believing that these children can be readily extended in the inclusion classroom through an "open-ended curriculum.") Indeed, his teacher refused to accept the psychologist's report, saying that she "did not believe in IQ tests and that there were several students in Alex's class who were much brighter.

Children of IQ 169 appear in the population at a ratio of less than 1:100,000. If an elementary school teacher taught 30 students each year in a professional career of 40 years, the odds against her having such a child in her class are more than 80:1. This is one of many reasons why teachers and schools make such inadequate response to extremely gifted students. We do not have enough practice in dealing with them, we are not informed about such students in our pre-service training, and the very interventions which most benefit these children, such as radical acceleration and full-time ability grouping, are frowned upon. These interventions are not discouraged by the research community which freely acknowledges their usefulness, but by the educational establishment which holds rigidly to organizational procedures and teaching methodologies which benefit the mass of students in our schools rather than the individual (Benbow & Stanley, 1997).

Paula is a moderately gifted student whose school has responded, to some degree at least, to her academic and social needs. Largely as a result of this, her cognitive and affective behaviors are generally positive and are mirrored in almost every "trait list" published in texts on gifted education. Unfortunately, the majority of trait lists concentrates on the positive characteristics of moderately gifted achievers and ignores the negative behaviors often displayed by very highly gifted children whose schools have failed to make appropriate provisions for them. Alex's failure to display "task commitment," his unwillingness to complete classwork, his extreme dislike of school, and his social rejection by age peers are unlikely to be listed as behavioral traits of gifted students.

Exceptionally and profoundly gifted children are children whose capacity to learn is significantly advanced even beyond the average for the intellectually gifted. It is important to note, however, that we are talking about academic potential rather than school performance. These children are extremely intelligent-their capacity to learn is enormous. Even so, research on the classroom performance of such children suggests that, like Alex, the majority are required to work in the inclusion classroom, at levels several years below their tested ability (Hollingworth, 1926, 1942; Painter, 1976; Silverman, 1993; Gross, 1993).

### **Levels of Giftedness**

Educators working with "special needs" populations recognize that the level and type of intervention prescribed for children with disabilities-hearing impairment, visual impairment, or intellectual disability, for example-are dictated by the degree of severity of the condition (Payne & Patton, 1981). Indeed, only teachers with special training and qualifications teach children with severe disabilities.

Teachers of hearing impaired and intellectually handicapped children have avoided the temptation to treat their clientele as if they were a homogeneous group. Until some 10 years ago, however, educators and psychologists working with intellectually gifted students were trapped in precisely this mind-set. We readily acknowledge a distinguishable levels of talent among young people gifted in sports, athletics, music, or dance, out with intellectually able children we developed identification

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strategies, designated curricula, and established special programs based on the assumption that what worked for moderately gifted students would also work for the extremely gifted.

Fortunately, this perception is breaking down, and educators with a special interest in the gifted and talented are beginning to acknowledge the need to recognize degrees, as well as types, of intellectual giftedness. Our next task is to raise the awareness of classroom teachers and school administrators.

It would be simplistic to define intellectual giftedness solely in terms of IQ scores; nonetheless, the intelligence quotient is a useful index of the relationship (and in the case of the gifted child, the discrepancy) between mental age and chronological age. Paula, our moderately gifted 9 year old with an IQ of 133 and therefore a mental age of around 12, will be "out of sync" by at least three years before she has even passed through elementary school. Alex, 12 years old with an IQ of 169 and therefore a mental age of around 20, looks across a chasm of eight years from the level at which he is capable of reasoning to the grade level in which he has been placed on the basis of his chronological age. The IQ can assist us to understand the fundamental differences in mental processing between moderately and extremely gifted students.

Intellectually gifted children can be classified as mildly, moderately, highly, exceptionally, and profoundly gifted. Levels of intellectual giftedness, as defined by IQ ranges, and the prevalence of such children in the population, can be classified as follows:

Level	IQ Range	Prevalence
Mildly (or basically) Gifted	115 - 129	1:6 - 1:44
Moderately Gifted	130 - 144	1:44 - 1:1,000
Highly Gifted	145 - 159	1:1,000 - 1:10,000
Exceptionally Gifted	160 - 179	1:10,000 - 1:1 million
Profoundly Gifted	180+	Fewer than 1:1 million

Several researchers over the last 70 years have proposed that the number of children who score in the extremely high ranges of IQ exceeds the theoretical expectations derived from the normal curve (Terman, 1925; Burt, 1968; Silverman, 1989; Gross, 1993). Even the most generous over-prediction would affirm that exceptionally and profoundly gifted children comprise a tiny minority even among the gifted.

Although, as discussed earlier, the majority of teachers tend to view gifted students as a fairly homogeneous group, researchers have noticed profound differences between moderately gifted and exceptionally gifted children on almost every cognitive and affective trait that has been studied. In the realm of intellectual capacity alone, a profoundly gifted child of IQ 190 differs from his or her moderately gifted classmate of IQ 130 to the same degree that the latter differs from an intellectually handicapped child of IQ 70.

### Developmental Differences in Extremely Gifted Children

Even the earliest studies of exceptionally and profoundly gifted children reveal that these children differ strikingly from their age peers in their unusually early acquisition of speech, movement, and reading.

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Numerous researchers have noticed the early development of speech, which is typical of even moderately gifted children. Whereas the average child utters her first meaningful words (other than "mamma-dadda" babble) at about the age of 12 months (Staines & Mitchell, 1982), moderately gifted children start speaking, on average, two months earlier. However, my study of 53 Australian children of IQ 160+ found that the average age at which these extremely gifted children began to speak was 8.6 months, while several spoke as early as 6 months. By 13 months Emma had a vocabulary of more than 80 words, including complex words such as flower, sunshine, spaghetti, pineapple, and raining. Before her first birthday she was already linking words into pairs (Gross, 1999). Adam spoke his first word at 5 months of age and two months later was talking in three- and four-word sentences, regularly producing a running commentary on the grocery items as his mother wheeled him past the shelves in the shopping cart! Hollingworth (1942) noted that several of her subjects of IQ 180+ began to speak in sentences before their first birthday; the average child does not even begin to link words into pairs until around the age of 18 months (Jersild, 1960).

The speech of some exceptionally gifted children demonstrates quite remarkable complexity. Ian of IQ 200 knew all the words of "My Grandfather's Clock" by the age of 23 months, and shortly after his second birthday he announced to a family friend, "You know, my father is a mathematician and my mother is a physiotherapist" (Gross, 1993). A frequent comment by parents of these children is that their children's speech was phonetically clear and grammatically accurate from the earliest months. The mother of Hadley, also of IQ 200, notes, "His early speech, which began at the age of 6 months, was very clear and people frequently remarked on this. In fact, his early speech attempts were remarkably accurate, and on the few occasions that Robert or I did correct his pronunciation or his use of a word he seemed to note and apply the correction immediately" (Gross, 1993, p. 92).

Nonetheless, it is not unusual for the speech of extremely gifted children to be delayed. Probably the most famous example of this is the case of Einstein, who did not talk until 3 years of age and was suspected of being learning disabled (Goertzel & Goertzel, 1962). The absence of early speech is not therefore, an indication that the child is not highly gifted. However, the very early development of speech, coupled with an unusually speedy progression through the stages of speech development is a strong indicator that the child may well be highly gifted.

The development of movement tends also to arrive early in the extremely gifted, and as with speech, the stages of its progression are unusually accelerated. Emma sat up alone at 4 months of age, stood alone at 7 months and walked upstairs unaided at 11 months (Gross, 1999). Theman and Witty reported on a girl, "B," of IQ 200, who took several steps by herself at the age of 8 months "under the excitement of running after a dog" (1943, p. 168). The majority of children in my study were walking independently before the age of 12 months, three months earlier than the norm (Gross, 1993).

Reading, a third and significant source of knowledge acquisition, also tends to develop at remarkably early ages. Terman found that one of the few variables, on which the exceptionally gifted children in his study differed from the moderately and highly gifted, was the very early onset of reading (Terman & Oden, 1947). Hollingworth (1942) also noted that it was the early development of reading which most clearly differentiated exceptionally and profoundly gifted children from the moderately gifted. All Hollingworth's 12 subjects of IQ 180+ were reading before school entry, while four were reading at age 2, three at age 3, and three at age 4.



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VanTassel-Baska (1983) studied 270 students aged 13 and 14 who had achieved scores of at least 630 on the Scholastic Aptitude Test-Mathematics or 580 on the Scholastic Aptitude Test- Verbal in the Midwest Talent Search. These scores place them above the 90th percentile on a test standardized on college-bound seniors. VanTassel-Baska found that 80% of this group was reading by age 5, and 55% by age 4. Of the IQ 160+ children in my study, 95% were reading before the age of 5 (Gross, 1999).

This precocity in speech, movement, and reading among extremely gifted children is not reported merely as a curiosity; it has profound effects on the children's early cognitive and socio-affective development. Both early movement and early speech contribute significantly to the highly gifted child's capacity to acquire and process information and to relate to other people within and outside his or her family. Through early speech and reading, the young Child has access to an "information bank" normally reserved for children some years older, which may have a lasting effect on her values, attitudes, and interests. Teachers who have such children in their classes in the early years of school are often surprised at their wealth of knowledge on topics that are more usually the province of much older students.

### **Socio-Affective Development**

Differences between moderately and extremely gifted children are not, of course, confined to the cognitive domain. Hollingworth (1926) defined the IQ range 125-155 as "socially optimal intelligence." She found that children scoring within this range were well-balanced, self-confident, and outgoing individuals who were able to win the confidence of age peers. She claimed, however, that above the level of IQ 160 the difference between the exceptionally gifted child and his or her age-mates is so great that it leads to special problems of development which are correlated with social isolation. These difficulties appear particularly acute at ages 4 through 9 (Hollingworth, 1942).

DeHaan and Havighurst (1961), examining the differences between what they termed second-order" (IQ 125-160) and "first-order" (IQ 160+) gifted children, reinforced Hollingworth's findings. These findings suggested that the second-order gifted child achieves good social adjustment because he has sufficient intelligence to overcome minor social difficulties but is not "different" enough to induce the severe problems of salience encountered by the exceptionally gifted student. Janos (1983) compared the psychosocial development of 32 children aged 6-9 with IQs in excess of 164, with that of 40 age peers of moderately superior intellectual ability. The findings of Janos emphasized that the social difficulties experienced by this highly gifted group did not stem from a pre-existing emotional disturbance, but rather were caused by the absence of a suitable peer group with whom to relate. There are virtually no points of common experience and common interest between a 6-year-old with a mental age of 6 and a 6-year-old with a mental age of 12.

### **The Pressure to Conform**

The influence on the gifted student of his or her awareness of being different, and the resultant pressure to underachieve for peer acceptance, can hardly be overestimated. Research suggests that the more highly gifted the child, the greater becomes the social pressure to moderate his or her achievements (Hollingworth, 1926; Silverman, 1989; Gross, 1993, 1994). Terman and his colleagues observed this even in the first few years of their landmark study of 1500 gifted children in California.

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“Precocity unavoidably complicates the complexity of social adjustment. The child of 8 years with a mentality of 12 or 14 is faced with a situation that is almost inconceivably difficult. In order to adjust normally, such a child has to have an exceptionally well-balanced personality, and has to be well nigh a social genius. The higher the IQ, the more acute the problem” (Burks, Jensen, & Terman, 1930).

Furthermore, the awareness that one is different from one's age peers can arrive much earlier than is often realized. As Hollingworth (1942) noted, social difficulties arising from this can appear as early as 4 years of age. As children move through the preschool and primary years, the egocentricity of early childhood gradually gives place to an awareness of the opinions, attributes, and abilities of others. The child moves from a self-referenced perspective, in which she measures her achievements against the level of her previous performance (“I couldn't do that yesterday, but I can now!”) to a norm-referenced perspective from which she compares her achievements with those of other children (“Kate is 6 but she can't do that yet, and I could do it before I started school!”). This shift in perspective is much more closely linked to mental age than to chronological age; thus, a highly gifted Child of 4 or 5 may already have reached a stage of norm-referenced behavior which her age peers of average ability may not reach until the age of 7 or 8.

Because of this, gifted children may become aware, at an early age, that they are different in many ways from the other children around them. However, contrary to popular myth, this rarely leads to feelings of conceit or superiority. Rather, gifted children may feel acutely uncomfortable about their “difference” and may act swiftly to change their behavior to conform to the social or behavioral norms of their age group.

As discussed earlier, the majority of highly gifted students enter school with the reading accuracy and comprehension of children several years older. If the teacher does not recognize this precocity, and respond to it appropriately, the gifted young child may stop reading, or deliberately decrease the quality and quantity of his reading, after a few weeks in school. My study of exceptionally gifted Australian students (Gross, 1993) has found that more than 70% of early readers radically modify their in-class reading performance, or stop reading altogether in class, within the first month of school. Indeed, when asked, in later childhood, to discuss their first memories of school, many of these children recalled, as a powerful and uncomfortable memory, the feeling of strangeness, even alienation, that came with the realization that no one else in the class, except the teacher, could actually read!

### **The Gift of Acceleration**

The pressure to conform, and in many cases the disturbing realization that even assiduous conformity does not result in social acceptance, can sometimes result in the exceptionally or profoundly gifted child deciding that the gamble of attempting to deny one's interests, one's values, and indeed one's very nature, is no longer worth the attendant cost of beginning to dislike oneself. Children who come to this conclusion may, reluctantly, become social isolates, preferring their own company, in which they can at least be honest with themselves about themselves, to the company of children with whom they have virtually nothing in common. This social isolation results from an absence of congenial companionship rather than from a tendency to misanthropy on behalf of the exceptionally gifted. This is demonstrated by the fact that where socially isolated children have been accelerated to be with intellectual peers the isolation has disappeared and the exceptionally gifted

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have been able to form warm and supportive relationships with their older classmates (Hollingworth, 1942; Pollins, 1983; Gross, 1994).

The 53 children who are members of my longitudinal study are young people of truly remarkable intellectual potential. Their schools have recognized a minority as such. In the considerable majority of cases, however, the children's teachers have remained unaware of their extraordinary intellectual potential or, where psychometric evidence of this has been made available, the school has refused, on ideological grounds, to develop any form of differentiated curriculum for the gifted child. The majority of these extremely gifted children have spent, or are spending, their elementary school years working through a lockstep curriculum in a heterogeneous classroom without access to other gifted, even moderately gifted, students.

However, 11 of the 53 children have been radically accelerated and are undertaking part or all of their schooling with students three years older (Gross, 1993). In each case the grade-skips and subject matter acceleration have been carefully planned and monitored, addressing the children's social and emotional maturity as well as their academic achievement. No child has skipped more than one grade at a time; the skips have been spaced appropriately as the child progressed through school, with at least one year of consolidation between each skip. Guidelines were followed for grade advancement of precocious children as advised by Feldhusen, Proctor and Black (1986). Each student was psychometrically assessed to establish his or her intellectual capacity and to ensure that the child would be able to perform at a level considerably beyond the average for the receiving grade. In each case, it was understood that acceleration would be undertaken on a trial basis, and the children knew that they had the option, at any time, to return to their earlier placement. In every case, however, the acceleration has proven overwhelmingly successful.

In each instance the children's parents and the children themselves were involved in the planning and monitoring of the acceleration program. Indeed, in the majority of cases the initial grade-skip or early enrollment was proposed not by the teachers but by the parents who had familiarized themselves with the research literature on appropriate educational provisions for the gifted. In several cases the school was extremely reluctant to permit any form of acceleration and concurred only when it had become obvious that retaining the child with age peers, with a token provision of in-class enrichment or pullout, was proving quite inadequate to the child's academic and social needs.

### **The Reversal of Underachievement**

The common perception of the extremely gifted as eager, academically successful young people who display high levels of task commitment has been refuted by research. This research demonstrates that many highly gifted children underachieve seriously in the regular classroom and that by the end of elementary school, many have almost completely lost the motivation to excel (Pringle, 1970; Painter, 1976; Whitmore, 1980; Gross, 1993).

The majority of the extremely gifted young people in my study state frankly that for substantial periods in their school careers they have deliberately concealed their abilities or significantly moderate their scholastic achievement in an attempt to reduce their classmates' and teachers' resentment of them. In almost every case, the parents of children retained in the regular classroom with age peers report that the drive to achieve, the delight in intellectual exploration, and the joyful seeking after new knowledge, which characterized their children in the early years, has seriously



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diminished or disappeared completely. These children display disturbingly low levels of motivation and social self-esteem. They are also more likely to report social rejection by their classmates and state that they frequently underachieve in attempts to gain acceptance by age peers and teachers. Unfortunately, rather than investigating the cause of this, the schools attended by these children have tended to view their decreased motivation, with the attendant drop in academic attainment, as indicators that the child has "leveled out" and is no longer gifted (Gross, 1993).

By contrast, the children who have been radically accelerated, and their teachers and parents, believe strongly that they are now much more appropriately placed, both academically and socially. These students display higher levels of motivation, and they report that pressure to underachieve for peer acceptance has significantly diminished or disappeared completely. Although the curriculum which they are offered does not address all their academic needs, it provides a challenging and stimulating intellectual environment when enhanced with ability grouping, enrichment, or mentoring. The radical accelerants have positive attitudes towards school and believe that they are warmly regarded by their teachers. They have a greater number of friends and enjoy closer and more productive social relationships than they did prior to their acceleration. They have significantly higher levels of social and general self-esteem than do children of equal intellectual ability who have been retained with age peers or who have been permitted only a single grade-skip.

#### **The Least Restrictive Environment**

Educators concerned for the academic and social needs of the intellectually and physically disabled often argue that these children should be placed in the "least restrictive environment." This usually means inclusion in the regular classroom, where the child may interact in work and play with age peers and is exposed to a broader and more enriched curriculum than might be possible in the environment of a special class or special school. Ironically, the regular classroom is not necessarily the least restrictive environment for the intellectually gifted, and for exceptionally and profoundly gifted students it is probably the most restrictive environment. Hollingworth, in her landmark work on children of IQ 180+, warned that extremely gifted children must learn to accept that the majority of people they will encounter in life are very different from themselves. "The highly intelligent child must learn to suffer fools gladly-not sneeringly, not angrily, not despairingly, not weepingly-but gladly if personal development is to proceed successfully in the world as it is" (Hollingworth, 1942, p. 299).

No matter how appropriate the interventions that are made for extremely gifted students in school, they will live as adults in a world where the vast majority of people they encounter will find it difficult to relate to their remarkable intellectual capacities, atypical interests, and different values and perceptions. This does not mean, however, that our schools can absolve themselves from the obligation to assist the extremely gifted child in forming facilitative peer relationships in school. A child who receives affection and approval from other children is learning and practicing the skills that will assist her to form sound relationships in adulthood. A child who is ostracized by his peers has little opportunity to practice these skills.

Our task as educators, therefore, is to place the extremely, gifted child in the environment that will least restrict her opportunities for socialization. Research suggests that the inclusion classroom, with age peers, may not be the most appropriate environment.

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