



### BDIL Research Update, Part I

In a recent paper published in the *Journal of the American Academy of Child and Adolescent Psychiatry*, and spearheaded by our very own Dr. Ruth Carper and Dr. Ralph-Axel Müller, it was discovered that children and adolescents with autism spectrum disorders (ASDs) are lacking a typical asymmetry between the left and right hemispheres of the brain, compared to typically developing (TD) peers. This greater symmetry, or reduced asymmetry, is reflected in the microstructure of white matter tracts in regions throughout the brain, including the occipital lobe located near the back of the brain. In TD children and adolescents,

asymmetry between the brain hemispheres reflects different types of processing styles (the left is involved in analyzing specific details, and the right is involved in integrating the information to form a complete picture). This specialization allows the brain to process information more efficiently. In those with ASDs, however, the “division of labor” between the two halves of the brain is diminished, especially in the right hemisphere, which makes it more difficult to put information together into an integrated picture.

For more information, please see our [news coverage](#) in the Huffington Post.

### Lab Member Highlights



Meet Dr. Mikaela Kinnear, a postdoctoral fellow at BDIL and a clinical psychologist with expertise in childhood disorders, conducts clinical and diagnostic assessments for all of our research studies. If you are interested in participating in the Toddler or Adult MRI studies, she will be the friendly voice chatting with you on the phone! You also likely have met her during your 1<sup>st</sup> visit at SDSU. Mikaela is interested in social communication challenges, including the examination of underlying brain mechanisms. She is also expecting her first baby this Spring and can't wait to enroll him in the Toddler MRI study when he is old enough!

### Help spread the word!

We are *always* looking for families who are willing to take part in our ongoing studies funded by the NIH (your tax money!). Please be our Ambassadors and assist us with getting more families involved in our studies, and in advancing science towards a better understanding and better treatments of ASD. If you (or your friends, neighbors, relatives) are interested in getting involved in our research, please call us at (619) 594-0176 or email [BDIL@sdsu.edu](mailto:BDIL@sdsu.edu).

## Now recruiting!

BDIL is currently looking for research participants, with or without ASD diagnosis, in the following age range:

- ✦ **18-28 month old toddlers** (*with or without socio-communicative delays*)
  - ✦ Study entails 2-3 appointments involving a developmental assessment and a visit to the MRI research center
  - ✦ MRI is done while the child is naturally asleep at bedtime (no sedation involved!)
  - ✦ Toddlers enrolled in the study will be asked to return for repeat assessments at 3 years old and 4.5 - 5 years old
- ✦ **School-age children ages 7-17 years**
  - ✦ Studies entail 2-4 visits involving diagnostic and cognitive assessment, an awake MRI scan, and possibly an MEG scan for children 12-17 years old
- ✦ **40-65 year old adults**
  - ✦ Study entails 2-3 appointments involving diagnostic and cognitive testing and an MRI scan
  - ✦ Participants are asked to return in 2.5 years (30 months) to participate in the same procedures



Please call or email us for specific criteria and time commitment for each of these projects. All participants are generously reimbursed for their time and effort, and get to see an image of their brain!



Congratulations to our lab members who each presented cutting edge autism research findings at the 2016 Society for Neuroscience conference in San Diego!

## Did you know that we scan toddlers while they are asleep?

Dr. Inna Fishman, one of the BDIL faculty, is leading an NIH-funded study aimed to understand how brain networks develop and change over time early in life, in children who eventually do or do not develop autism spectrum disorders. The cutting-edge technology and analytic approaches allow us to scan 18-24 month old toddlers while they are **naturally asleep**, without sedation or medication. Stay tuned for results of this exciting study! See [page 4 here](#) for a review of Dr. Fishman's work.

## BDIL Research Update, Part II

Brain connectivity fluctuates over time in autism! A recent study led by Dr. Maryam Falahpour, a postdoctoral research fellow, examined patterns of synchronized activity between brain regions that have previously been shown to be altered in autism. Using a "sliding window" analysis (a technique in which brain activity is examined in 30-second "windows," across a 5 to 10 minute scan, until the entire scan duration is covered), it was discovered that multiple pairs of underconnected brain areas show greater fluctuations in children and young adults with autism than in controls. In other words, there are more frequent changes in brain functional connectivity in autism, which suggests more variable connectivity between brain regions over time. Importantly, these findings indicate that previous results of brain underconnectivity need to be reexamined. This research was published in *Brain Connectivity*. For more information, please see this [press coverage](#).