
Can Traumatic Brain Injury Impair a Child's Working Memory?



Traumatic brain injury (TBI) during childhood can have long-term effects on cognitive and psychosocial functioning, including poor academic achievement. Pediatric TBI can cause significant deficits in working memory, as demonstrated in a study published in *Journal of Neurotrauma*, a peer-reviewed publication from Mary Ann Liebert, Inc., publishers. The article is available free on the *Journal of Neurotrauma* website at <http://www.liebertpub.com/neu>.

Working memory is the ability to collect, retain, and use information needed to perform tasks and respond to immediate demands. Amery Treble and coauthors from University of Houston, Texas and University of Texas Health Science Center at Houston used brain imaging studies to measure verbal and visuospatial working memory in a group of children who sustained TBI and a control group who did not. The comparison showed poorer visuospatial working memory in the pediatric TBI group, which was associated with disruptions in brain connectivity between neural networks that underlie working memory.

In the article "Working Memory and Corpus Callosum Microstructural Integrity after Pediatric Traumatic Brain Injury: A Diffusion Tensor Tractography Study," the authors propose that the identification of neuroanatomical biomarkers indicative of these changes in brain microstructure might allow for early identification of children at increased risk for impaired working memory and for earlier intervention.

"While confirming the longstanding belief that the corpus callosum is consistently involved with traumatic brain, this study's exquisite regionally specific analyses of callosal integrity, together with its evaluation of working memory in a pediatric brain-injured population, make this a particularly important contribution to the field of pediatric TBI," says John T. Povlishock, PhD, Editor-in-Chief of *Journal of Neurotrauma* and Professor, VCU Neuroscience Center, Medical College of Virginia, Richmond.

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