



Brain Mapping and Developmental Disorders

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Brain Mapping is a new field of research that is offering exciting new insights into understanding developmental disorders. Brain Mapping can refer to several technologies — PET scanning, MRI scanning and even invasive, neurosurgical procedures. For research in children, the most promising new technology is called functional magnetic resonance imaging, or fMRI. Typical MRI scans show the structure of the brain, but fMRI actually shows the brain at work. Because it is completely safe and non-invasive, fMRI can be conducted even in young children, as long as they are willing to lie still and perform some simple cognitive tasks. An fMRI scan works by measuring where blood flows in the brain while someone is performing a cognitive task, such as reading, solving math problems, speaking or experiencing emotion. By comparing blood flow patterns across groups of children with different neurodevelopmental disorders, research can begin to understanding what is unique about brain function in these children, even when the brain structure looks perfectly normal. With a greater understanding of exactly what goes wrong in the brain, scientists can start to focus treatments on the core brain problems and not just the behaviors that children express.

Some developmental disorders that are currently being studied using fMRI are dyslexia and autism. For instance, at the UCLA Brain Mapping Center, researchers are using fMRI to see if different brain abnormalities are responsible for different subtypes of dyslexia. Investigators have examined changes in brain function before and after treatment with Fast-Forward, a computer-based treatment program for children with auditory processing disorders. Researchers from Yale University Child Study Center have studied differences in how children with autism respond to seeing human faces, and UCLA researchers using fMRI have found differences in the emotion centers of the brain in children with autism. The National Institute of Child Health and Development is now funding several large centers to perform similar research in combination with studies of genetics and treatment of autism. We are pleased to have established a collaborative relationship with The Help Group and to include students of its various programs in our studies. The next few years should show a huge increase in our understanding of how the brain works in children with many different developmental disorders. For more information, contact the UCLA Brain Mapping Center, Dr. Susan Bookheimer, (310)794-6386

This article is reprinted from the Fall 2002 issue of The Help Group's HelpLetter.