

## Underachieving Students

**M**itch was admitted to a math/science magnet middle school following his outstanding performance in elementary school. In the eighth grade, however, his teachers noticed a change. Mitch became easily distracted and seemed to have trouble remembering the most basic formulas. He made careless errors and often did not finish assignments. His teachers also noticed that he was acting out in class. For a student who had been excelling, he was barely making average grades.

*Mitch had become an underachieving student. What caused this change in performance and attitude? What could his teachers do to help Mitch get back on track?*

Researchers working with underachieving students in his school suggested to his parents that Mitch be screened for a brain injury. The screening revealed that the previous summer Mitch had been hit on the head while playing baseball and had lost consciousness for several minutes. His family did not receive any information from the doctor about potential long-term effects from the injury and his teachers never knew about the incident.

Based on the positive screening result, the researchers suggested accommodations Mitch's teachers could use in the classroom to build on his strengths and work with his limitations in short-term memory, organizational skills, processing speed, and attention span. With these modifications, Mitch has a good chance of improving his academic achievement, renewing his self-esteem, and enhancing his interactions with teachers and others. In some cases, a neuropsychological assessment is recommended in order to obtain a better understanding of a student's cognitive difficulties and to better inform the types of accommodations needed.

Underachieving students like Mitch are benefiting from research conducted by the **Research and Training Center on Community Integration of Individuals with Traumatic Brain Injury**. Located at the Mount Sinai School of Medicine in New York City, the Research and Training Center (RTC) is funded by the National Institute on Disability and Rehabilitation Research (NIDRR).

RTC researchers learned that five percent of the students surveyed in regular classes in two New York City schools had experienced a brain injury due to trauma and were found to be underachievers (Cantor & Gordon, 2002). The RTC's research on underachieving students with a brain injury focuses on three components:

- **Identification** of students who have experienced a brain injury due to trauma,
- **Assessment** with tools that focus on cognitive deficits and strengths, or a neuropsychological assessment, and
- **Classroom accommodations** that help students with brain injuries break the cycle of underachievement (Hibbard, Gordon, Martin, Raskin, & Brown, 2001, 2002).

The RTC's research work has relevance for K-12 educators in light of recent and forthcoming Federal initiatives. The reauthorization of the Elementary and Secondary Education Act, the *No Child Left Behind Act of 2001*, stresses accountability and the utilization of research-based instructional interventions for all students to obtain a high-quality education. The Individuals with Disabilities Education Act is due for reauthorization in 2003; revisions are expected to emphasize the use of scientifically based research in order to improve education for students with disabilities.

With a basic understanding of the nature of childhood brain injuries and a tool for screening, teachers and administrators can begin to identify students with a brain injury and help them avoid extended periods of underachievement. Following up with more appropriate assessments can pinpoint a student's cognitive strengths and weaknesses. Implementing classroom accommodations makes a positive difference for students to help them succeed, and serves to push forward the research-based, student-centered education agenda.

## Childhood brain injuries

A Harris Poll sponsored by the Brain Injury Association of America found that about a third of Americans indicated they were not familiar with the terms brain injury or head injury, and many were unaware of the potential for a resulting disability (Harris Interactive, 2000). The term brain injury is used to indicate an injury to the brain due to trauma; therefore, it does not include injuries before or during birth. Trauma refers to a medical event or a blow to the head that can cause a brain injury.

Brain injuries resulting from falls, accidents, and sports injuries are frequent among children, and traumatic types of brain injury is the leading cause of death and disability in children (NCIPC, 2001). An estimated one million children per year experience a brain injury (Savage, 1991 in Cantor & Gordon, 2002). It is estimated that 3,000 children and youth die from brain injuries due to trauma; 29,000 are hospitalized; and 400,000 are treated in hospital emergency departments (NCIPC, 2001).

For the 1999-2000 school year, about three percent of the students in special education were identified in the category of traumatic brain injury, or 13,874 students ages 6-21 (U.S. Department of Education, 2001). Results of the RTC's research indicate that if widespread screenings of school children were conducted, as many as 500,000 students across the country could be identified as having had a brain injury that affected their academic performance (W. A. Gordon, personal communication, September 12, 2002).

Children and youth who experience moderate to severe brain injuries are usually hospitalized, however, the majority of brain injuries are mild. These mild injuries are often not reported by parents or caregivers and are often given inadequate attention by health care providers.

Approximately 15 percent of people who experience a mild brain injury do not recover completely and are left with some chronic cognitive impairment. There is no way to predict who will or will not have permanent or long-term damage (Hibbard et al., 2001, 2002).

Even a mild brain injury such as a concussion can cause a period of altered mental state or loss of consciousness, and may affect the future development and function of a child's growing brain. Teachers may not be aware that a child has experienced a brain injury or that such an injury may result in problems in school. A cognitive deficit may only become evident when more complex tasks are required, such as abstract thinking and other higher order thinking skills.

## Identification

When the RTC initiated research in the New York City schools in 1997, researchers found that students with brain injuries were not being identified nor were their unique needs understood. The RTC had developed a screening instrument to address the issue of unidentified traumatic brain injury in adults, the *Brain Injury Screening Questionnaire* (BISQ) (see below.) While the BISQ can be used with students 14 and older, the RTC also developed a pediatric form of the BISQ to allow a parent or caregiver to report for younger students.

Screening students for past brain injuries can help to identify those who are underachieving and in danger of "slipping through the cracks" if their needs are not recognized. Once they are identified, many students can be helped by modifications in the classroom that address specific cognitive issues. Other students will need further assessment to learn about their specific cognitive strengths and deficits.

## Brain Injury Screening Questionnaire (BISQ)

The *Brain Injury Screening Questionnaire* (BISQ) is a self-administered questionnaire that can also be completed via an interview. The BISQ has three parts and is scored electronically. **Part One** lists a number of ways a person can sustain a brain injury. If a person reports an injury event, whether or not he or she lost consciousness or was dazed and confused, and for how long, is recorded. If no events are reported, the screening is complete with Part One.

If there are positive events, the person continues to **Part Two**, which is a list of 100 conventionally accepted symptoms. RTC research with adults identified 25 of the 100 symptoms that are sensitive and specific to brain injuries (Gordon, Haddad, Brown, Hibbard, & Sliwinski, 2000). This determines if the person being screened reports the kinds of persisting problems typically found after brain injury that suggest he or she should be further assessed with neuropsychological tests. **Part Three** seeks other possible causes, such as medications taken or other conditions, which could account for the symptoms reported in Part Two.

The BISQ is based on the *HELPS* card developed by Picard, Scarisbrick and Paluck (1991) and the symptom checklists developed by Lehmkuhl (1988) at TIRR and Kreutzer at the Medical College of Virginia (undated). The RTC is currently validating the BISQ. Persons interested in developing a screening program in schools, service agencies, or health programs can obtain the BISQ, along with technical assistance from the RTC, to assure appropriate use in a variety of settings. For additional information, contact Wayne A. Gordon, Ph.D.: [Wayne.Gordon@mssm.edu](mailto:Wayne.Gordon@mssm.edu)

Adapted from "Brain Injury Screening" <http://www.mssm.edu/tbinet/alt/TA/techa4.html>

The BISQ is being used in different settings and with different populations. Following are several school districts that are working with the RTC to identify underachieving students who may have experienced a brain injury.

### **New York City**

The RTC has carried out screening in magnet schools and regular schools with high minority populations. The purpose of these efforts, co-funded by the NY State Department of Education, is to identify underachieving students who were not known to have a brain injury so that needed instructional accommodations may be provided. More than 150 underachieving students per year have received services in the New York City schools since 1997. During that time, RTC staff members also worked with school personnel to develop and provide training to more than 10,000 educators in all New York City districts on what teachers should know to maximize educational opportunities for students who have experienced a brain injury.

### **Birmingham**

Educators in Birmingham, Alabama, asked the RTC for technical assistance to use the BISQ for screening and to make classroom modifications. Two of the four school districts in Birmingham are using the BISQ for screening underachieving students during the 2002-2003 school year. All students in the participating districts are screened with the BISQ when they are referred to school-based teams (prior to a referral to Special Education).

If a possible brain injury is identified through screening, classroom accommodations are suggested. Often, simple strategies such as memory aids may make a positive difference. Those students who do not respond sufficiently to the initial accommodations are then referred for Special Education services and a full assessment. The Alabama State Department of Education has indicated interest in possible expansion of screening across the state.

### **Denver**

Several school districts in Denver, Colorado, were searching for a screening tool to identify students with brain injury caused by trauma when they learned of the BISQ. In April 2002, the RTC began a collaborative effort with school districts in the Denver area. In 25 percent of the districts, every student who is referred for Special Education evaluation will be screened with the BISQ to identify those who may have experienced a brain injury.

## **Assessment**

A positive BISQ screening result indicates that a brain injury *may* be the cause of a student's cognitive and emotional challenges. Following up with a neuropsychological assessment can confirm or rule out a diagnosis of brain injury and identify specific strengths or deficits in short-term memory, organizational skills, processing speed, and attention span.

Typically, educational assessments focus on intelligence and academic achievement and are not designed to

identify cognitive deficits that may result in poor academic performance. Data from traditional assessments often result in misdiagnosis for students who have experienced a brain injury. When underachieving students are misdiagnosed as having learning disabilities or emotional disabilities, the academic modifications provided are not appropriate as they do not address the cognitive issues typically experienced by students with a brain injury (Cantor & Gordon, 2002).

## **Classroom accommodations**

Students' problems in cognition (such as attention, concentration, memory), behavior (agitation, restlessness, fatigue), and psychosocial functioning (depression, rage, withdrawal) can affect academic performance and school interactions long after a brain injury and regardless of its severity (Hibbard et al., 2001, 2002). Some very simple adjustments and accommodations can make a real difference for the student, and the teacher's recognition and support helps emotional and behavioral considerations as well as academic achievement.

*Students with Traumatic Brain Injury: Identification, Assessment and Classroom Accommodations* (Hibbard et al., 2001, 2002), is a monograph developed by the RTC to provide a general overview for educators and others. Several strategies related to classroom environment, structure and pacing, teaching style, and behavioral supports for students with brain injury are described, as well as suggestions for working with resource room staff and counselors. While many students with other learning challenges can benefit from similar strategies, students with brain injuries require multiple combinations of classroom modifications to help address their cognitive problems that are limiting academic success. Following are a few examples of accommodations in the classroom:

- Modifications in the **classroom macro-environment**  
Changing the child's seating arrangements helps to minimize environmental distracters (such as a noisy classmate, windows, or door to a busy hallway).
- Changes in the **classroom micro-environment**  
Students with memory problems can learn to use a daily organizer as an external memory system.
- Modifications in the **structure or pacing** of teaching  
Scheduling frequent breaks during the day for students with a brain injury can help decrease problems stemming from inattention and fatigue. Slowing the pace of instruction will help a student with processing problems.
- Modifications in **teaching style**  
Teachers can modify their approach by giving advance cues and repeating important concepts to help a student with slower information processing and memory deficits (Hibbard et al., 2001, pp. 5, 8-9).

*For further information, please contact the Research and Training Center on Community Integration of Individuals with Traumatic Brain Injury.*

## RTC References and Resources

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Brain injury screening.  
<http://www.mssm.edu/tbinet/alt/TA/techa4.html>

Frequently asked questions about TBI.  
<http://www.mssm.edu/tbinet/alt/faq.html>

How is TBI different for those injured as children?  
<http://www.mssm.edu/tbinet/alt/faqs/faq14.html>

RTCTBI: Our current program.  
<http://www.mssm.edu/tbinet/alt/info/info3.html>

What is mild TBI?  
<http://www.mssm.edu/tbinet/alt/faqs/faq12.html>

What should schools know about helping children with TBI?  
<http://www.mssm.edu/tbinet/alt/faqs/faq15.html>

## Additional References

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National Center for Injury Prevention and Control (NCIPC). (2001) *Traumatic brain injury in the United States: Assessing outcomes in children*. Washington: Centers for Disease Control and Prevention (099-7122). [http://www.cdc.gov/ncipc/tbi\\_report/tbi.htm](http://www.cdc.gov/ncipc/tbi_report/tbi.htm)

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The NCDDR thanks **Wayne A. Gordon, Ph.D.**, Principal Investigator of the RTC, Professor of Rehabilitation Medicine, Mount Sinai School of Medicine; **Joshua Cantor, Ph.D.**, Instructor, Department of Rehabilitation Medicine, Mount Sinai School of Medicine; and **Mary R. Hibbard, Ph.D.**, Associate Professor, Department of Rehabilitation Medicine, Mount Sinai School of Medicine for discussing their research and providing information for this issue of *Focus*.

## About the RTC

The purpose of the **Research and Training Center on Community Integration of Individuals with Traumatic Brain Injury** is to expand knowledge of *what works* to help people of all ages with brain injuries caused by trauma in living their lives after injury. Current research includes projects on getting back to work, aging, emotional adjustment, screening for brain injuries in children, substance abuse prevention, and peer mentoring. For more information about the Research and Training Center, visit the RTC's Web site: <http://www.mssm.edu/tbinet/>

## About NIDRR

The RTC is one of 39 *Rehabilitation Research and Training Centers* currently funded as centers of national excellence in rehabilitation research by the **National Institute on Disability and Rehabilitation Research** (NIDRR). Located in the U.S. Department of Education, NIDRR is one of three components of the Office of Special Education and Rehabilitative Services. NIDRR provides leadership and support for a comprehensive program of research aimed at improving the lives of individuals with disabilities from birth through adulthood. For more information, visit NIDRR's Web site: <http://www.ed.gov/offices/OSERS/NIDRR/>

Available online: <http://www.ncddr.org/du/products/focus/focus3/>



The NCDDR assists, through information and technical assistance, NIDRR grantees with identifying and crafting dissemination strategies. These strategies are designed to meet the needs of a grantee's unique target audience. NCDDR also analyzes and reports on dissemination trends relevant to disability research.

*Focus: A Technical Brief from the National Center for the Dissemination of Disability Research* was produced by the National Center for the Dissemination of Disability Research (NCDDR) under grant H133A990008-A from the National Institute on Disability and Rehabilitation Research (NIDRR) in the U.S. Department of Education's Office of Special



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