

word method and the phonics method. The Boder test provides a diagnosis that is meaningful to the educator in the choice of remediation methods. This matching method or neuropsychological approach to reading remediation involves matching the learning strengths with a teaching strategy designed to exploit these strengths. It is favored by Johnson and Mykelbust who recognize two main subtypes of dyslexia, "visual dyslexia and auditory dyslexia" and also by Mattis who identified language, dyscoordination, and visuospatial subtypes. The validation of Boder's neuropsychological approach and classification of dyslexic subtypes is an important advance in the evaluation of reading remediation methods. The Boder method, matching learning strengths to teaching methods, appears to be theoretically sound and much preferred to techniques based on deficit remediation which involve the training or retraining of damaged or dysfunctional areas of the brain. (Millichap JG, Millichap NM. Dyslexia: As the neurologist and educator read it. Springfield, IL. Charles C. Thomas, Publisher 1986).

#### CORPUS CALLOSUM AND COGNITIVE FUNCTION

Cognitive functions communicated between the cerebral hemispheres by the corpus callosum was studied in two patients with commissurotomies at the Cognitive Neuroscience Laboratory, Department of Psychiatry, Dartmouth Medical School, Hanover, NH and the Department of Neurosciences, University of California at San Diego, CA. The patients were asked to judge whether pairs of words rhymed. One word in each pair was presented to the left visual field and the other to the right visual field. The two words in each pair either sounded and looked alike (R+ L+), sounded alike but looked different (R+ L-), sounded different but looked alike (R- L+), or both sounded and looked different (R- L-). The two commissurotomy patients differed in that one had sparing of some rostral and splenial fibers of the corpus callosum verified by MRI while the second patient had MRI-verified full callosal section. The patient with some sparing of fibers was able to perform the rhyming judgment significantly better than chance when the words both looked and sounded alike (R+ L+) whereas her accuracy did not differ from chance in the other three conditions. The second patient with full callosal section performed at chance in all conditions, and normal control subjects were significantly better than chance in all conditions except R+ L-. Both patients had callosal section performed at age 26 to control intractable epileptic seizures. These results indicated to the authors that the first patient was capable of comparing both phonologic and orthographic information across her hemispheres and this ability reflected the functioning of the callosal remnant fibers. The splenium of the corpus callosum interconnects visual association cortex and this patient's ability to transfer orthographic information was commensurate with the splenial locus of her spared callosal fibers. The surviving rostral fibers may have contributed to the transfer of phonologic information. (Gazzaniga MS et al. Human callosal function: MRI-verified neuropsychological functions. Neurology July 1989; 39:942-946).

COMMENT. The MRI has proved of value in defining the extent of brain lesions with greater precision than was previously possible and has provided more accurate information regarding the areas of the callosum that are cut in the split brain patient. This study has helped to specify the functional zones of the human callosum in regard to cognition. A second paper regarding magnetic resonance imaging morphology of the corpus callosum in monozygotic twins is published from the same Program in Cognitive Neuroscience of Dartmouth Medical School (*Ann Neurol* July 1989; 26:100-104). There are wide variations in the size and shape of the human corpus callosum and measurements of size and shape revealed greater similarity in twin pairs than in randomly paired controls. The results were consistent with the view that the anatomy of the corpus callosum is under genetic control as well as being influenced by nongenetic factors.

#### TRANSIENT INFANTILE HYPERTONICITY AND LEARNING DISABILITIES

The neuromotor and developmental progress of 33 children who had transient hypertonicity during early infancy was analyzed and reported from the Stanley S. Lamm Institute, Long Island College Hospital, Brooklyn, NY. Seventeen children were mildly affected while 16 were moderately affected. Hypertonia was present in all four limbs in 24%, the lower limbs were more involved in 48% and hypertonicity was asymmetric in 24%. CT scans in the immediate newborn period showed subarachnoid hemorrhage in 6 and leukomalacia in 1. Subsequent CT scans were normal. EEG's showed no significant abnormality in 12 infants at 3-17 months of age. Gross motor milestones were fairly satisfactory in all children, and independent walking was achieved between 8-20 months of age, 75% by 15 months. Hypertonicity disappeared at 9-18 months of age. Independent walking occurred after 14 months of age in 12 patients whereas resolution of hypertonicity had occurred in the majority of the patients before 14 months of age. At 2-3 years of age developmental abnormalities were identified in more than 2/3 of the children. Delays in speech and language development and also in fine motor, adaptive and behavior difficulties were most frequently present. At five years of age or older learning disabilities were frequent and they were associated with persistent language and perceptual problems. None had epilepsy and mental retardation occurred in only two. Reading disability was diagnosed in 14 of 25 children older than 5 years of age (42%) compared to a figure of 4% in the general population. (PeBenito, R et al. *Residual developmental disabilities in children with transient hypertonicity in infancy.* *Pediatr Neurol* May/June 1989; 5:154-60).

COMMENT. The hypertonic infant at risk for language and learning disabilities should receive regular neurological and developmental follow-up evaluations through early childhood despite resolution of the increased tone and normal motor milestones. Early therapeutic intervention is advised.