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## Science tries to find secrets of teen brains

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### Media Assistance:

**Jim Dryden**

Assoc. Dir. of Broadcast  
Services

[jdryden@wustl.edu](mailto:jdryden@wustl.edu)

(314) 286-0110

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By Tina Hesman and Matt Franck  
St. Louis Post-Dispatch

New brain research is shattering assumptions held for generations about the adolescent mind, fueling a battle over teen mental health, the rights of parents and the effectiveness of treatment.

The findings are forcing scientists to redraw the line between normal teen behavior and severe mental illness, while questioning how the brain truly develops.

The picture that's emerging is a teen brain not merely awash in a brief tide of hormones but also in the middle of a tumultuous overhaul.

Those transitions, scientists now believe, are so significant that they may unlock the mysteries of mental illness, explaining why some teens take their own lives, why others harm their classmates and loved ones, or why some emerge later in life with crippling mental disorders.

The research - much of it published a year ago - already looks forward to a day when teens could be tested for suicidal depression as easily as they are for diabetes.

But already there are signs that society, and parents in particular, would reject such a tool.

Efforts to offer even the most basic mental health questionnaire to high school students have been met with fierce resistance nationwide. Critics have attacked state and federal calls for increased screening, most notably in Illinois.

Those actions are fed by a belief that millions of children have wrongly been medicated to control their behavior. Many parents question the validity of a mental health diagnosis, fearing that their children have been or will be falsely tagged with a stigma they'll never outgrow. At the center of the controversy is the teen brain, its confounding architecture and the profound question of what's typical in a teen and what's not.

"Behavior that's normal in a 13-year-old, most of us would call pathological in a 30-year-old," said Joseph Parks, medical director for the Missouri Department of Mental Health. "But where do you make the cutoff?"

Under the old thinking, the adolescent brain was fully formed, needing only to be filled with facts, figures and experiences to become an adult mind.



Karen Elshout, Post-Dispatch

Robin Harris holds a blanket that belonged to her daughter, Kaitlyn, a teen whose depression led her to kill herself.

At the same time, many people rejected the idea that young people were even capable of developing mental illnesses.

"You couldn't even get the diagnosis until about the mid-(19)80s," said Dr. Kelly N. Botteron, an assistant professor of child psychiatry at Washington University. "Earlier child psychiatrists thought kids were not even cognitively capable of getting depressed."

### **Teen brains are different**

The new research, key portions of which were completed in St. Louis, show a teenage brain as an organ in transition with a volatile and vulnerable composition.

"It's not entirely clear that the brain is ever finished developing," said Dr. John Csernansky, director of the Conte Center for the Neuroscience of Mental Disorders at Washington University.

The evolving teenage brain clearly isn't adultlike until the early 20s. So the old stereotypes of teens may have some merit.

If teens act "young and stupid," it may be because brain areas that dampen impulsivity and govern rational thought are among the last to mature.

All that is fine when the brain develops normally.

But what's shaking up those involved with mental health is what happens when the teen brain fails to successfully reinvent itself as an adult brain. Researchers increasingly believe if that process misfires, teens are vulnerable to developing mental illness.

In fact, many now believe that several severe mental illnesses have roots in the developing teen brain. That's true, they say, even if symptoms aren't seen until years or decades later.

What concerns many is the possibility that early warning signs might be disregarded, as parents, educators and others ignore what looks to them like typical teen behavior.

Early identification matters, because treating the disorders early could head off the worst manifestations of the diseases, giving young adults a better chance at a productive life.

"If an adult gets depressed and loses a year of function, they can generally get back close to where they were; but if a kid loses a year, it's really hard to catch up again in terms of development," Botteron said.

The implications of the research are vital in an age when society is increasingly aware of the consequences of abnormal and violent teen behavior.

Although no one can say for certain whether school shootings such as the one at Columbine High School in Colorado in 1999 are the result of mental illness, few question that early detection would reduce violent acts by teens.

Sometimes mental illness is to blame when children disrupt class or get into fights at school. Some may turn to drug and alcohol use to help ease the pain, leading to run-ins with the law.

A survey of teens at the St. Louis Detention Center in 2003 suggests that 81 percent have at least the warning signs of mental illness and anxiety disorders.

Perhaps the chief hope of the new research is that it could someday mean the difference between life and death for teenagers suffering from bipolar disorder (often called manic depression), schizophrenia and major depression.

Each of those disorders can lead to suicide, which for years has ranked as the second- or third-leading cause of death for teens.

### **Resistance to screening**

Kaitlin Harris was one of 94 Missourians ages 15-24 to commit suicide last year.

Pretty, popular and a straight-A student, Kaitlin, 15, of Ballwin, looked to those who knew her as if she had the world. But on March 25, 2004, she finally lost the battle she'd been fighting with depression for more than three years.

"I don't think Kaitlin wanted to end her life," said Robin Harris, her mother. "She wanted to end her pain."

Harris is now pushing her school district to adopt a program aimed at identifying early those teens who are potentially suicidal.

But determining when and how to respond to warning signs of adolescent mental illness is a thorny ethical issue with explosive implications.

Nowhere has the controversy been greater than in Illinois, where a state-appointed commission's report calling for universal mental health screening for school-age children was assailed as an encroachment of parental rights. The commission has since retreated from its recommendation. Critics have also attacked a federal panel's call for increased screening. In the wake of the criticism, several federal agencies have said that they do not support universal mental health screening for children, particularly without parental consent.

Leading the fight against teen mental health screening is a coalition of critics that has made allies of Scientologists such as Tom Cruise and conservative activists such as Phyllis Schlafly.

Much of their opposition is based on religious grounds. Some question whether mental illness even exists. Others parents fear that a child they view as normal will be incorrectly labeled as mentally ill.

But perhaps a greater share of the resistance is rooted in skepticism over whether mental illness in youth can even be accurately diagnosed, much less treated. Those doubts increase as more children are medicated for behavior problems.

Mental health professionals say there's some validity to the criticism. They point to a system that tolerates hasty diagnoses, often by physicians with no mental health expertise.

In short, they admit that at the very least, the field of adolescent mental health suffers from a crisis of credibility - one that scientific research may be unable to address.

### **Seeking definitive tests**

Much of the skepticism about mental illness and its diagnosis is grounded in the fact that doctors have no blood tests, brain scans or chemical analysis from which to base their conclusion.

"You can't examine somebody's thoughts like you can X-ray their insides," said Dr. Anne Glowinsky, a psychiatrist at Washington University. "When somebody comes to the ER and says 'I'm suicidal,' we don't have a test for that."

Most of what scientists know about how mental illness affects the brain comes from examinations of dead people. Until recently, scientists couldn't peer into living brains to look for changes associated with normal development or the ravages of disease. That is beginning to change, as researchers develop ever-more sensitive brain scanners.

In the past several years research groups have published composite pictures of healthy brains and those affected by mental illness. The differences between the healthy group and people with depression, schizophrenia and

bipolar disorder appear striking, but don't distinguish between causes of psychiatric disorders and the consequences of having a mental illness.

And the composite pictures are somewhat misleading. They present the most clear-cut findings from studies of dozens to hundreds of brains. But a snapshot of an individual brain may fall somewhere between "normal" and mentally ill. Consequently, scientists still can't scan an individual and say with certainty that the person does or does not have a mental illness based upon the structure or function of the brain.

But new efforts to define normal, healthy development and to track brain changes associated with mental illness may lead to predictive tests that could show which children are at risk of getting a psychiatric disease.

Parents are already familiar with growth curves that rate their children's weight, height and head size. The new studies may lead to a similar growth curve for brain development, Botteron said.

But a brain scan for mental health as reliable as a mammogram or colonoscopy is probably decades away, scientists say. For now, psychiatrists and psychologists must still rely on interviews and observations of children's behavior to diagnose mental illness.

### **Screening criticized**

As scientists seek a breakthrough, critics of mental health treatment are poised to trounce programs that seek to identify mentally ill youth.

In recent months, much of that resistance has been directed at a questionnaire used by hundreds of high schools nationwide to identify teens who may need help.

The program, called TeenScreen, was developed by Columbia University, which structured the screening tool based on the latest brain research. The program's developers say it has already shown success in identifying troubled teens who might otherwise slip through the cracks.

Last year, more than 50,000 students were screened nationwide, and dozens of schools were on waiting lists to participate. But the program has been assailed in many communities. Some school boards have rejected the program after parents complained that it might falsely label their children.

Two parents in Indiana have sued TeenScreen, claiming they did not consent to their daughter's being screened. Activists are tapping into fears held by many parents that far too many children are being medicated for problems such as attention deficit disorder.

"TeenScreen is nothing more than a way for the psychiatric industry to troll for patients," said Roger Teagarden of the Citizens Commission on Human Rights of St. Louis. The organization is supported by the Church of Scientology, which opposes mental health treatment.

TeenScreen was introduced to the St. Louis area for the first time last year when Pattonville High School began screening freshmen in all health classes.

But the Indiana suit is forcing the Pattonville district to reassess the way it handles parental consent.

The backlash against teen mental health screening extends far beyond just one program, with criticism directed at the federal government.

In 2003, a report released by the New Freedom Commission - formed by President George W. Bush - issued a report calling for increased mental health screening. The same report cited TeenScreen as a model program.

Illinois followed the federal lead, forming its own commission to make recommendations on mental health. The panel initially called for "universal screening" of children for mental illness. No state in the nation had taken such a bold position.

But the Illinois draft report was immediately attacked by critics, including one of the state senators who supported the bill establishing the mental health commission.

Today, Sen. Chris Lauzen, R-Aurora, said he agreed that states must work to identify mentally ill youth. But he said parental rights must be paramount, even if that means that some children's mental illness might go unnoticed.

"If I were going to err, I would err on the side of the person who loves that child and not the person who knows what's best for that child," he said.

### **Looking to science**

As criticism mounts against screening efforts, the challenge facing mental health professionals is to win over skeptical parents.

Science may someday help, offering the hope that a parent could one day look over a brain image and trust the validity of a diagnosis.

Parks, medical director for the Missouri Department of Mental Health, said the stigma that accompanied mental health treatment was partly due to public doubts that various disorders actually exist.

Parks and others say that reaching mentally ill teens requires as much of a societal breakthrough as a scientific one.

Part of that effort involves elevating the status of mental health by boosting public confidence in the accuracy in diagnosis and the efficacy of treatment. But that's not an easy sell, given that the mental health system is already overburdened.

Family practitioners and pediatricians are doing most of the work of diagnosing and medicating mental disorders among children. Often that's happening with office visits of 15-30 minutes, simply because insurance won't pay for a more complete diagnosis.

Parents such as Robin Harris, whose daughter Kaitlin committed suicide last year, say the time for action is now.

Harris is urging the Parkway School District, where Kaitlin attended school, to become the second in the state to offer the TeenScreen program. Doing so, Harris says, could give teens the support and respect they need to open up and admit they have a problem that needs treatment.

In the moments before she killed herself, Kaitlin drew an angel on the mirror in her bedroom. The angel was Kaitlin's emblem. She had drawn it many times before and included the words "I have wings to fly" inscribed on the wings.

Now her mother keeps an angel statue at the base of Kaitlin's tombstone. Under the angel, Harris stashes business cards from a suicide prevention group. She has refilled the cache several times.

"I don't want to miss an opportunity," Harris said. "Even those kids who seem to have it all together, I don't want to miss an opportunity to give them resources."

On Kaitlin's birthday this year, Harris handed out the suicide information cards to the teenagers who had gathered to honor her daughter. Then they released balloons to fly toward heaven.

**thesman@post-dispatch.com 314-340-8325**  
**mfranck@post-dispatch.com 573-635-6178**

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## Contact Information

### Subject Matter Experts:

- [John Csernansky](http://mednews.wustl.edu/sb/page/normal/202.html)  
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