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### Research Interests

My research interests include understanding the neural correlates of developmental disabilities, by utilizing neuroimaging techniques. My current research involves developmental dyslexia, which is a common reading disability thought to have a neurological basis. Although the cause of dyslexia is unknown, most research has focused on phonological processing, which includes difficulties associating sounds with letters and blending sounds together. Other deficits in dyslexia are apparent in visual and auditory temporal information processing, which is the perception and integration of rapidly presented successive stimuli. The relation between temporal processing and fluent reading or reading disabilities is not known. Through neuroimaging studies, it has been established that there are connected networks of cortical structures involved with reading tasks both in adults and in children with average reading ability. Preliminary work suggests that some of these cortical areas may normally be involved in visual and auditory temporal processing. However, it is not known if reading and temporal processing tasks overlap in similar cortical regions.

The objective of my project is to determine, by means of functional magnetic resonance imaging (fMRI) whether the same cortical networks are involved in reading and in temporal processing, and whether these networks are impaired in children with dyslexia. We hypothesize that the cortical networks for reading and temporal processing overlap. Children with dyslexia will likely display abnormal activation in regions of these networks, suggesting that reading and temporal processing are linked by functional anatomy.

Dyslexia is a learning disability with life-long consequences, but unfortunately it is often not recognized early enough. Identification of cortical networks involved in dyslexia will lead to the understanding of its neurodevelopmental etiology, as well as normal reading processes in the brain.