RUNNING FROM RITALIN

Is the hectic pace of contemporary life really to blame for A.D.D.? Not so fast.

BY MALCOLM GLADWELL

THERE has always been a temptation in American culture to think of drugs as social metaphors. In the early sixties, the pharmaceutical metaphor for the times was Valium. During the sexual revolution, it was the Pill, and that was followed, in quick succession, by marijuana in the nineteen-seventies, cocaine in the nineteen-eighties, and Prozac in the early nineteen-nineties. Today, of course, the drug that has come to symbolize our particular predicaments is Ritalin, the widely prescribed treatment for attention-deficit hyperactivity disorder, or attention-deficit disorder, as it is more popularly known. In his new book, "The Hyperactivity Hoax," the neuropsychiatrist Sydney Walker calls attention disorders and the rise of Ritalin "symptoms of modern life, rather than symptoms of modern disease." In "Ritalin Nation" the psychologist Richard DeGrandpre argues that Ritalin and A.D.H.D. are the inevitable by-products of a culture-wide addiction to speed—to cellular phones and beepers and faxes and overnight mail and computers with powerful chips and hard-driving rock music and television shows that splice together images at hundredth-of-a-second intervals, and a thousand other social stimulants that have had the effect of transforming human expectations. The soaring use of Ritalin, the physician Lawrence Diller concludes in his new book, "Running on Ritalin,"

> reveals something about the kind of society we are at the turn of the millennium. . . . It throws a spotlight on some of our most sensitive issues: what kind of parents we are, what kind of schools we have, what kind of health care is available to us. It brings into question our cultural standards for behavior, performance, and punishment; it reaches into the workplace, the courts and the halls of Congress. It highlights the most basic psychological conundrum of nature versus nurture, and it raises fundamental philosophical questions about the nature of free will and responsibility.

In a recent *Time* cover story on Ritalin, the mother of a child with A.D.H.D. is described as tearing up her daughter's Ritalin prescription. "I thought, maybe there is something else we can do," she says. "I knew that medicine can mask things." That is the kind of question that Ritalin provokes—not the simple, traditional "Will this cure my child?" but the harder, postmodern question "In curing my child, what deeper pathology might this drug be hiding?"

It's important that we ask questions like this, particularly of drugs that are widely used. The problem with Ritalin is that many of the claims made to support the drug's status as a symbol turn out, on closer examination, to be vague or confusing. Diller, DeGrandpre, and Walker are all, for example, deeply suspicious of our reliance on Ritalin. They think that it is overprescribed—that it is being used to avoid facing broader questions about our values and our society. This sounds plausible: the amount of Ritalin consumed in the United States has more than tripled since 1990. Then again, it has been only in the last ten years that clinical trials have definitively proved that Ritalin is effective in treating A.D.H.D. And, even with that dramatic increase, the number of American children taking Ritalin is estimated to be one or two per cent. Given that most estimates put the incidence of A.D.H.D. at between three and five per cent, are too many children taking the drug—or too few? "You really run into problems with teen-agers," William Pelham, a professor of psychology at SUNY Buffalo and a prominent A.D.H.D. expert, told me. "They don't want to take this medication. They don't feel they need to. It's part of the oppositional stuff you run into. The kids whom you most want to take it are the ones who are aggressive, and they are the most likely to blow it off."

Or consider how A.D.H.D. is defined. According to the Diagnostic and Statistical Manual-IV, a child has A.D.H.D. if, for a period of six months, he or she exhibits at least six symptoms from a list of behavioral signs. Among them: "often has difficulty organizing tasks and activities," "often does not seem to listen when spoken to directly," "is often easily distracted by extraneous stimuli," "is often 'on the go' or acts as if 'driven by a motor,'" and "often blurts out answers before questions have been completed," and so on. "Ritalin Nation" argues that all these are essentially symptoms of boredom—the impatience of those used to the rapid-fire pace of MTV, Nintendo, and the rest of contemporary culture. The A.D.H.D. child blurts out answers before questions have been completed because, DeGrandpre says, "listening is usually a waiting situation that provides a low level of stimulation." The A.D.H.D. child is easily distracted because, "by definition, extraneous stimuli are novel." Give A.D.H.D. kids something novel to do, something that can satisfy their addiction, DeGrandpre argues, and they'll be fine. Diller works with a different definition of A.D.H.D. but comes to some of the same conclusions. High-stimulus activities like TV and video games "constitute a strange sort of good-fit situation for distractible children," he writes. "These activities are among the few things they *can* concentrate on well."

WHEN A.D.H.D. kids are actually tested on activities like video games, however, this alleged "good fit" disappears. Rosemary Tannock, a behavioral scientist at the Hospital for Sick Children, in Toronto, recently looked at how well a group of boys between the ages of eight and twelve actually did at PacMan and Super Mario World, and she found that the ones with A.D.H.D. completed fewer levels and had to re-start more games than their unaffected peers. "They often failed to inhibit their forward trajectory and crashed headlong into obstacles," she explained. A.D.H.D. kids may like the stimulation of a video game, but that doesn't mean they can handle it. Tannock has also given a group of A.D.H.D. children what's called a letter-

Since far more children have attention disorders than take Ritalin, why are we so sure that the drug is overprescribed?

naming test. The child is asked to read as quickly as he can five rows of letters, each of which consists of five letters repeated in different orders—"A, B, C, D, E," for example, followed by "D, E, B, A, C," and so on. A normal eight-year-old might take twenty-five seconds to complete the list. His counterpart with attention deficit might take thirty-five seconds, which is the kind of performance usually associated with dyslexia. "Some of our most articulate [A.D.H.D.] youngsters describe how doing this test is like speaking a foreign language in a foreign land," Tannock told me. "You get exhausted. That's how they feel. They have a thousand different ideas crowding into their heads at the same time." This doesn't sound like a child attuned to the quicksilver rhythms of the modern age. This sounds like a garden-variety learning disorder.

What further confounds the culture-of-Ritalin school is that A.D.H.D. turns out to have a considerable genetic component. As a result of numerous studies of twins conducted around the world over the past decade, scientists now estimate that A.D.H.D. is about seventy per cent heritable. This puts it up there with the most genetically influenced of traits—traits such as blood pressure, height, and weight. Meanwhile, the remaining thirty per cent—the environmental contribution to the disorder—seems to fall under what behavioral geneticists call "non-shared environment," meaning that it is likely to be attributable to such factors as fetal environment or illness and injury rather than factors that siblings share, such as parenting styles or socioeconomic class. That's why the way researchers describe A.D.H.D. has changed over the past decade. There is now less discussion of the role of bad parents, television, and diet and a lot more discussion of neurology and the role of specific genes.

This doesn't mean that there is no social role at all in the expression of A.D.H.D. Clearly, something has happened to make us all suddenly more

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aware of the disorder. But when, for instance, Diller writes that "the conditions that have fueled the A.D.D. epidemic and the Ritalin boom" will not change until "America somehow regains its balance between material gain and emotional and spiritual satisfaction," it's clear that he is working with a definition of A.D.H.D. very different from that of the scientific mainstream. In fact, books like "Running on Ritalin" and "Ritalin Nation" don't seem to have a coherent definition of A.D.H.D. at all. This is what is so confusing about the popular debate over this disorder: it's backward. We've become obsessed with what A.D.H.D. means. Don't we first have to figure out what it is?

ONE of the tests researchers give to children with A.D.H.D. is called a stop-signal task. A child sits down at a computer and is told to hit one key if he sees an "X" on the screen and another key if he sees an "O." If he hears a tone, however, he is to refrain from hitting the key. By changing the timing of the tone—playing it just before or just as or just a millisecond after the "X" or "O" appears on the screen—you can get a very good idea of how well someone reacts. "Kids with A.D.H.D. have a characteristically longer reaction time," Gordon Logan, a cognitive psychologist at the University of Illinois, told me. "They're fifty per cent slower than other kids." Unless the tone is played very early, giving them plenty of warning, they can't stop themselves from hitting the keys.

The results may seem a relatively trivial matter—these are differences measured in fractions of a second, after all. But for many researchers the idea that children with A.D.H.D. lack some fundamental ability to inhibit themselves, to stop a pre-programmed action, is at the heart of the disorder. Suppose, for example, that you have been given a particularly difficult math problem. Your immediate, impulsive response might be to throw down your pencil in frustration. But most of us wouldn't do that. We would check those impulses, and try to slog our way through the problem, and, with luck, maybe get it right. Part of what it takes to succeed in a complex world, in other words, is the ability to inhibit our impulses. But the child with A.D.H.D., according to the official diagnosis, "often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace" and "often runs about or climbs excessively in situations in which it is inappropriate." He cannot apply himself because he cannot regulate his behavior in a consistent manner. He is at the mercy of the temptations and distractions in his immediate environment. "It's not that a child or an individual is always hyperactive or always inattentive or distracted," Tannock says. "The same individual can one minute be restless and fidgeting or the next minute lethargic or yawning. The individual can be overfocussed one minute and incredibly distractible the next. It is this variability, from day to day and moment to moment, that is the most robust finding we have."

Russell Barkley, a professor of psychiatry at the University of Massachusetts at Worcester, has done experiments that look at the way A.D.H.D. kids experience time, and the results demonstrate how this basic problem with self-regulation can have far-reaching consequences. In one experiment, he turns on a light for a predetermined length of time and then asks a child to turn the light back on and off for what the child guesses to be the same interval. Children without A.D.H.D. perform fairly consistently. At twelve seconds, for example, their guesses are just a little low. At thirty-six seconds, they are slightly less accurate—still on the low side—and at sixty seconds their guesses are coming in at about fifty seconds. A.D.H.D. kids, on the other hand, are terrible at this game. At twelve seconds, they are well over; apparently, twelve seconds seems much, much longer to them. But at sixty seconds their guesses are much lower than everyone else's; apparently, the longer interval is impossible to comprehend. The consequences of having so profoundly subjective a sense of time are obvious. It's no surprise that people with A.D.H.D. often have problems with punctuality and with patience. An accurate sense of time is a function of a certain kind of memory—an ability to compare the duration of ongoing events with that of past events, so that a red light doesn't seem like an outrageous imposition, or five minutes doesn't seem so impossibly long that you can imagine getting from one side of town to the other in that

amount of time. Time is about imposing order, about exercising control over one's perceptions, and that's something that people with attention deficit have trouble with.

This way of thinking about A.D.H.D. clarifies some of the more confusing aspects of the disorder. In DeGrandpre's formulation, the A.D.H.D. child can't follow through on instructions or behaves inappropriately because there isn't enough going on in his environment. What the inhibition theory implies is the opposite: that the A.D.H.D. child can't follow through or behaves inappropriately because there is too much going on; he falters in situations that require him to exercise self-control and his higher cognitive skills. DeGrandpre cannot explain why A.D.H.D. kids like video games but are also so bad at them. Shouldn't they thrive in that most stimulating of environments? If their problem is self-control, that apparent contradiction makes perfect sense. The A.D.H.D. child likes video games because they permit—even encourage—him to play impulsively. But he's not very good at them because to succeed at PacMan or Super Mario World a child must learn to overcome the temptation posed by those games to respond impulsively to every whiz and bang: the child has to learn to stop and think (ever so quickly) before reacting.

At the same time, this theory makes it a lot clearer what kind of problem A.D.H.D. represents. The fact that children with the disorder can't finish the hard math problem doesn't mean that they're not smart enough to know the answer. It means they can't focus long enough to get to the answer. As Barkley puts it, A.D.H.D. is a problem not of knowing what you should do but, rather, of doing what you know. Motivation and memory and higher cognitive skills are intact in people with attention deficit. "But they are secondarily delayed," Barkley says. "They have no chance. They are rarely engaged and highly ineffective, because impulsive actions take precedence." The inability to stop pressing that "X" or "O" key ends up causing much more serious problems down the road.

This way of thinking about A.D.H.D. also demystifies Ritalin. Implicit in the popular skepticism about the drug has always been the idea that you cannot truly remedy something as complicated as A.D.H.D. with a pill. That's why the mother quoted in the *Time* story ripped up her child's Ritalin prescription, and why Diller places so much emphasis on the need for "real" social and spiritual solutions. But if A.D.H.D. is merely a discrete problem in inhibition why couldn't Ritalin be a complete solution? People with A.D.H.D. don't need a brain overhaul. They just need a little help with stopping.

THERE is another way to look at the A.D.H.D.-Ritalin question, which is known as the dopamine theory. This is by no means a conclusive account of A.D.H.D., but it may help clarify some of the issues surrounding the disorder. Dopamine is the chemical in the brain—the neurotransmitter—that appears to play a major role in things like attention and inhibition. When you tackle a difficult task or pay attention to a complex social situation, you are essentially generating dopamine in the parts of the brain that deal with higher cognitive tasks. If you looked at a thousand people at random, you would find a huge variation in their dopamine systems, just as you would if you looked at, say, blood pressure in a random population. A.D.H.D., according to this theory, is the name we give to people whose dopamine falls at the lower end of the scale, the same way we say that people suffer from hypertension if their blood pressure is above a certain point. In order to get normal levels of attention and inhibition, you have to produce normal levels of dopamine.

This is what Ritalin does. Dopamine is manufactured in the brain by special receptors, and each of those receptors has a "transport," a kind of built-in vacuum cleaner that sucks up any excess dopamine floating around and stores it inside the neuron. Ritalin shuts down that transport, so the amount of dopamine available for cognition remains higher than it would be otherwise. In about sixty-five per cent of those who take the drug, Ritalin appears to make them "normal," and in an additional ten per cent it appears to bring about substantial improvement. It does have a few minor side effects—appetite loss and insomnia, in some users—but by and large it's a remarkably safe drug, with remarkably specific effects.

So what does the fact that we seem

BRIEFLY NOTED

THE TESSERACT, by Alex Garland (Riverhead; $24.95). A misunderstanding between a Filipino Mafia lord and a jittery English merchant briefly brings together disparate characters in Manila, among them Jojo, the don's sensitive henchman; Rosa, a young doctor who lives with her family in the suburbs; and Alfredo, a heartbroken psychologist who pays to hear the dreams of the city's street children. Garland is a gifted storyteller whose use of language is reminiscent of Graham Greene's. His ambitious second novel is like the charm carried by one of its characters: at once consoling and intoxicatingly alien.

IN THE POND, by Ha Jin (Zoland; $20). When Shao Bin, in post-Cultural Revolution China, is not among the chosen few for new housing, his wife berates him for not bribing the powers that be. Instead, Bin, a factory worker with a talent for cartooning, takes aim against the bosses' corruption and gets his cartoons published. Not surprisingly, the clownishly wicked bosses maintain an arsenal for zapping such gnats, and it seems that the war can have only the grimmest conclusion. But the author is as resourceful as his hero, and the simplicity of the narrative proves deceptive.

THE VINTNER'S LUCK, by Elizabeth Knox (Farrar, Straus & Giroux; $23). In this wily novel, Sobran, a successful Burgundian winemaker whose wayward youth was spent in Napoleon's Grand Army, comes to regard his luck as a matter of individual will rather than divine intervention—a radical thought at the time. But in Knox's ingenious take on the consequences of the Enlightenment, Sobran manages to turn away from the church and adopt empirical techniques in his winemaking only with the help of a clandestine lifelong friend, who is, plausibly enough, an angel.

SISTER OF MY HEART, by Chitra Banerjee Divakaruni (Doubleday; $23.95). Cousins Sudha and Anju—one fair, one plain, both fatherless—are raised amid the ruins of the Chatterjee fortune. The fairy-tale plot is thick with boldface secrets and surmises: Will Sudha elope with her true love? Will Anju escape Calcutta and be allowed to go to college? But Divakaruni's gift asserts itself in her moving portraits of Gouri, Nalini, and Pishi, the three acrimonious women—sharp-tongued one minute, compassionate the next—who bring the girls up.

THE GIRL WITH THE GOLDEN EYES, by Honoré de Balzac, translated from the French by Carol Cosman (Carroll & Graf; $17.95). Gender politics may be the reason for this new translation of Balzac's 1835 novella, from his trilogy "History of the Thirteen": its tale of jealous rivalry involves lesbianism. A beautiful, nobly born fellow meets a gorgeous exotic who turns out to have been sold into sexual slavery. They have a mad, and then a madder, night of love before her female owner appears. Best, though, is the chilling finale, when the hot-blooded rivals display hearts of ice.

to be relying more and more on Ritalin mean? The beginning of the answer, I think, lies in the fact that Ritalin is not the only drug in existence that enhances dopamine. Cocaine affects the brain in almost exactly the same way. Nicotine, too, is a dopamine booster, although its mechanism is somewhat different. Obviously, taking Ritalin doesn't have the same consequences as snorting cocaine or smoking a cigarette. It's not addictive, and its effect is a lot more specific. Still, nicotine, cocaine, and Ritalin are all performing the same basic neurological function.

What, for instance, was the appeal of cocaine at the beginning of the coke epidemic of the eighties? It was a feel-good drug. But it was a feel-good drug of a certain kind—a drug that people thought would help them master the complexity and the competitive pressures of the world around them. In the now infamous *Time* story on cocaine that ran in the summer of 1981, there is a picture of a "freelance artist" in Manhattan doing lines on his lunch break, with the caption "Feeling stronger, smarter, faster, more able to cope." Cocaine, the article begins, "is becoming the all-American drug," and its popularity, in the words of one expert, is a symptom of the fact that "right from childhood in this country there is pressure for accomplishment." At the moment of its greatest popularity, cocaine was considered a thinking drug, an achievement drug, a drug for the modern world. Does that sound familiar?

Nicotine has a similar profile. Cigarettes aid concentration. Understandably, this isn't a fact that has received much publicity in recent years. But there are plenty of data showing that nicotine does exactly what you would expect a dopamine enhancer to do. In one experiment, for example, smokers were given three minutes to read randomly ordered letters, in rows of thirty, and cross out the letter "e" every time they encountered it. The smokers took the test twice, before and after smoking a cigarette, and, on average, they were able to read 161.5 more letters—or more than five extra lines—after smoking than before. It's no surprise that this test sounds a lot like the test that A.D.H.D. kids do so poorly on, because we are really talking about the same set of cognitive skills—the ability to concentrate and screen out distractions. Numerous studies have shown that children with A.D.H.D. are much more likely to smoke and take illegal drugs in later life; what the dopamine theory suggests is that many people resort to such substances as a way of medicating themselves. Nora Volkow, the chairman of medicine at Brookhaven National Laboratory, says that between ten and twenty per cent of drug addicts have A.D.H.D. "In studies, when they were given Ritalin they would stop taking cocaine," she told me. Timothy Wilens, a psychiatrist at Harvard Medical School, presented data at a recent National Institutes of Health conference on A.D.H.D. which showed that treating A.D.H.D. kids with Ritalin and the like lowered the risk of their developing drug problems in adolescence by an extraordinary sixty-eight per cent. Among people with dopamine deficits, Ritalin is becoming a safe pharmaceutical alternative to the more dangerous dopamine boosters of the past.

Here, surely, is one of the deeper implications of the rise of Ritalin—particularly among adults, whose use of the drug has increased rapidly in recent years. For decades, in this country and around the world, millions of people used smoking as a way of boosting their dopamine and sharpening focus and concentration. Over the past twenty years, we have gradually taken away that privilege, by making it impossible for people to smoke at work and by marshalling an array of medical evidence to convince people that they should not start at all. From a public-health standpoint, this has been of critical importance: countless lives have been saved. But the fact remains that millions of people have lost a powerful pharmacological agent—nicotine—that they had been using to cope with the world around them. In fact, they have lost it precisely at a moment when the rising complexity of modern life would seem to make dopamine enhancement more important than ever. Among adults, Ritalin is a drug that may fill the void left by nicotine.

Among children, Ritalin is clearly performing a similar function. We are extending to the young cognitive aids of a kind that used to be reserved exclusively for the old. It is this reliance on a drug—the idea that children should have to be medicated—that, of course, people like Diller, Walker, and DeGrandpre find so upsetting. If some children need to take a drug in order to be "normal," they think that the problem is with our definition of "normal." Diller asks, "Is there still a place for childhood in the anxious, downsizing America of the late nineteen-nineties? What if Tom Sawyer or Huckleberry Finn were to walk into my office tomorrow? Tom's indifference to schooling and Huck's 'oppositional' behavior would surely have been cause for concern. Would I prescribe Ritalin for them, too?" But this is just the point. Huck Finn and Tom Sawyer lived in an age where difficult children simply dropped out of school, or worked on farms, or drifted into poverty and violence. The "childhood" Diller romanticizes was a ruthlessly Darwinian place, which provided only for the most economically—and genetically—privileged. Children are now being put into situations that demand attention and intellectual consideration, and it is no longer considered appropriate simply to cast aside those who because of some neurological quirk have difficulty coping. Only by a strange inversion of moral responsibility do books like "Ritalin Nation" and "Running on Ritalin" seek to make those parents and physicians trying to help children with A.D.H.D. feel guilty for doing so. The rise of A.D.H.D. is a consequence of what might otherwise be considered a good thing: that the world we live in increasingly values intellectual consideration and rationality—increasingly demands that we stop and focus. Modernity didn't create A.D.H.D. It revealed it. ♦

POWER PLAY

"We all have knives. It is 1183, and we're barbarians," Eleanor of Aquitaine says to her sons, in "The Lion in Winter," James Goldman's 1966 black comedy about the bitter dealings of an early royal family. In a Roundabout Theatre staging that begins February 17th, Stockard Channing and Laurence Fishburne bring fresh blood to the roles of the imprisoned queen and her beleaguered Plantagenet king, Henry II, who nearly destroy each other trying to choose an heir to the throne from their ruthless brood (which includes King John of Magna Carta fame and Richard the Lion-Hearted).

Photograph by Max Vadukul