



## Brattleboro Retreat

### **The Adolescent Brain: A Work in Progress**

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Helping young people overcome psychiatric and addiction challenges is a central aspect of the work done at the Brattleboro Retreat. That's because we believe in young people and the promise they hold for the future. But we also know that because their physical and emotional development is still underway, they are highly vulnerable to the pitfalls of trauma, psychiatric diseases, and the use and abuse of alcohol and other drugs.

"Not terribly long ago, scientists believed that brain development in humans was pretty much finished by about age ten," said Robyn Ostrander, MD, associate medical director and medical director of Child and Adolescent Services, who treats young people in the Brattleboro Retreat's inpatient and residential programs. "Now we know the process extends into a person's twenties and beyond."

### **"Learning involves forming new connections in the brain"**

*--Robyn Ostrander, MD, Medical Director,  
Child & Adolescent Services*

By the time a child reaches the age of six, her brain size is about 90 to 95 percent the size of an adult's brain. But the process of developing a

fully refined adult brain is far from over. In fact, an adolescent's brain may only be 80 percent developed. And several more years will be required to finish establishing crucial nerve connections and pruning the redundant tissues that constitute a mature adult brain.

"In particular, nerve cells in the parts of the brain involved in judgment and insight are not fully connected to areas in the rest of the brain," explains Dr. Ostrander. "This accounts, in part, for the self-centeredness and risk taking behaviors we often notice in adolescents."

Combine this tendency to take risks with the fact that the adolescent brain is less able to bounce back from the effects of things like alcohol and other drugs, and you have a potentially dangerous mix.

Developmentally speaking, teen brains are also highly excitable. This is a desirable quality that allows young people to be responsive to their surroundings and to learn new skills, concepts and habits so quickly.

"Learning involves forming new connections in the brain," says Dr. Ostrander. "Ideally we want young people to use this window in their development to perfect their cognitive abilities and adopt healthy habits. The downside is that if alcohol and other drugs are introduced during this period, the potential for establishing very negative habits, or even dependence, is very high."

The silver lining is that adolescents who become dependent on alcohol and other drugs are often more open to reinventing themselves as a sober person, and they can utilize their brain's extraordinary capacity to learn to accomplish that goal.

"Adolescents in our inpatient and residential programs are under enormous stress and experience considerable suffering. Unless they

get effective treatment and support, they have a lot to lose," notes Ostrander. "Yet our model of care is strengths-based, meaning that we believe every young person possesses innate skills they can use to turn the corner. Our job is to help them recognize those skills and then incorporate them into their daily lives."