

The Mislabeled Child

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When we first began treating children with learning and behavioral difficulties, we were struck by a paradox: although we found many different professional groups willing to diagnose and treat such children—general and developmental pediatricians, pediatric psychiatrists, psychologists, neuropsychologists, educational specialists, and even a few neurologists—we found a surprising degree of uniformity in the approaches they employed. Each specialty observed and categorized children's *behaviors*, rather than identifying the *causes* of those behaviors in a child's unique neurological wiring and life experience. In practice, this meant relying on the approach to diagnosis outlined in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM)*, with its behavior-based criteria for a growing variety of learning disabilities.

As a neurologist and a medical internist, this pattern of assessment goes very much against our grain. We were trained never to rely exclusively on behaviors for a diagnosis, because behaviors—like limps, clumsy fingers, or coughs—can have many different causes. So can problems reading or paying attention. Instead, we work backward from behaviors to locate specific causes in the nervous system, because effectively directing treatment requires correctly identifying the source of dysfunction. The distinction between behavioral and causal approaches is important, because adopting one approach or the other has profound consequences for how we understand and treat children with behavioral and learning challenges, and for how we organize our educational, healthcare, and even parenting practices.

Diagnostic Confusion

Consider, for example, our approach to children diagnosed with Attention Deficit/Hyperactivity Disorder (ADHD), perhaps the most well-known learning disability in modern times. According to the American Academy of Pediatrics, 8 to 10 percent (up to 14 percent of boys) meet the criteria

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for ADHD. Most children who struggle in school frequently show some ADHD-type behaviors, and many of these children end up taking stimulants to treat their “condition.” Studies have also shown that nearly all children stop paying attention when they’re confused, and become unmotivated when they can’t succeed. Confused and unmotivated children are often inattentive and restless. It’s important to distinguish causes from effects.

When we examine children who show ADHD-type behaviors, we often find a variety of causes for these behaviors rather than a single global problem with attention. Many have undiagnosed reading or handwriting problems; or brain-based visual or auditory processing deficits; or sensory-motor processing deficits that make handling the barrage of incoming information in the busy school environment, including social signals, highly difficult. Or we find children with very strong or uneven learning preferences, whose performance varies dramatically depending upon their learning environment; or even highly intellectually gifted children who are simply bored by an insufficiently challenging routine.

Understanding why a particular child is struggling with attention involves more than simply documenting certain behaviors. It requires completely assessing the physical, medical, neurological, cognitive, behavioral, emotional, educational, and psychological aspects of the child’s development, to see where breakdowns in the child’s attentional or behavioral control mechanisms are occurring. Although many practice guidelines—like those of the American Academy of Pediatrics—advise considering such factors when making behavioral diagnoses, they provide little guidance on how they should influence diagnosis; and because these various factors are not adequately considered in the *DSM*, they are seldom considered by practitioners when diagnosing ADHD.

For many children, schools are sources of enormous stress. Stresses may arise from interactions with peers—involving struggles for acceptance or esteem, or even physical threats or bullying—or with teachers, who are enormously important figures, especially during the elementary years. Stresses may also arise from the learning process itself. Academic pressures have intensified in recent years due to the standards movement. While valuable in pointing out the problems with our current educational system, the No Child Left Behind program has—with an almost Orwellian irony—raised the specter of grade retention and failure for millions of children.

Enormous numbers of children are struggling to meet basic academic standards in areas like reading, writing, math, and language. Many have neurologically-based disorders of cognition and learning. Up to 10 percent

of children have dyslexia, 18 percent have untreated visual problems, 13 percent partial hearing loss, 5 to 10 percent disorders of central auditory processing, 5 to 10 percent language disorders, and 6 percent motor coordination disorders that impair vital functions like handwriting. Current federal guidelines permit only 3 percent of a school's students to opt out of standardized assessments because of disability, so many students with learning problems are under intense pressure to meet performance standards. We are imposing higher academic demands on the very children we misdiagnose; we expect better performance yet often ignore the real barriers to a child's success.

Brain Problems, School Problems

Most learning or behavioral difficulties arise from one of two types of problems. The first is a problem with one of the basic neurological functions that underlie reading, writing, counting, and other basic academic functions. These neurological problems—which occur in areas like perception, motor coordination, memory, attention, or pattern processing—are often very difficult to diagnose, because they frequently don't present in ways that suggest their true nature. Yet these difficulties are relatively common in school-aged children, and they are often mislabeled as deficits in attention or as autism spectrum disorders. If correctly diagnosed, these problems can often be treated successfully using therapies that take advantage of nervous system plasticity to repair the underlying deficit—and eliminate the resulting ADHD-type behaviors.

The second type of problem is caused—or greatly exacerbated—by instruction that is poorly suited to the way particular children are “wired to learn.” While most of us learn better in some ways than others, for some children these differences are profound and potentially debilitating. Such children could learn very well in the right educational setting, but they struggle in the standard classroom because information is presented to them in forms they are not well suited to process. Frequently, these children have difficulty taking in information through auditory-verbal (lecture-based) instruction, or expressing information through handwriting. Because our educational system overwhelmingly stresses these forms of communication, children with primarily visual, spatial, hands-on, or novelty- and experience-based learning styles often suffer needless problems with learning and attention.

Some children also differ markedly in the rate and depth at which they prefer to take in information. Some are intellectual pythons, who

prefer extended periods to digest a single topic. Others learn like sparrows, needing frequent short bursts of learning interrupted by frequent breaks. While all students must achieve certain basic competencies in core subjects, they do not all need to pursue them in the same ways or through the same routes. What they need is a form of education that's right for children who learn the way they do. Many children who struggle in school do not have cognitive "impairments" or "abnormalities" in any absolute sense, but simply differences in learning style—differences that often render them well-suited for various adult occupations.

Our clinic, for example, is located in Seattle, so we see many children of software designers and engineers who work for companies like Microsoft and Boeing. Often the supposed "learning disorders" that have made these children poorly suited for the auditory-verbal learning environments in their schools are manifestations of the same visual and spatial reasoning styles that have made their parents professionally successful and creative. The conflict between the child's learning style and his school's teaching style leads to unnecessary failures and frustrations. In response, we tend to classify the child as "sick" rather than seeking to understand what makes many healthy children struggle.

When children find themselves in environments where learning is demanded but not facilitated, they often end up in a cycle of despair. They struggle, fall behind their classmates, become anxious and ashamed of their difficulties, and eventually even of themselves. Some even wish they had never been born, like our patient who told her mother she wanted Santa to bring her death for Christmas, or the boy whose mother found the note he had written to himself saying he deserved to die for being so stupid.

For children like these, learning challenges aren't just a question of grades or achievement: they strike at the very heart of a child's self-image, and for some can quite literally be a matter of life and death. Too often they receive a variety of diagnoses—like ADHD, oppositional defiant disorder, depression, conduct disorder, bipolar disorder—and a variety of drugs (often 3 or 4 for a single child) to control behavior. In many cases, the underlying problems go untreated, leaving children as the helpless victims of a monolithic approach to diagnosis that often fails to discern the real causes of the very behaviors it classifies.

Research Barriers

Better treatment begins with better research. Although the behavioral approach has laid claim to scientific consensus, it has continued to

receive criticism from sources both inside and outside the research and clinical communities. Not surprisingly, supporters of the *DSM* model have responded with a vigorous defense of the validity of the ADHD diagnosis and the efficacy of stimulant treatment. Too often, they have done so in a manner that has inhibited better research into the heterogeneity of attention problems, enforced the notion that all children with attention problems suffer from the same general disorder, and impeded the search for more effective treatments.

For example, despite decades of heavy stimulant use, there has never been a good study of the long-term safety and efficacy of these drugs in children. Moreover, the only large study so far into risk factors for the persistence of ADHD-like symptoms from childhood into adulthood—conducted by Harvard professor Ronald C. Kessler and colleagues and published in *Biological Psychiatry*—found that those who were treated for ADHD as children had an almost fivefold greater risk of suffering ADHD-like symptoms as adults—hardly the kind of positive outcome that should inspire confidence.

Surprisingly, the authors of this study failed to address the obvious possibility that stimulant treatment for ADHD-like behaviors in children might directly contribute to the persistence of ADHD-like symptoms later in life. The study raises the question, then deliberately avoids it:

The possibility exists, of course, that childhood treatment promotes adult persistence. Indeed, a suggestion along these lines has been made that stimulant treatment promotes subsequent drug use disorders among children with ADHD. However, review of long-term adult follow-up studies of patients who, as children, were included in treatment studies shows clearly that childhood stimulant treatment is actually associated with a reduction in adult substance use disorders. Another possibility is that history of treatment sensitizes respondents to the existence of their current residual symptoms, which might actually be substantially higher than in childhood if treatment was discontinued, leading to more accurate reports about those symptoms among respondents with a history of treatment than among those who were not treated in childhood.

With this, the authors move on to other topics, having glossed over a potential problem with the behavioral/stimulant approach. It may be true that treatment for ADHD in children leads to lower rates of substance abuse as adults—but might it also lead to higher rates of ADHD-like symptoms as adults? Is it really convincing to claim that higher rates of

ADHD are due to greater sensitivity to its symptoms? Even if this were true, can a treatment for a psychological disorder be considered successful if those who are treated still believe they suffer from it? And what does this say, if anything, about the capacity of ADHD treatment in children to *reduce* the persistence of ADHD in adults, or to promote human flourishing during childhood and beyond? Such hard questions go unasked and unanswered. Such an oversight, though surprising, is unfortunately characteristic of much of the literature on psychotropic drugs in children, where difficult questions are often carefully avoided.

Given the virtual absence of data regarding long-term consequences of pharmacotherapy, the growing practice of treating children with stimulants, anti-depressants, and even anti-psychotics continues as a vast untracked experiment in clinical neuropharmacology on an absolutely unprecedented scale. The current concern about the possible relationship between psychotropic drugs and suicide in children is only one dimension of a larger, unstudied, potentially disastrous story.

The Pressure to Label

Not surprisingly, schools and daycare centers are the leading catalysts for diagnosis. In nearly 60 percent of cases, teachers are the first to suggest the ADHD diagnosis, though many teachers over-identify children at risk. In one study of teacher perceptions, 72 percent of teachers identified over 5 percent of their students as having ADHD, and fully one-third identified between 16 and 30 percent. Interestingly, rates of identification increased with class size.

Placing teachers in the role of diagnosticians creates a difficult dynamic, in which parents often feel pressured to pursue a formal diagnosis and initiate drug therapy. In our clinic, we have heard from many parents who have been told by teachers or other school officials that a refusal to place their child on stimulants would harm the child's education and undermine the classroom environment. Although legal protections have prevented the most overt forms of coercion, teachers still hold considerable authority, and function as gatekeepers to success through their abilities to assign work, provide grades, and recommend retention.

Problems with diagnosis and treatment also occur in physicians' offices. Studies have shown that in over half of cases where primary care doctors make the diagnosis of ADHD, they do so without following established guidelines or formally assessing the child's attention. One study of children receiving stimulants found that over 40 percent had no docu-

mented diagnosis of ADHD. Another study found that in roughly one quarter of visits in which psychotropic medications were prescribed, there was no associated mental health diagnosis in the patient's chart.

To be fair, primary practitioners face a difficult situation. Most are not trained in alternative approaches to attention problems, and many feel short of other options. They often face desperate parents and suffering kids, and they are expected to "do something" to solve the child's problem within the confines of a ten-minute appointment.

Similar problems occur in the area of autism and autism spectrum disorders. One paper the journal *Pediatrics* showed how Department of Education statistics on autism were compromised by variations in state definitions of the disorder. Oregon, for example, lists autism criteria as simply, "Impairments in social interaction." So defined, autism is little more than "oddism," and any child who differs from peers can be so labeled. Predictably, Oregon has had the highest autism rates in the country—2 to 3 times the national average—since statistics were first kept in the early 1990s. This is not meant to cast aspersions on the diagnosis of autism, which is a legitimate pathophysiologic entity. Rather, it is meant to point out how diagnoses made primarily on the basis of behaviors often undergo a process of diagnostic mission creep. After establishing a beachhead in an area of true impairment, the diagnosis is extended by analogy to include a much greater range of behaviors of far less severity until they shade imperceptibly into normal.

An additional source of difficulty arises when pressures faced by schools and physicians combine to create incentives to label children with specific behavioral diagnoses. The Individuals with Disabilities Education Act (IDEA) has effectively tied school services and insurance payments to a limited set of "funnel diagnoses," like ADHD and autism. Disabilities in reading, math, language, and writing are lumped together under the heading "specific learning disability," and amazingly in many districts these so-called "academic" disabilities will not qualify a child for an individualized education plan while so-called "medical" diagnoses like autism and ADHD will. Two results follow. First, there is often pressure to diagnose a child with ADHD or autism simply to access needed services or accommodations for a learning problem. We see such cases every week—with parents of dyslexic children, for example, told that they could get special help for their kids if they could get them diagnosed with ADHD. The second unwelcome result is that teachers receive lopsided and incomplete training on the nature of children's learning challenges. Autism and ADHD receive star billing, and common disorders like dyslexia or handwriting

impairments often receive little explicit coverage. Consequently, teachers often tell us that they have little idea how to adjust their educational strategies when a student struggles, other than to refer him or her to a learning specialist.

Unfortunately, many learning specialists also receive little training in brain-based cognition and neurodevelopment, and often follow general rather than individualized approaches to helping struggling children. Even many school psychologists have little idea how to diagnose and treat children with neurological injury, dyslexia, visual perceptual problems, or any of the many other conditions that affect the capacity to learn.

All of these factors combine to funnel growing numbers of children into behavioral diagnoses (like ADHD) and onto psychotropic drugs (like stimulants). Between 1994 and 2001, psychotropic drug prescriptions soared for teenagers by 250 percent. By 2001, one in every ten office visits by teenage boys led to a prescription for a psychotropic drug. In testimony before the President's Council on Bioethics in 2003, Dr. Steven E. Hyman speculated that much of this explosion has been driven by inadequately trained primary care practitioners who aren't following guidelines for treatment. While this unquestionably contributes, if it were the major driver in the growing use of psychotropic drugs, we would expect to see many children who'd been placed on medicines by primary practitioners taken off them by psychiatrists and behavioral pediatricians. But we very rarely see this. Instead, specialists typically switch or even add medicines. Although primary care practitioners may sign the majority of prescriptions, they appear to be reflecting the practices of specialist practitioners.

Moral Underdevelopment

The trouble with the current situation is not only academic but moral. A recent article in the *New York Times* on psychotropic self-medication in young adults, entitled "Young, Assured, and Playing Pharmacist to Friends," is obviously not a formal study, but it does offer some important insights into the kinds of habits that can develop in children who grow up taking behavior- and mood-altering drugs. One young adult was quoted as saying "I feel like I have been programmed to think, 'If I feel like this then I should take this pill.'" Notice both the passivity and the sense of mechanism in the phrase "have been programmed." These feelings mark the transfer of causal efficacy from will to pill, where the role of the will is reduced to the agent that picks the mood and selects the drug to reach it.

This is a considerable decline in the will's domain, and a reminder that other things may be lost when control of troubling behaviors or moods is pursued through chemical shortcuts in an attempt to achieve a form of "non-developmental development." Drugs don't teach self-awareness, self-restraint, the ability to delay gratification, persistence, resiliency, or any of the other skills that children need to control their own behavior. Yet developing these traits is one of the crucial missions of education. The goal of teachers and parents should be to help children develop into competent and productive adults, not simply to control their behavior.

Behavioral labels can dramatically affect how adults perceive and behave toward children, by purporting to describe limitations in their abilities, feelings, personal will or agency, and moral capacity. We've had many parents tell us how teachers or therapists, after casually diagnosing autism, have made sweeping pronouncements about their child's cognitive and emotional limitations: like the speech therapist who told one mother that her son's apparent maternal attachment was not true affection, because he had Asperger's syndrome; or the many teachers who ascribe the intense, advanced, and often specialized interests of highly gifted children to the perseveration of autism or the hyperfocus of ADHD, rather than seeing them as healthy manifestations of special intelligence.

Diagnostic labels can also convince parents that their children cannot control or prevent their misbehaviors, which often feeds into the cycle of bad behavior. For example, we failed to convince one highly educated and professionally successful couple that their son, who'd been diagnosed with ADHD and Asperger's syndrome, needed to be disciplined for repeatedly trying to harm his younger sister, rather than simply having his medications adjusted. If misbehavior is always the result of a disease, and pills can make the behaviors go away, then the scope of adult responsibility shrinks to providing the right drugs, rather than disciplining, training, or modifying the home or educational environment.

A Victory for Whom?

One of medicine's most basic ethical principles is that interventions are justified only when they benefit the patient (with rare exceptions, such as when medical inaction places others at serious risk). In the case of children whose ADHD-like behaviors are so severe that they have difficulty functioning in almost any environment—a group most experts would place at between 2 and 3 percent of all children—the benefits of treatment are easier to cite: improved relationships, fewer risky behaviors, and so

forth. But in the much larger group of children whose functional deficits are less severe, the benefits of stimulants are far less clear.

One benefit frequently sought is improved academic performance. Many parents and teachers believe that stimulants can make children better learners. But data demonstrating long-term academic benefits are extremely thin. In the Multimodal Treatment Study of children diagnosed with ADHD, for example, scores on achievement tests were virtually unchanged by stimulants. The sole demonstrable benefit—a one point rise in a reading achievement test—is comparable to a one point rise in IQ. Although stimulants often do make it easier for children to stick with and finish assignments, they don't make them better readers, mathematicians, or historians. Stimulants help children conform better to the schedules and activities they're assigned, but not perform better in the sense of measurable long-term gains in learning. For many parents and teachers who've grown weary of scolding, cajoling, or wrestling with easily distracted youngsters, this can seem like a big victory. But the question is: a victory for whom?

The other key factor in determining the risk/benefit ratio is risk, a factor that cannot be clearly established at present. In all but the most severely affected children, the benefits of stimulants accrue largely to others by controlling behavior, while the potential risks (and clear short-term side effects, including appetite suppression, anxiety, and sleep problems) accrue entirely to the child. In such a setting, "Do no harm" should be given more weight than it usually is. At the very least, the medical community should provide parents with a more complete and more accurate assessment of the realistic benefits and uncertain risks these drugs may cause.

At the same time, parents need to know that there might be therapeutic alternatives. Although chemical states in the brain do influence behaviors and moods, and drugs can influence these chemical states, it's also true that non-medicinal interventions can alter brain chemistry and behavior in desirable ways. Unlike medicines, which largely work only as long as taken, changes induced by new habits, new ways of thinking, and new ways of behaving really do become part of a child's neurological and behavioral fabric. These changes, often cultivated in specific controlled environments, affect the child's general capacities.

And here lies the crucial difference between the behavioral approach and the causal approach to caring for struggling children. The *behavioral paradigm* fails to look deeper into the physiological causes of many learning problems, yet ultimately relies most heavily on purely physiological solutions—like stimulants. The *causal paradigm* tries to break down seem-

ingly similar behavioral problems in terms of their precise physiological and environmental causes; it looks for problems in the child's brain that we can locate and fix with appropriate experience-based therapy, and for problems at home or at school that we might alter or ameliorate by modifying the child's environment. The behavioral approach rules the day, but it often does not serve its supposed beneficiaries.

Positive Neurology

This brings us to the question of the fundamental needs of children. One overwhelming need is an approach to education and development that works with, rather than simply on, their developing nervous systems. In contrast to the behavioral approach, whose disconnect with causation leaves it dependent upon the promise of "better living through chemistry," a more neurologically-based approach holds out the promise of "better chemistry through living": that is, better neurological development and function through targeted experience.

The brain possesses a remarkable capacity to "re-wire" itself in response to experience. By carefully targeting inputs (through teaching, therapy, or play), existing brain pathways can be trained to function more smoothly, old blocks can be bypassed by new learning pathways, and children can master skills that they previously found impossible. By breaking down complex behaviors—like reading, listening, or paying attention—into component functions, then training those functions through targeted experience, researchers have dramatically improved function in the most complex human activities. For example, Dr. Torkel Klingberg and colleagues in Sweden have significantly improved working memory and reduced ADHD-type behaviors using a computer-based training program. For children with reading difficulties—who are often diagnosed with ADHD because of difficulties listening or concentrating on visual materials—researchers like Harold Solan at the State University of New York and Michael Merzenich at the University of California, San Francisco have shown that children can improve their reading skills by interventions that improve visual attention and auditory discrimination.

Work like this should lead us to abandon the view that children with learning and behavioral challenges are simply deficient in various brain functions or chemicals, and see them instead as needing new experiences that can help them learn and function in new ways. A child's brain is remarkably "resource-full," because of its plasticity and diversity of systems. That's why most children with learning and behavior problems can

be greatly helped by reshaping their experiences—by changing the child’s environment at home and at school, and with targeted exercises that aim to improve brain function.

This approach might be called “positive neurology,” in analogy to the positive psychology movement that has shifted that field’s emphasis from relief of mental illness toward pursuit of mental health. A similar trend in neurology, which aimed beyond cataloguing weaknesses to developing strengths, could revolutionize our approach to struggling children. The key is building institutions and providing services that take brain-based differences in learning into account.

Even though children differ markedly in the ways and rates at which they develop, and a given child’s progress may differ greatly in different areas, the expectation of uniformity shapes the curriculum of most schools. It is as if we had adopted a factory farming model, where cacti and orchids were treated just like potatoes. No one would try to raise plants this way, and it works no better with children.

Young boys are particularly likely to be disadvantaged, because auditory processing and motor delays are much more common in males, and often present as difficulties in attention. One-third of five- and six-year-olds cannot process a sentence longer than nine words; so all that’s retained from, “When you need to go to the restroom, raise your hand and wait till I call on you,” will be “when you need to go to the restroom.” It’s easy to see why such children appear impulsive or inattentive. Likewise, children with sensory-motor delays who require frequent movement to stay attentive may suffer learning and behavior problems when classroom schedules require lengthy seated work. Rather than trying to modify children to fit the arbitrary educational frameworks of our schools, we should design our schools to promote healthy neurocognitive development for children with all sorts of learning and processing styles. There is no one right educational approach for all children, and trying to design our institutions as if there were will inevitably cause difficulties.

The Most Basic Skills

One key area in which a more neurologically appropriate understanding is needed is in the concept of basic skills. When we ask educators, “What are basic academic skills?” most cite memorizing the alphabet, learning letter sounds, counting, performing simple calculations, and mastering penmanship. In reality, these academic skills require complex mixtures of many underlying functions. Before children can master ABC or 123, they

must first master many more basic neurological skills, like auditory discrimination, speech-in-noise perception, visual perception, sensory-motor skills, memory and language skills, and attention-related skills like mental focus, motivation, and impulse control.

Normally, these skills are developed through interactions with parents, siblings, and peers. But for some children—often those with impairments in sensory input or the connections that integrate functions—routine activities may be too confusing to stimulate optimal development. These children must have their needs specifically assessed, so lagging functions can be developed through targeted, experience-based treatment. For most children, this will involve the use of highly structured play activities, where incoming patterns are simplified for easier processing, and repetition is used to enhance retention and increase the possibility of forming new associations. For example, for children with deficits in auditory-verbal working memory or sound-processing, computer games have been created that start by delivering simplified sound messages, then require children to process and retain those messages to score points and advance to more difficult levels. Similarly, for children with sensory processing and motor coordination problems that make even casual play with other children extremely difficult, highly simplified activities involving balance, postural muscle control, and bilateral hand and leg interactions can be highly successful.

In general, children would benefit tremendously from a continuing breakdown of the artificial barriers that divide play, education, development, and therapy. Both schools and therapy centers would benefit from an increasing use of technologies that allow sensory inputs to be precisely and repeatedly delivered, feedback to be immediate and direct, and progress to be monitored by not only therapists and teachers but also by the children themselves. This is one area where government can play a vital role, by bringing together experts in education, neurocognitive development, and the software and video game industries to discuss ways in which healthy neurocognitive development can be promoted through educational, therapeutic, and entertainment programs. We are already beginning to see games developed purely for play that can be used therapeutically to improve mental focus, impulse inhibition, and motor control—like the popular *Dance Dance Revolution*, where children imitate movements on a screen by dancing on a pad that registers their movements. By intentionally promoting needed skills, companies like Electronic Arts, Nintendo, Microsoft, and Sony could promote gains in behavioral control undreamed of by Pfizer and Merck.

The key is providing incremental challenges tailored to each child's learning style and adjusted continually through ongoing assessment. When children fail to achieve a critical ratio of success, motivation plummets and they stop trying. After repeatedly facing challenges that demand unmakeable rather than incremental leaps in their exercise of skill, they simply lose heart and give up. But even thoroughly discouraged children can be reinvigorated by success. We often see children who had given up on reading or math work hard on demanding remediative therapies once they've seen how small successes build in a stepwise fashion. Success breeds success by developing a taste for mastery. Research has shown that mental focus increases dramatically in children who have been diagnosed with ADHD when they are given meetable challenges, and deteriorates both when challenges are unmeetable, or—crucially—not challenging enough.

From Better Medicine to De-Medicalization

Of course, such an approach—better chemistry through living—is more demanding than writing prescriptions for Ritalin. And we are not naïve enough to believe that every child will ever get access to the best brain-based teachers and therapists, or that parents will become experts in brain-based learning. Yet we do believe that the time has come to move beyond the behavioral approach, to lessen our dependence on pharmacotherapy, and to seek more precise ways to help struggling kids. The development of a child's mind is a kind of unfolding or flowering that we can't wholesale create but can nurture into fullest bloom. The metaphor is the garden, not the factory farm and certainly not the neurochemist's laboratory. This approach demands a commitment both to *better medicine* and to the *de-medicalization of childhood*—a commitment to uncovering the brain-based causes of many behavioral problems, and a recognition that many children whom we now classify as sick are really healthy. They are failing because we are failing them, not because of the brains and bodies nature has given them.