

Gifted Students with Attention Deficits: Fact and/or Fiction? Or, Can We See the Forest for the Trees?

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ABSTRACT

According to Gordon (1990), far too many high ability students are referred for problems with impulsivity, hyperactivity, and sustaining attention. Several important issues, rarely discussed in the literature on attention deficits, offer alternative hypotheses for the increasing incidence of hyperactivity and attention problems of gifted youngsters. These include theories on emotional development and excitability of gifted students (Dabrowski, 1938; Piechowski & Colangelo, 1984), evidence of unchallenging curricula for high ability students (Reif, 1993), implications of the multiple intelligences paradigm (Gardner, 1983), and adult reaction to students' extreme precocity (Rimm, 1994). These issues are examined in light of Barkley's theory of inhibition as it relates to the manifestation of ADHD. The issues represent environmental conditions that may cause or influence ADHD-like behaviors in high ability students. Diagnostic and intervention strategies are suggested to counteract environmental contributors to the problem.

A master of Lego™ bricks, verbally precocious Chris is failing miserably at school. Despite an estimated IQ of 172, he was retained in first grade because of failure to complete work and poor motor and social skills for his age. In second grade, his teacher referred him for special education screening because of his impulsive and disorganized behavior. Chris was diagnosed with Attention Deficit Hyperactivity Disorder (ADHD).

Referrals for attention disorders among gifted children have been growing at an unexpected rate (Webb & Latimer, 1993). Although the increases alone are troublesome, there is additional concern because of professionals' lack of clear definitions for ADHD, giftedness, creativity, and a variety of other behavioral characteristics (Cramond, 1994; Jordan, 1992; Piechowski, 1991). Diagnosis of ADHD sweeps across a number of

problematic behaviors such as impulsivity and hyperactivity, in addition to a collection of deficits in concentration, persistence for tasks, organization of

PUTTING THE RESEARCH TO USE

Why is there concern about the apparent over-identification of bright, creative students with Attention Deficit Hyperactivity Disorder (ADHD)? The coincidence of ADHD and giftedness has received little exploration, particularly in light of the delicate interaction between characteristics of students and requirements of learning environments. Characteristics and behaviors can be misleading when they form the primary foundation for diagnosis of any exceptionality. Moreover, much of the information regarding ADHD has emerged from the medical and special education fields, neither of which has considerable knowledge of or expertise in giftedness.

In this article, we outline a variety of perspectives from which to consider and interpret the behaviors of gifted students who are suspected of having attention difficulties and suggest care be taken to consider a course of action based on the broadest array of options that allow for multiple hypotheses.

In addition, we offer diverse explanations for behaviors observed to foster a more holistic understanding of the students' needs and thereby increase the school's capacity to meet these needs. Rather than jumping to conclusions, educators and parents are encouraged to follow a step-by-step course of action that serves to rule out alternate hypotheses prior to referral for ADHD behaviors. Environmental modalities and strategies must be considered and assessed for behavioral effects by conducting comprehensive observations of classroom activities, curricular and pacing adaptations, and school efforts to reinforce creativity as well as to develop individual talent.

thinking, and focusing attention. Such varied aspects of ADHD have prompted some researchers to claim that most gifted students with learning disabilities also demonstrate behaviors associated with ADHD (M. Cherkes-Julkowski, personal communication, March 9, 1993).

The most frequently prescribed intervention for ADHD is medication in the methylphenidate family, usually Ritalin-AE. Medications are usually successful in controlling behavior, but they are also suspected to inhibit creativity and intellectual curiosity in bright children. Anecdotal reports tell of gifted youngsters being "cured of their giftedness" in an effort to help them attend to schoolwork. As Cramond (1994) put it, "perhaps we are lucky that medication was not available to stop the daydreams of Robert Frost and Frank Lloyd Wright" (p. 205). No conclusive research exists to explain the impact of such medication on various thought processes, including those related to potentially creative, productive thinking. Perhaps even more worrisome is that the behaviors thought to signal a disorder might sometimes be the result of an environment where bright but reluctant youngsters are expected to conform to a sluggish and boring curriculum.

The predicament of inattentive gifted youth has several important implications. First, the loss of valuable human resources comes at a time when the world depends increasingly on its brightest and most creative youth to assist in resolving the problems of tomorrow. If we cannot design appropriate interventions that will nurture human potential, much of the world's best human capital will never reach its potential. A second concern is for lost achievement. Unfortunately, even when medication is appropriate to assist in behavior management, underachievement often continues (Lind & Olenchak, 1995). School administrators occasionally exacerbate the situation by viewing ADHD purely as a medical problem, thereby absolving themselves, teachers, and school curricula from responsibility. Parents, too, can excuse their child's inappropriate behaviors rather than providing the support and structure some of these students need to practice academic and behavioral self-regulation (Zimmerman, Bonner, & Kovach, 1996). Medical professionals admit that if schools were more receptive to individual learning needs of students and were more cognizant of ADHD and its various treatment options, a number of children would not need medication (Barkley, 1990). Educators who are successful with bright but active youngsters argue that schools should be held accountable for providing appropriate educational options for these students

(Reif, 1993). Whether medical or educational, the dilemmas are enormous for families confronted with rearing bright children who have ADHD. A spokesperson from the Association for the Education of Gifted Underachieving Students reported that the majority of inquiries received are from frustrated parents of gifted/ADHD students seeking information and strategies to help their youngsters (L. Baldwin, personal communication, November 12, 1996). The two excerpts that follow illustrate the frustration and pain faced by the parents of bright students whose school experiences have been dismal:

1. My son is 15 and has just been diagnosed with attention deficit disorder without hyperactivity. He has been steadily failing subjects since seventh grade even though his IQ is 130. We need help to restore his self-esteem and confidence. He has shown moments of brilliance since he was little, especially in any art or spatial design activity such as building with Legos™ and other structures. But any real blossoming has been shut down by his feelings of failure and years of people—teachers, counselors, and yes, his parents—telling him he is being lazy. We need help in learning how to parent so we are helpful and not harmful to our son.
2. I am a parent of two children, a girl of 15 and a boy of 12, both of whom have tested in the gifted range of intelligence and both of whom have some learning disabilities. Both have been diagnosed as having an attention deficit disorder. My daughter has poor organizational skills as well as a memory weakness and weak fine-motor integration skills. My son also has difficulty in reading with weaknesses in decoding. I am looking for ways in which I can circumvent their disabilities and stimulate them intellectually. ... It has been difficult getting the schools to recognize their difficulties. Some teachers have been cooperative and others have not. The school system doesn't recognize their attention deficit disorder as a disability. So much time is being wasted trying to find the right people to help. The process has been trial and error without success (L. Emerick, personal communication, April 17, 1994).

Contemporary educators do not seem to have appropriate strategies, knowledge, or confidence in providing an appropriate education for gifted students with learning and attention difficulties. As mentioned by one parent, some districts dodge their legal responsibility for providing an appropriate education for such students. Although the medical profession has long recommended medication as a primary approach to the problem, edu-

cators are provided little direction about the nature and types of educational solutions that are also required.

The most serious concern is that gifted behavior is sacrificed for more manageable behavior in some creative, bright students who are medicated for ADHD. Highly able students with problems in attention, hyperactivity, and self-regulation remain at risk for developing their potential. However, it remains unclear whether these attention deficit behaviors are due to a neurological problem affecting learning, are the result of a learning environment inappropriate for such exceptional learners, or are a combination of both. The complexity of the problem motivates the development of a bio-psycho-social systems model to improve the theory, research, and educational response. Such a model should help to keep many gifted learners from falling through the cracks of the floorboards scaffolding the educational bureaucracy.

In this article, we explore unique issues of attention deficit disorders among gifted students and offer alternate explanations for the occurrence of those behaviors among some students. We first distinguish among three groups of students who demonstrate behaviors associated with ADIID: (a) students whose learning and attention problems stem, for the most part, from a neuro-chemical disorder; (b) those whose behaviors are mostly brought about, and perhaps intensified, by the learning environment; and (c) those who fall into both of the preceding categories.

In addition, suggestions are offered for determining whether the behaviors are primarily environmental, essentially neurological, or both. Finally, we share an approach our research has found to be particularly helpful for combating ADHD-like behaviors that are precipitated by the environment.

What is an Attention Deficit Disorder?

Children with Attention Deficit Hyperactivity Disorder (ADHD), according to the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV;* American Psychiatric Association, 1994), have problems sustaining situation-appropriate attention. These problems can include hyperactivity, alertness, arousal, and distractibility. Some researchers claim that the attention problems are exacerbated by tasks that are dull, repetitive, and boring (Barkley, 1990; Luk, 1985). Impulsivity, academic difficulties, and poor motor skills are other behaviors characterizing children with ADHD. Children with ADHD frequently fail to complete assignments in school or at

home, exhibit disruptive behavior in the classroom, and have difficulty relating to their classmates. A majority of these students have learning deficits in spelling, math, reading, and handwriting (Barkley).

Despite current media fascination, this syndrome is not a recent invention. It had been noted in psychiatric literature as early as the mid-1800s. Its emergence in this century began with the appearance of Strauss and Lehtinen's (1947) book, *Psychopathology and Education of the Brain-Injured Child*. In the 1950s and 1960s, children who were of at least average ability and who exhibited certain symptoms were identified as having Strauss' Syndrome, or minimal brain damage, because theorists and researchers of that era believed the behaviors represented some injury to the brain. Characteristics associated with Strauss' Syndrome included the following behaviors:

1. Erratic and inappropriate behavior on mild provocation;
2. Increased motor activity;
3. Poor organization of behavior;
4. Distractibility of more than ordinary degree under ordinary conditions;
5. Persistent faulty perceptions;
6. Persistent hyperactivity; and
7. Awkwardness and consistently poor motor performance (Stevens & Birch, 1957).

In the 1970s, professionals dropped the brain injury-behavior link because these connections were virtually impossible to verify, and they focused instead on labeling the set of behaviors as the Hyperactive Child Syndrome. In the early 1980s, psychologists redefined the disorder by de-emphasizing the role of hyperactivity as the primary symptom of the disorder and elevating the importance of one's ability to sustain attention and to control impulses. Some students, it was noted, were not particularly hyperactive but rather seemed to "drift off" during lectures, reading assignments, and written tasks. This led to the emergence of two terms to describe these children as those who had either Attention Deficit Disorder (ADD) with Hyperactivity or ADD without Hyperactivity (American Psychiatric Association, 1980).

Today, researchers have returned to an earlier focus by re-labeling the syndrome as Attention Deficit Hyperactivity Disorder (ADHD). This label reflects the position that hyperactivity along with problems sustaining attention and controlling impulses are the primary symptoms of the disorder. Theorists do not deny that some children experience attention deficits without hyperactivity, but they argue it may be an altogether different syndrome (Carlson, 1986).

Many theories about the causes of the problem are currently being investigated. There is consensus about a genetic and physiological predisposition to the disorder (Barkley, 1995; M. Cherkas-Julkowski, personal communication, February 3, 1995). However, researchers currently are exploring a variety of hypotheses in an attempt to explain how the environment interacts with the individual to bring about manifestations of the disorder. Some theories focus on the notion that individuals with ADHD have an extraordinary need for stimulation (Zental, 1985) or are easily confused with energetic, highly creative people (Cramond, 1994). These hypotheses focus on the behavior-environment relationship: when environmental stimuli decrease, hyperactivity and inattention increase as a means of self-stimulation to compensate for the "boring environment." Others cite motivational causes for the behaviors (Haenlein & Caul, 1987). These researchers claim the lack of sustained attention owes to the individual's need for excessive reinforcement both in kind and frequency. They claim that when a task does not have strong intrinsic appeal, it cannot hold the ADHD learner's attention. Some argue that children with ADHD show poor self-regulation of behavior, thus failing to meet the demands expected in certain situations (Routh, 1978). Usually these situations are highly structured and require adherence to a specific set of social rules (Barkley, 1990).

The important issue is that, although each of these hypotheses has implications for intervention, they cannot be considered in the absence of theories explaining the unique qualities of gifted students and how those characteristics modify conceptions of ADHD in the gifted population. Unfortunately, the majority of researchers and professionals involved in the area of ADHD has little contact with experts in the social and emotional development of the gifted child. Likewise, few theorists or practitioners in gifted education are familiar with the literature of medicine, psychiatry, or special education. This lack of paradigm sharing limits the ability of concerned professionals to offer complete and appropriate diagnoses or effective strategies for addressing the problems of gifted youngsters with ADHD.

Alternative Perspectives

According to Gordon (1990), far too many gifted students are referred for problems with hyperactivity and attention. There are several important perspectives rarely discussed in the ADHD literature that may help to explain why some gifted youngsters have difficulty in

adapting to traditional schooling and may, therefore, be especially susceptible to attention problems. A variety of new research findings, research-based theories, or applications of old theories to the gifted population present opportunities for better understanding ADHD and its relationship to gifted youngsters. These include the emotional development of gifted students, curricular and pacing issues, the nature of intelligence, and adult response to child precocity. We turn now to these alternative perspectives.

Emotional development of gifted students

The evolving theory of emotional development and developmental potential of gifted individuals (e.g., Dabrowski & Piechowski, 1977; Piechowski & Colangelo, 1984; Olenchak, 1994; Piechowski, 1991; Silverman, 1993) offers a different lens for examining the growing occurrence of hyperactivity and attention problems in gifted youngsters. Dabrowski's theory of positive disintegration aims to explain qualitative differences of human development. He proposed that gifted individuals had "increased psychic excitabilities" that predicted extraordinary achievement (Nelson, 1989). The concept of overexcitabilities has been described as:

an expanded and intensified manner of experiencing in the psychomotor, sensual, intellectual, imaginal, and emotional areas ... As personal traits, overexcitabilities are often not valued socially. Being viewed instead as nervousness, hyperactivity, neurotic temperament, excessive emotionality and emotional intensity that most people find uncomfortable at close range. (Piechowski & Colangelo, 1984, p. 81)

Relevant to this discussion is Piechowski and Colangelo's (1984) description of psychomotor overexcitability. They defined the trait as "an organic excess of energy or excitability of the neuromuscular system. It may manifest itself as a love of movement for its own sake, rapid speech, pursuit of intense physical activities, impulsiveness, restlessness, pressure for action, drivenness, the capacity for being active and energetic" (p. 81).

Piechowski and Colangelo (1984, p. 83) gave examples from gifted adolescents describing their psychomotoric overexcitability needs. One young man explained, "When I'm around my friends, I usually come up with so much energy I don't know where it came from. Also when I am bored, I get sudden urges and lots of energy ... [in school] I use this energy to goof off." Another student reported, "Like when I've been doing a long homework assignment. ... I suddenly get the urge to shoot baskets or ride my bike."

This energy seems to come as much from boredom as from excitement of new ideas. Some students report the

need to dance to some music before sitting down to write about some new idea or before finally mastering a complex piece in music. Cruickshank (1963, 1967, 1977), whose seminal work with hyperactive students is well known, came to assess hyperactivity and extreme sensitivity to the environment as positive characteristics in bright children rather than as problematic behavior. When such gifted children appear impulsive, it simply may be their extra urge to explore their world (Piechowski, 1991). Their curiosity and desire for knowledge can take precedence over the school's need for a prescribed curriculum locked in time, sequence, and space. In this sense, the regular classroom can be too restrictive for students predisposed to "overexcitabilities."

Inappropriate curriculum and pacing

Another set of factors that may contribute to school-related problems among gifted students involves issues of curricula and instruction. As has been shown, problems with hyperactivity, attention, and impulsivity increase when the curriculum is perceived as routine and dull; consequently, certain gifted children are placed at risk for failure. Research has shown that many bright students are not being taught at their instructional level and, by definition, do not require the usual amount of repetition to master many skills (Gallagher, 1990; Reis et al., 1993; Stanley, 1978).

The results of a major national study revealed that much of the regular curriculum is redundant for gifted students (Reis et al., 1993). When as much as 60% of the curriculum was eliminated, gifted students exceeded or equaled achievement levels of matched students who were required to complete the regular curriculum. Although these findings bode ill for bright students in general, consider the plight of those who tend to be predisposed to seeking greater levels of stimulation from the environment. They are automatically at odds with the expectations schools have for students to be neat, docile, quiet for extended periods, and interested in what the teacher is teaching.

Chris, the child mentioned at the beginning of this article, is a case in point. He was often punished for blurting out answers during whole class lessons. For example, when the teacher asked the class to figure out the answer to a problem on the chalkboard, Chris jumped out of his seat, ran to the board, and solved the problem before anyone else had a chance to respond. His teacher cited this instance as extreme impulsivity; her lack of understanding of Chris' needs produced a misinterpretation of his behavior. In short, gifted children who are active are placed in double jeopardy. On

one hand, these children have an intrinsic need to discover, understand, and master the curriculum; they need to be actively engaged in learning. However, when school tasks are mysteriously frustrating or not meaningful and the environment is unfriendly, the student may avoid the aversion by searching for solace through optimal arousal elsewhere. This "elsewhere" is often in their mind's eye where daydreams are far more arousing than the school curriculum (Baum, Owen, & Dixon, 1991). For some students, it is inventing a need to visit the school nurse who may have developed a positive and stimulating relationship with these articulate, intellectually fascinating youngsters. For still others, disrupting the class routine in any way possible remains a good primary means of attention and arousal (Baum, 1985; Lind & Olenchak, 1995).

Application of Multiple Intelligence Theory

Gardner's Theory of Multiple Intelligences (1983, 1993) offers yet another hypothesis for understanding the complexity of attention disorders. Denying a unitary conception of intelligence, Gardner has claimed that students' potential strengths may be in one or more of eight intellectual domains: verbal, logical-mathematical, spatial, kinesthetic, musical, naturalistic, interpersonal, and intrapersonal. Because school is mostly about verbal and logical-mathematical abilities, other ways of knowing and communicating are not only restricted but often devalued. Many gifted youngsters who are not achieving in school have exceptional spatial abilities (Baum et al., 1991; Dixon, 1983; Olenchak, 1995; Silverman, 1989). Often these students are described by their teachers as disruptive, off-task and deviously adept at avoiding unpleasant tasks. However, when creating with Lego™ bricks, repairing a motor, or drawing cartoon characteristics, these same students can be remarkably calm, focused, and persistent (Baum et al.).

It appears that when some hyperactive students are encouraged to learn and communicate in an area of strength (usually a non-verbal intelligence), even boring tasks are accomplished without accompanying behavioral problems. For example, some upper elementary students with severe attention disorders who were found to have potential talent in dance or music were selected to participate in a federally funded program designed to recognize and nurture those talents (Baum, Owen, & Oreck, 1996). Their classroom or special education teachers were amazed at the ability of students to attend to tasks during the dance or music classes. Ray, a fourth grader whose teachers described as "needing excessive attention, being all over the

place, and lacking ability to concentrate," was a different child in dance class. "I could not believe the way he stays on tasks, focuses his attention on the dance teacher, and is willing to do a particular movement again and again until he does it correctly," exclaimed this same teacher. Could it be that students with attention-related disorders are best served in an environment that incorporates and values alternate modes of thinking and communicating? Perhaps attention deficits are connected to specific intelligences, an idea that has not yet been investigated.

Adults' response to child precocity

There is evidence that some adults (e.g., teachers and parents) may be intimidated or overwhelmed by the precocity of gifted youngsters and, as a result, may fail to exercise control over the child's behavior (Rimm, 1994). Such adults may underestimate the ability of these students to regulate their own behavior. In these cases, not only is the child excused for misbehavior, but their misbehavior is reinforced by adult assertions that the child cannot control it.

Testing the Hypotheses: Understanding the Issues

In truth, there are probably multiple factors and combinations of factors contributing to the difficulties that some gifted students experience while attending to and controlling their behavior. Barkley (1995) has suggested a theory that hints at the delicate interaction between the characteristics of the students and the requirements of the environment. He argues that ADHD is best understood in terms of inhibition, which he views as a trait. Everyone thus falls somewhere along a continuum of extreme inhibition to no inhibition (see Figure 1). Excessive inhibition can effectively paralyze one from engaging in life activities; at the other end, the absence of inhibition can result in reckless behavior, a lack of impulse control, and inability to delay gratification. Barkley defines deficits of attention as a special case of the latter extreme. For Barkley, ADHD is, consequently, a portion of the inhibition trait. We will argue that, although such traits are viewed as enduring dispositions, there are dependable

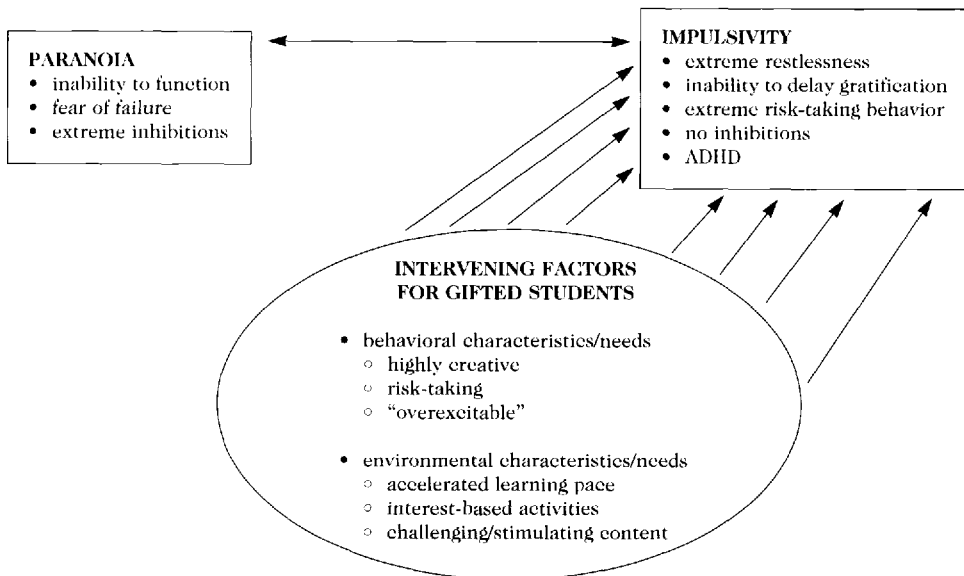


Figure 1. Interpretation of Barkley's trait theory of ADHD as it applies to giftedness

conditions that will cause the trait to appear or disappear in human behavior. In short, the trait lies beneath the surface, but the behaviors it manifests depend, in part, on the environment. For example, a usually self-regulated student under pressure of an important exam can become more inhibited and fearful than usual or even lose concentration altogether.

Creative people with high energy and ability are less inhibited and more likely to take risks. Because they are highly motivated to accomplish their own goals, they may create their own rules and be unwilling to postpone their agenda. Curiosity and urge for stimulation drives highly creative persons to take even more risks than customary and to forge ahead with little consideration of consequences. Likewise, students with high abilities are driven to engage in new learning and challenges. These qualities place gifted and creative people on the low inhibition side of the continuum (see Figure 1). When the environment is too restrictive and inhibits the natural energy of such students, they find themselves being pushed toward a more extreme end of the continuum. At that point, the behavior of these students may resemble that of a smaller number of people who truly suffer from AD/HD due to neurological or chemical imbalances. Once individuals' behavior dictates placement at this end of the continuum, regardless of the cause (environmental or neurological), they have minimal skills or capacities to regulate their own behavior without medical, cognitive, or psychological intervention.

Thus, to make an appropriate referral for ADHD behaviors, it is important to consider the effects of the environment on the student's behavior. In other words, we must estimate to what extent traditional school environments and curricula serve as gateways for the emergence of attention deficit-like behaviors. Only then can we be confident that the ADHD behaviors are primarily the result of a neurological or chemical imbalance.

To rule out alternate hypotheses, we need to analyze and modify the environment that may be responsible for prompting the behavior. If changes in the classroom—including curricula and instruction—result in improved student attention and behavior, more intrusive and ineffectual interventions can be avoided. We suggest the following strategies to assist in this evaluation:

1. Observe and document under which circumstances the child has difficulty in attending to tasks and otherwise performing acceptably.
2. Consider Gardner's notion of multiple intelligences; are there adaptations of curricular presentations

(e.g., visual or kinesthetic instead of verbal) that might capture the student's attention?

3. Observe the student's behavior in different learning environments to estimate the optimal conditions for learning.
4. Observe parent-child and teacher-child interactions to ascertain whether limits are set, if strategies for self-regulation are provided, and whether the student actually is able to self-regulate.
5. Observe the child at different times of the day to decide to what degree the student's creativity is appreciated, reinforced, or allowed expression.
6. Investigate whether there is any effort to develop the student's gifts or talents; if so, how does the student behave during appropriate talent development activities?
7. Pretest the student to assess instructional levels and evaluate appropriate curricular pacing.

The results of these observations can suggest specific strategies that can minimize learning obstacles facing the student. These observations should provide information that will help to discern:

1. which students will profit solely from environmental intervention like Chris, described earlier, who, when the curriculum was differentiated and his gift was accommodated, made his disruptive, inattentive behavior disappear.
2. which students will require chemical intervention like Brad, whose impulsivity in social interactions caused great difficulty for him. However, once on medication his behavior greatly improved, and he was able to develop social relationships.
3. which students will need both types of interventions like Adam, whose extreme giftedness and hyperactivity combined to make school an abysmal experience. In this case, both medication and acceleration were needed to address his problems.

Unfortunately, current remedies for the vast majority of bright students with ADHD-like behaviors typically encompass plans for medication and behavior modification, with little attention extended to curricula and instruction. In fact, many strategies used in gifted education have been found to accommodate the needs of such children in a more positive, less invasive, and more appropriate manner. For example, several research projects have successfully used talent development or attention to students' gifts, abilities, or intelligences as an intervention for promoting academic success for gifted students at-risk, including high ability students with attention and learning problems (Baum et al., 1996; Baum, Renzulli, & Hébert, 1994;

Neu, & Baum, 1995; Olenchak, 1994, 1995). These studies showed that modifications in curriculum, pacing, and instructional strategies had positive effects on increasing student attention and in improving self-regulatory behavior and achievement. Offering high levels of challenge and problem solving opportunities, especially in areas of the students' talents and interests, resulted in student's willful engagement and sustained interest in learning activities. Often when teacher talk was minimized so that students were allowed to explore their environments and to engage actively in learning and inquiry, no symptoms of ADHD surfaced.

Consider Bryan, an eighth grader, described by his teachers as a "serious behavior problem, socially inept, impulsive, and never completing assignments." In contrast, Bryan himself reported frequently cooking up creative ideas but then usually losing interest in them. He became interested in rewriting a court simulation used in the eighth grade civics course because he thought the original simulation was "stupid." Bryan was able to test out of civics because he already knew most of the content for the year and, thus, was able to use that time to work with the enrichment teacher on his project. Armed with a management plan that reduced the overall project into smaller, sequenced steps, a computer, and information from interviews and observations he had conducted about trials, Bryan began his writing. As he pursued this project, he thought of ideas for two novels, both of which he began to write along with the simulation. Working on three projects at once provided Bryan with an outlet for his "overexcitabilities," as his mind was often bombarded with exciting new ideas for new schemes as he worked on the law simulation. During the course of working on these projects, Bryan realized he was better able to concentrate on his writing while "plugged into his music," which is often the case for students strong in kinesthetic intelligence (M. Cherkes-Julkowski, personal communication, May 21, 1995). He spent marathon sessions on his computer while wearing his Sony Walkman, and he negotiated with his English teacher to allow him to complete classroom writing assignments in the computer lab. His teacher noticed that Bryan not only completed all assignments but improved his writing substantially. By the end of the school year, the three projects were completed, his grades and behavior improved, and he began to set higher goals for achievement for the following year.

Should Bryan have been "cured" from working on multiple projects? Should he have been required to sit in a civics class when he already knew much of the material? Should students be asked to consume knowl-

edge only for the sake of knowledge, or can they also be provided with opportunities to solve problems and learn skills within a meaningful context?

Again the questions must be posed: Are observed ADHD behaviors primarily the result of a neurological difficulty or a neurochemical imbalance that must be treated with medication and therapy? Do ADHD behaviors dissipate when educational programs are carefully designed to meet the needs of individual students? Or, finally, does effective intervention require both chemical and environmental change?

Toward Answers

As the frequency of school disabilities attributed to attention deficits continues to soar, there are increasing reasons to believe that many bright youngsters claimed to suffer from ADHD and other problems of concentration may be misdiagnosed. The result of treating one circumstance (giftedness) as if it were another (attention problems), or of failing to serve the gift in lieu of remedying the weakness, may produce far greater academic, social, and emotional problems than those related to ADHD. It is essential for educational practitioners and diagnosticians to consider the array of alternate hypotheses undergirding student behaviors before developing treatment plans. Diagnoses—whether educational, psychological, or medical—are sometimes unequivocal, sometimes unreliable, and sometimes hardly more than guesses. If a child's actual needs serve as the primary rudder for steering the intervention, then all reasonable options should be entertained before formulating solutions. Caution must be taken to consider aspects of each student's case individually and to formulate a course of action based on the broadest array of options that allow for multiple hypotheses. Otherwise, educators and parents take the risk of discouraging that which should be nurtured and of de-emphasizing that which deserves accentuation. To conclude that all students who satisfy certain diagnostic criteria alone ipso facto suffer from attention disabilities is tantamount to ignoring individuality.

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