

Hooper, Stephen R. "Traumatic Brain Injury." Encyclopedia of School Psychology. 2005. SAGE Publications.

TRAUMATIC BRAIN INJURY

In 1998, the National Institutes of Health (NIH) released a Consensus Statement that broadly defines traumatic brain injury (TBI) as a brain injury from an externally inflicted trauma (i.e., car accident, physical abuse) that may result in significant impairment of an individual's physical, cognitive, and psychosocial functioning. The NIH Consensus Statement noted that while TBI could result in physical impairment, generally the more significant and/or problematic sequelae involved the person's cognition, emotional functioning, and behavior.

Reid and colleagues (2001) noted that approximately 75 to 200 of every 100,000 children will sustain a TBI in the United States each year, with a male-to-female ratio of nearly 2:1. The incidence of TBI also increases significantly in people who are 15 to 24 years of age, particularly for males. These figures, coupled with the fact that approximately 75% to 80% of all head injuries are mild in nature and thus may go unreported, suggest that TBI in school-age children and adolescents is a major educational problem. Even with the high potential underestimation of occurrence, TBIs represent the most frequent neurological conditions that result in hospitalization of children and adolescents under 19 years of age, and they are the leading cause of death or permanent disability in children and adolescents.

Until legislative changes were initiated in the early 1990s, these children were not typically identified as

needing special education and related services (e.g., detailed assessment, intervention); however, some school systems accommodated students who sustained moderate or severe head injuries under exceptional children classifications (e.g., learning disabled, mental retardation, multiply handicapped). Even with current legislative mandates acknowledging TBI as a special education classification, the range of outcomes following a TBI will vary, in large part secondary to the severity of the injury.

PSYCHOEDUCATIONAL OUTCOMES

Students typically show a decline in the level of intellectual performance following a TBI. For the most severely injured children, scores on the Wechsler Intelligence Scale for Children (Wechsler, 1974) are lower on the performance scale than on the verbal scale. This pattern of results is likely because of the dependence of many of the verbal scale's subtests on "old learning" (with the exception of tasks that require the use of numbers, which are more dependent upon speedy accuracy, problem solving, and novel learning). Further, it is unlikely that intelligence quotient (IQ) scores return to preinjury levels for children sustaining severe brain injuries, with evidence indicating that only a partial recovery of intellectual abilities is typically possible.

Academic problems following TBI at all severity levels have covered the gamut. In addition to specific problems in reading, writing, and arithmetic, there appears to be an increased need for special education programs, a tendency to return to a lower grade placement, and failure to return to school. Difficulties learning new or novel materials, problems with higher-order cognition (e.g., generalization, abstraction, organization, planning, strategy generation), slowed information processing speed, and overall reduced independent work efforts all can affect an individual's classroom or vocational performance in a negative fashion. It is important that all of these difficulties be taken into account when evaluating a TBI survivor's return to the formal academic setting.

NEUROPSYCHOLOGICAL OUTCOMES

Nearly every major neuropsychological domain has been reported as being impaired following different types of TBI. In a review of the pediatric TBI literature, Hooper (1998) noted problems in areas of

gross- and fine-motor skills, attention-to-task, language skills, visual-spatial, memory, and executive functions. These deficits can be manifest as either mild, moderate, or severe, depending on the nature of the TBI, and they have been reported to persist to varying degrees well after the injury. Indeed, neuropsychological function or dysfunction has been predictive of which children required special education services two years postinjury. Hooper (2003) has noted that it is critical for school psychologists to be knowledgeable of neuropsychological assessment procedures in order to guide evaluation and treatment processes.

PSYCHOSOCIAL OUTCOMES

TBI can be associated with an increased vulnerability for the emergence of a psychiatric disorder, particularly in moderate and severe TBIs. These problems can manifest as denial of the injury and lack of concern for the injury in young children, and significant deterioration in self-concept and depression in older children and adolescents. Even in the instance of a mild TBI, behavior problems and accompanying changes in temperament (e.g., increased irritability) have been described; however, mild TBI does not appear to be associated with an increased risk for psychiatric disturbance.

For children and adolescents sustaining a severe TBI, rates of poor social adjustment have ranged from 25% at one year postinjury to more than 50% at three to five years postinjury. Significant declines in adaptive behavior at one year postinjury also have been noted. Butler and colleagues (1997) also have presented an emergent psychosocial typology in pediatric closed head injuries. Specific subtypes—normal, cognitive deficient, somatic, mild anxiety, antisocial behavior, and social isolation—have been proposed. This typology is awaiting further validation, but should prove useful in addressing possible treatment options.

FAMILY OUTCOMES

Given the psychosocial as well as the neurocognitive changes that can be observed in individuals who have sustained a TBI, it stands to reason that the larger family system is vulnerable as well. Martin (1990) reported that variables such as family support systems, family communication, extracurricular involvement of the family system (e.g., church), and availability of

appropriate services and trained personnel were crucial to assisting families in coping with the injured individual. Issues pertinent to increased dependency, financial difficulties secondary to costs of rehabilitation and medical needs, and increased family stress (perhaps related to parental or spousal guilt following an injury) all serve to disrupt the family system. Wade and colleagues (1996) also noted that preinjury family status on such variables as communication, problem solving, role flexibility, and stress can be predictive of family functioning postinjury.

EDUCATIONAL PLANNING

Educational planning for individuals with TBI should be tailored to the specific strengths and weaknesses of each person. While this may seem a bit trite, this adage becomes extremely critical when working with these individuals. In particular, individuals in an acute phase of recovery may be showing frequent changes, and assessment-treatment linkages will need to be dynamic and reviewed on a regular basis (e.g., Individualized Education Plans should be written for shorter periods of time). The range of educational interventions for individuals with TBI is quite broad, with many different kinds of strategies being applicable to this population.

Telzrow (1991) asserted that the process of educational consultation and programming should begin before the student returns to the formal educational setting—perhaps even at the time of the injury—so as to promote communication between the family and the school, and to facilitate planning for the student's reentry. The initial consultation not only might entail performing a comprehensive assessment to determine current neurologically related behavioral deficits from the injury, but it also may require understanding the nature of the individual's injuries and his or her current medical status. This will increase the need for clear communication between the hospital or rehabilitation facility, the family, and the school. Furthermore, placement decisions should consider the full range of services available in a school system—including summer school programming and year-round schooling—in order to address the student's pending educational needs (e.g., maintenance and generalization of information).

It is also important for the practitioner to become familiar with specific teaching strategies that might be helpful with these students. While many of these

strategies may not appear to be different from what is used in regular and special education settings, their use with individuals with TBI may be crucial with respect to learning, prevocational adaptation, and general school readjustment. For example, the practices that have been deemed important in the instructional process of students with TBI involve direct instructional techniques such as:

- Repetition and practice
- Cueing
- Modeling
- Instructional pacing
- Decreased use of time limits
- Immediate feedback regarding the individual's performance

Lastly, it is critical to note that one educational strategy for addressing TBI is prevention. By advocating for primary prevention venues such as those addressing bicycle and motorcycle helmets, child-restraint systems, child abuse, and drinking-and-driving laws, perhaps some of these injuries could be prevented.

—Stephen R. Hooper

See also Communication Disorders; Individuals With Disabilities Education Act; Intelligence; Learning; Memory; Neuropsychological Assessment; Perseveration; Problem Solving

REFERENCES AND FURTHER READING

- Butler, K., Rourke, B. P., Fuerst, D. R., & Fisk, J. L. (1997). A typology of psychosocial functioning in pediatric closed-head injury. *Child Neuropsychology, 3*, 98–133.
- Hooper, S. R. (1998). Individuals with traumatic brain injury. In A. S. Bellack & M. Hersen (Eds.), *Comprehensive clinical psychology* (pp. 137–153). New York: Pergamon.
- Hooper, S. R. (2003). School psychology and traumatic brain injury: A programmatic approach to training. *Brain Injury Source, 7*, 28–31.
- Martin, D. A. (1990). Family issues in traumatic brain injury. In E. D. Bigler (Ed.), *Traumatic brain injury: Mechanisms of damage, assessment, intervention, and outcome* (pp. 381–394). Austin, TX: Pro-Ed.
- Rehabilitation of Persons with Traumatic Brain Injury. (1998). *NIH Consensus Statement, 16*, 1–41.
- Reid, S. R., Roesler, J. S., Gaichas, A. M., & Tsai, A. K. (2001). The epidemiology of pediatric traumatic brain injury in Minnesota. *Archives of Pediatric and Adolescent Medicine, 155*, 784–789.

- Telzrow, C. (1991). The school psychologist's perspective on testing students with traumatic brain injury. *Journal of Head Trauma Rehabilitation*, 6, 23-34.
- Wade, S. L., Taylor, H. G., Drotar, D., Stancin, T., & Yeates, K. O. (1996). Childhood traumatic brain injury: Initial impact on the family. *Journal of Learning Disabilities*, 29, 652-661.
- Wechsler, D. (1974). *The Wechsler Intelligence Scale for Children-Revised*. New York: Psychological Corporation.