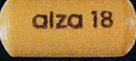


# PILLS FOR CHILDREN: HOW THEY WO

	HOW IT WORKS	SIDE EFFECTS	TESTED/ APPROVED
 <b>ADDERALL</b>	A once-a-day amphetamine, it puts the brake on areas of the brain responsible for organizing thoughts	Rapid heartbeat, high blood pressure and, in rare cases, overstimulation. It can also become addictive	 Approved to treat ADHD in children 3 and older
 <b>CONCERTA</b>	It keeps neurons bathed in norepinephrine and dopamine, which reduce hyperactivity and inattention	Headache, stomach pain, sleeplessness and, in rare cases, overstimulation	 Approved to treat ADHD in children 6 and older
 <b>STRATTERA</b>	Approved a year ago, it's the first nonstimulant for ADHD; it enhances norepinephrine levels in the brain	Decreased appetite, fatigue, nausea, stomach pain	 Approved to treat ADHD in children 6 and older
 <b>RITALIN</b>	Its active agent, methylphenidate, stimulates the brain to filter and prioritize incoming information	Headache, lack of appetite, irritability, nervousness, insomnia	 Approved to treat ADHD in children 6 and older
<b>METHYPATCH</b>	The patch form of the stimulant methylphenidate, it delivers continuous low doses through the skin	Similar to those for oral methylphenidate	Developed to treat ADHD, but the FDA has deemed drug "unapprovable" until further studies are completed
 <b>PROZAC</b>	Approved in 1987, it was the first anti-depressant aimed at regulating serotonin, a brain chemical involved in mood	Insomnia, anxiety, nervousness, weight loss, mania	 Approved to treat depression and OCD in children 7 and older

## Inside the brain

### Frontal lobe

Organizes and plans, as well as controls movement

■ Depression, ADHD, OCD

Limbic system

### Basal ganglia

Control anxiety level, coordinate motor behaviors

■ Anxiety, OCD, depression, panic, bipolarity

### Hippocampus

Essential to formation of memories and higher learning

■ Depression, anxiety, panic, bipolarity

### Putamen

Involved in regulating motor functions and attention

■ ADHD

### Amygdala

Hub of fear and emotions

■ Depression, anxiety, panic, post-traumatic stress

alcohol and drugs. Kids with severe and untreated ADHD have been linked, according to some studies, to higher rates of substance abuse, dropping out of school and trouble with the law. Bipolar kids have a tendency to injure and kill themselves and others with uncontrolled behavior like brawling or reckless driving. They are also more prone to suicide.

Which is why Teresa Hatten of Fort Wayne, Ind., hesitated little when it came time to put her granddaughter Monica on medication. Hatten's grown daughter, Monica's mom, suffers from bipolar disorder, and so does Monica, 13. To give Monica a chance at a stable upbringing, Hatten took on the job of raising her, and

one of the first things she had to do was get the violent mood swings of the bipolar disorder under control. It's been a long, tough slog. An initial drug combination of Ritalin and Prozac, prescribed when Monica was 6, simply collapsed her alternating depressed and manic moods into a single state with sad and wild features. By the time she was 8, her behavior was so unhinged, her school tried to expel her. Next Monica was switched to Zyprexa, an antipsychotic, that led to serious weight gain. "At 12 years old she had stretch marks," says Hatten. Now, a year later, Monica is taking a four-drug cocktail that includes Tegretol, an anticonvulsant, and Abilify, an antipsychotic. That, at last, seems to have solved

the problem. "She's the best I've ever seen her," says Hatten. "She's smiling. Her moods are consistent. I'm cautiously optimistic." Monica agrees: "I'm in a better mood." Next up in the family's wellness campaign: Monica's 8-year-old cousin Jamari, who is on Zyprexa for a mood disorder.

All along the disorder spectrum there are such pharmacological success stories. In the October issue of the *Archives of General Psychiatry*, Dr. Mark Olfson of the New York State Psychiatric Institute reports that every time the use of antidepressants jumps 1%, suicide rates among kids 10 to 19 decrease, although only slightly. But that doesn't include the nonsuicidal depressed kids whose misery is eased thanks to the same pills.

WE KNOW THAT FRONTAL LOBES, WHICH MANAGE BOTH FEELING



## Joel Flynn, 14

**HOMETOWN** Jefferson City, Mo.

**BIO** He may not look it, but Joel feels the drug he takes for his ADHD has flattened his personality some. That's a price the straight-A student is willing to pay, given that when his condition was diagnosed, at age 6, his fidgetiness made it impossible for him to play baseball, much less do schoolwork. The drug that calms him is, paradoxically, a stimulant

tions, particularly the selective serotonin reuptake inhibitors (SSRIs), or antidepressants. These have been rolled out with highly visible, to-the-consumer ad campaigns. While an earlier generation of antidepressants—tricyclics like Tofranil—didn't work in kids, SSRIs do. According to a study by Professor Julie Zito of the University of Maryland School of Pharmacy, use of antidepressants among children and teens increased threefold between 1987 and 1996. And that use continues to climb.

Nobody, not even the drug companies, argues that pills alone are the ideal answer to mental illness. Most experts believe that

drugs are most effective when combined with talk therapy or other counseling. Nonetheless, the American Academy of Child and Adolescent Psychiatry now lists dozens of medications available for troubled kids, from the comparatively familiar Ritalin (for ADHD) to Zoloft and Celexa (for depression) to less familiar ones like Seroquel, Tegretol, Depakote (for bipolar disorder), and more are coming along all the time. There are stimulants, mood stabilizers, sleep medications, antidepressants, anticonvulsants, antipsychotics, anti-anxieties and narrowcast drugs to deal with impulsiveness and post-traumatic flashbacks. A few of the newest meds were developed or approved specifically for kids. The majority have been okayed for adults only, but are being used "off label" for younger and younger patients at children's menu doses. The practice is common and perfectly legal but potentially risky. "We know that kids are not just little adults," says Dr. David Fassler, professor of psychiatry at the University of Vermont. "They metabolize medications differently."

Within the medical community—to say nothing of the families of the troubled kids—

concern is growing about just what psychotropic drugs can do to still developing brains. Few people deny that mind pills help—ask the untold numbers who have climbed out of depressive pits or shaken off bipolar fits thanks to modern pharmacology. But few deny either that we're a quick-fix culture, and if you give us a feel-good answer to a complicated problem, we'll use it with little thought of long-term consequences.

"The problem," warns Dr. Glen Elliott, director of the Langley Porter Psychiatric Institute's children's center at the University of California, San Francisco, "is that our usage has outstripped our knowledge base. Let's face it, we're experimenting on these kids without tracking the results."

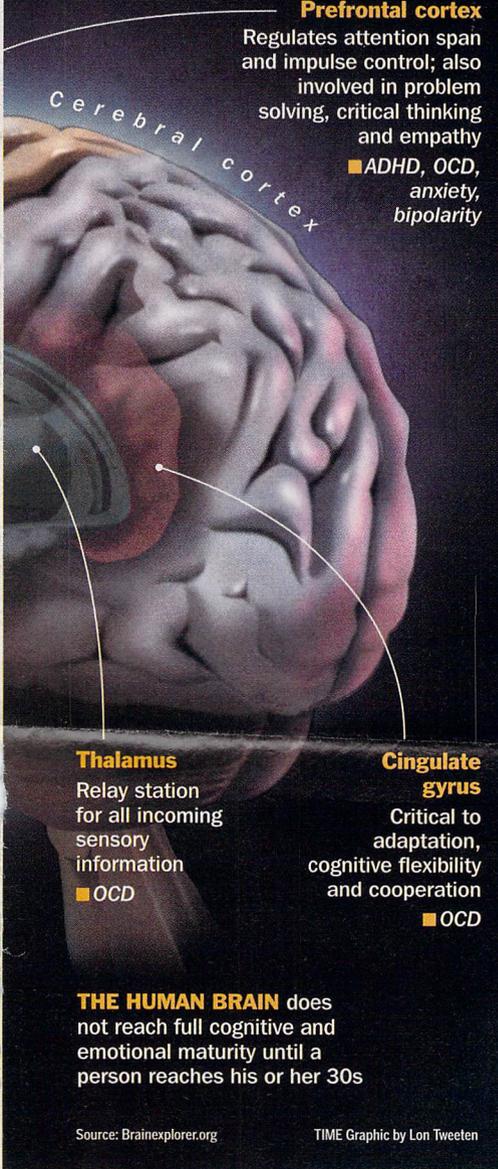
### THE CASE FOR MEDICATION

THOSE EXPERIMENTS, HOWEVER, ARE OFTEN driven by dire need. When a child is suffering or suicidal, is it fair not to turn to the prescription pad in conjunction with therapy? Is it even safe? Untreated depression has a lifetime suicide rate of 15%—with still more deaths caused by related behaviors like self-medicating with

**OUR KNOWLEDGE BASE. WE'RE LEARNING WHAT THESE DRUGS ARE  
T'S FACE IT: WE'RE EXPERIMENTING ON THESE KIDS.™**

—DR. GLEN ELLIOTT,  
UCSF Psychiatric Institute

Children are just as vulnerable as adults to mental illness. But though the pharmaceutical pantry is filling up with more medications designed and tested for kids, in some cases they still have to settle for smaller doses of drugs made for adults



**Prefrontal cortex**

Regulates attention span and impulse control; also involved in problem solving, critical thinking and empathy

■ ADHD, OCD, anxiety, bipolarity

Cerebral cortex

**Thalamus**

Relay station for all incoming sensory information

■ OCD

**Cingulate gyrus**

Critical to adaptation, cognitive flexibility and cooperation

■ OCD

**THE HUMAN BRAIN** does not reach full cognitive and emotional maturity until a person reaches his or her 30s

Source: Brainexplorer.org

TIME Graphic by Lon Tweeten

	HOW IT WORKS	SIDE EFFECTS	TESTED/ APPROVED
 <b>ZOLOFT</b>	It enhances the levels of serotonin in the brain to maintain feelings of satisfaction and stability	Upset stomach, dry mouth, agitation, decreased appetite	Not approved for kids but prescribed peditrically based on adult data for depression, anxiety, OCD and others
 <b>PAXIL</b>	Like Prozac and Zoloft, it elevates levels of serotonin in the brain	Nausea, drowsiness, insomnia	Not approved for kids but prescribed peditrically based on adult data for depression, anxiety, OCD and others
 <b>EFFEXOR</b>	It targets two brain chemicals, serotonin and norepinephrine, to regulate mood	Nausea, constipation, nervousness, loss of appetite, drowsiness	Not approved for kids, but doctors prescribe it for childhood depression based on adult data
 <b>DEPAKOTE</b>	This antiseizure medication is particularly effective in treating the grandiose, hyperagitated state of mania	Liver and white blood cell abnormalities, headache, nausea, drowsiness	Not approved for kids, but many doctors use it to treat childhood bipolar mania and seizures
 <b>ZYPREXA</b>	It's a mood stabilizer designed to balance levels of serotonin and dopamine in the brain	Weight gain, drowsiness, dry mouth, seizures	Not approved for kids, but many doctors use it to treat childhood bipolar mania and schizophrenia
 <b>LITHIUM</b>	It stabilizes the episodes of elated, intensely joyous moods associated with mania	Nausea, loss of appetite, trembling of the hands	Not approved for kids, but many doctors use it to treat childhood bipolar mania

**ARE WE MEDDLING WITH NORMAL DEVELOPMENT?**

FOR CHILDREN WITH LESS SEVERE PROBLEMS—children who are somber but not depressed, antsy but not clinically hyperactive, who rely on some repetitive behaviors for comfort but are not patently obsessive compulsive—the pros and cons of using drugs are far less obvious. “Unless there is careful assessment, we might start medicating normal variations [in behavior],” says Stephen Hinshaw, chairman of psychology at the University of California, Berkeley.

The world would be a far less interesting place if all the eccentric kids were medicated toward some golden mean. Besides, there are just too many unanswered questions

about giving mind drugs to kids to feel comfortable with ever broadening usage. What worries some doctors is that if you medicate a child’s developing brain, you may be burning the village to save it. What does any kind of psychopharmacological meddling do, not just to brain chemistry but also to the acquisition of emotional skills—when, for example, antianxiety drugs are prescribed for a child who has not yet acquired the experience of managing stress without the meds? And what about side effects, from weight gain to jitteriness to flattened personality—all the things you don’t want in the social crucible of grade school and, worse, high school.

Adding to the worries is a growing body of knowledge showing just how in-

completely formed a child’s brain truly is. “We now know from imaging studies that frontal lobes, which are vital to executive functions like managing feelings and thought, don’t fully mature until age 30,” says Hinshaw. That’s a lot of time for drugs to muck around with cerebral clay.

For that reason, it may not always be worth pulling the pharmacological rip cord, particularly when symptoms are relatively mild. Child psychologists point out that often nonpharmaceutical treatments can reduce or eliminate the need for drugs. Anxiety disorders such as phobias can respond well to behavioral therapy—in which patients are gently exposed to graduated levels of the very things they fear until

**AND THOUGHT, DON'T FULLY MATURE UNTIL AGE 30.**

—STEPHEN HINSHAW, University of California