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Incubator

### Bio

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#### BIO

Speech is a critical communication signal for the development of social skills and language function. Autism spectrum disorders affect 1 in 88 school-age children and are characterized by deficits in social communication and language skills, and many of these individuals also experience speech perception difficulties. My primary research goals are to understand the brain bases of social communication and language impairments in children with ASD, and to describe neural changes associated with remediation of these behavioral deficits. The theoretical framework that motivates my work is that impaired perception and neural decoding of speech impact social skill and language development in many children with ASD. Moreover, I believe that a grasp of these relationships is central to understanding the etiology of these disorders and will provide insight into their remediation.

I have initiated a program of research to further our understanding of auditory brain function serving key elements of speech perception in children with ASD. The first study produced by this program of research was recently published in the Proceedings of the National Academy of Sciences and shows that children with ASD have weak brain connectivity between voice-selective regions of cortex and the distributed reward circuit and amygdala. Moreover, the strength of these speech-reward brain connections predicts social communication abilities in these children. These results provide novel support for the hypothesis that deficits in representing the reward value of social stimuli, including speech, impede children with ASD from actively engaging with these stimuli and consequently impair social skill development. My future research will leverage this finding by probing this aberrant brain circuit in detailed explorations of speech perception in children with ASD. An important component of my future research is to explore neural plasticity associated with training programs designed to ameliorate social communication deficits in children with ASD, with a focus on the speech-reward brain circuit identified in my recent publication. In addition to my interest in studying social communication and language impairments in children with ASD, my research program also includes investigating the relationship between speech perception impairments and phonological and reading difficulties in children with reading disorders (RD). This work is a continuation of my dissertation work, which examined neural decoding of temporal features in speech in children with RD.