

Research at the Stanford Cognitive and Systems Neuroscience Lab



Vinod Menon
Professor, Psychiatry and Behavioral Sciences

CURRENT RESEARCH

Under the direction of Dr. Vinod Menon, the Stanford Cognitive and Systems Neuroscience Lab (SCSNL) investigates changes in brain networks that relate to children's cognitive abilities as they develop. SCSNL uses advanced brain imaging techniques (fMRI, sMRI, DTI,) in combination with behavioral and computational methods to find out more about the brains of children with autism. By using brain imaging tools like fMRI, researchers are able to monitor children's brain activation when they are exposed to different sounds, such as their mother's voice. Children with autism often fail to attend to the voices of those around them, so the goal of these studies is to determine how children with autism process sounds compared to their typically developing peers.

SCSNL researchers seek answers to questions including: Why don't the brains of children with autism allow them to tune into speech the way brains do for other kids? How is the information presented by a person's voice interpreted differently by children with autism? What's the difference between the typically developing brain and the developing brain in a child with autism? The answers may reveal windows of optimal intervention with treatment and therapy, and will help in the creation of more targeted approaches to remediating symptoms of autism.

Other research projects at SCSNL include:

- Discovering the functional and structural architecture of the typically developing brain
- Examining atypical development of cognitive, affective and social information processing systems in individuals with autism and related neurodevelopmental disorders such as ADHD

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AFFILIATION

 Stanford University

EDUCATION

- B.Sc. (Hons.), Physics, Indian Institute of Technology (1982)
- Ph.D., Computer Science & Neuroscience, University of Texas at Austin (1990)
- Postdoctoral Fellow, Neurobiology, University of California, Berkeley (1994)

RESEARCH AREAS

Life Science, Neurological / Cognitive, Pediatric

FUNDING REQUEST

Over \$260,000 is required to continue the work of this lab every year.

- Personnel Salaries: \$150,000 annually for a postdoctoral fellow, and staff research assistants.
- Supplies and Materials: \$2,500 a year is requested for individual PC workstations for the post-doctoral fellows and research assistants. These workstations will be used for programming tasks, data entry, data analysis, and manuscript preparation. \$2,000 a year is requested for software purchases, licenses, and upgrades: for project development as well as image and data analysis. \$3,000 a year is requested for purchase of neuropsychological and clinical assessment materials for each participant.
- Data Collection Costs: \$81,000 a year is requested for scanning 150 participants at two time points, each over 5 years. Scanning will be performed in the 3T MRI scanner at the Lucas Imaging Center on the Stanford campus. \$12,000 a year is requested for Clinical assessments and neuropsychological testing that will be performed by trained clinical psychology graduate students from the Stanford University – Pacific Graduate School of Psychology

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