

The official newsletter of the Einstein Cognitive Neurophysiology Lab and the Human Clinical Phenotyping Core of the Rose F. Kennedy Intellectual and Developmental Disabilities Research Center

Editorial

We are so excited to share with you the Summer 2021 edition of our lab newsletter, The CNL! For those of you who have been reading with us since our first edition last year, thank you. For those of you who are new here, welcome! We created this semi-annual newsletter to share our work with our participants, colleagues, and community members. In this edition, you'll get to read about our ongoing work on Autism, check out some of our recent posters and publications, and even learn about common misconceptions about Schizophrenia, which we study in the lab. And, no matter if you're just starting in science, or if you've been here for years, you'll want to read about Eva, a local eighth grade student who tells us why she's passionate about neuroscience! Overall, we hope that in reading this newsletter, you feel connected to our work because, truly, it would not be possible without you. We hope you have a fantastic summer, and we'll see you in the next edition!

Stay safe and see you soon,

Alaina Bernuti, Ana Francisco, Filip de Santis, & Sophie Molholm

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To access the links inside, please see the online version of this newsletter:
cognitiveneurolab.com/newsletters

AUTISM RESEARCH

at Einstein-Montefiore

CURRENT RESEARCH

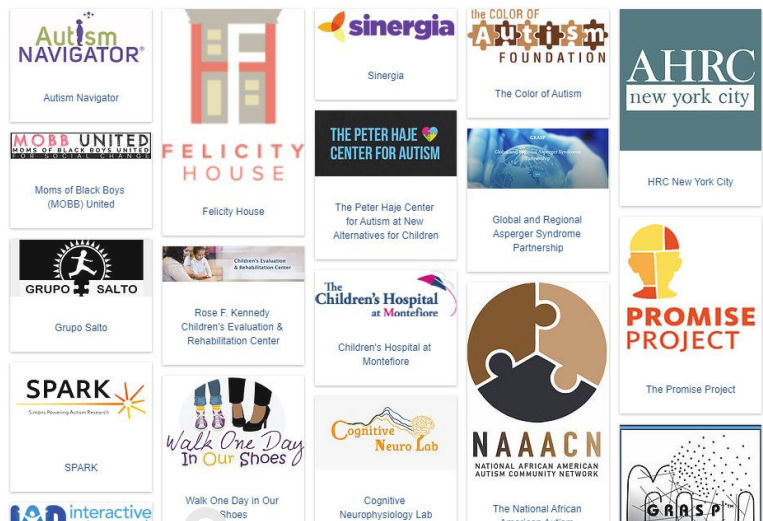
Click [here](#) for a list of on-going Autism research projects.

We're excited to announce Einstein-Montefiore's new Autism Research webpage! This will serve as a resource hub for investigators and families to learn about current Autism research projects, and to view new publications and upcoming events. Click [here](#) to check it out!

DID YOU KNOW?

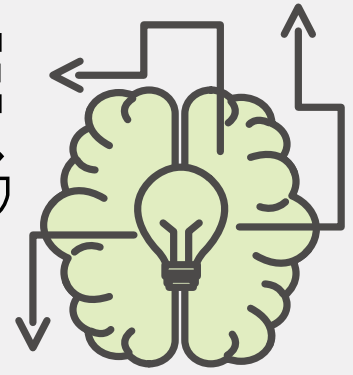
Albert Einstein College of Medicine has been assessing and investigating Autism for over 63 years!

RESOURCES



This webpage includes a listing of local service providers. Click [here](#) to view!

PREDICTIVE PROCESSING



in Autism Spectrum Disorder

Have you ever watched a tennis game and felt like your eyes move back and forth across the screen, even before the ball? Predictive processing is the ability to predict, and prepare for the next scenario from what we see and what we hear. It is so trivial and effortless to us that we may not realize that it is actually very complicated and requires timely coordination of different parts in brain. While for most of us it works perfectly fine, for others it can go wrong, and impair their ability to understand and prepare for events in their surroundings.



One of the neuropsychiatric conditions that is commonly linked to predictive processing is **autism**. Individuals with autism resist even trivial changes in everyday life and adhere to routines, which can be explained by difficulties to predict what may come next. In a recent EEG study from our lab, Dr. Shlomit Beker found that children with autism do not have the same signature in the brain before they see something familiar, as children of the same age that are not on the spectrum. In another study performed by Seydanur Tikir, a PhD candidate in the lab, we find that adults with autism are less efficient in adjusting the certainty of their predictions based on statistics of the events in their environment.

These studies could teach us a lot about the brains of people with autism, but more importantly, they can help us develop tools that will aid people on the spectrum to process, predict and act in a more efficient way, in their surroundings.

Meet the Researchers!

Seydanur Tikir



Shlomit Beker



PEDIATRIC RESEARCH DAY 2021

Our lab presented work at Einstein-Montefiore's Pediatric Research Day 2021.



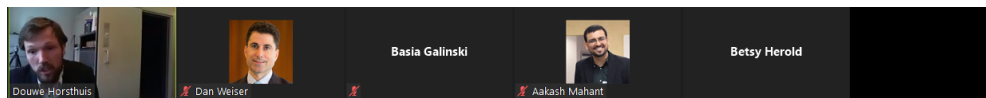
Our EEG lab manager and data analyst, Douwe Horsthuis, was selected to give a talk on **basic auditory processing** and **sensory memory** in children with **cystinosis**.

THE INITIAL STEPS YOUR BRAIN
TAKES TO COMPREHEND SOUND
IN YOUR ENVIRONMENT

THE STAGE OF MEMORY THAT
ALLOWS YOU TO BRIEFLY
REMEMBER THOSE SOUNDS

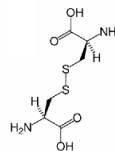
A VERY RARE GENETIC
CONDITION
[LEARN MORE [HERE](#)]

Douwe did an amazing job sharing our findings with a large online audience and raised awareness of cystinosis!



Cystinosis

- Rare autosomal recessive disorder
- Incidence ~0.5-1/100,000 live births
- Mutations in cystinosisin (CTNS) gene on chromosome 17p13.2



Cognitive
Neuro Lab

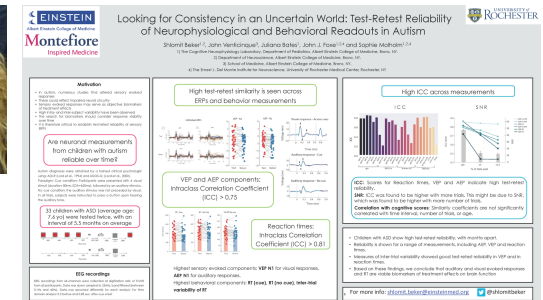
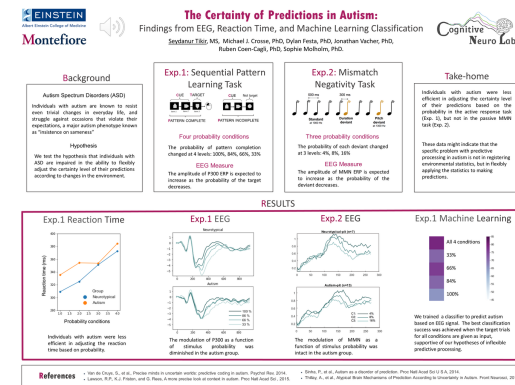
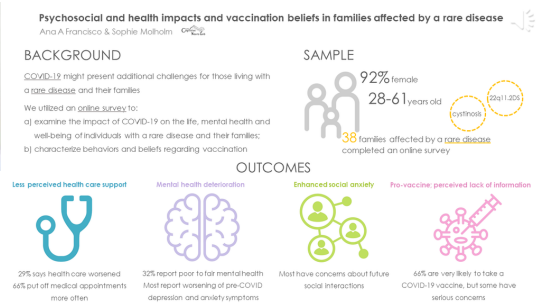
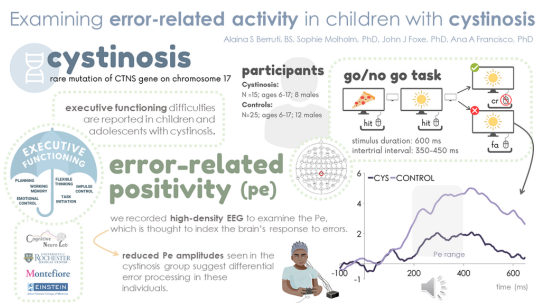
EINSTEIN
Albert Einstein College of Medicine
Montefiore
Inspired Medicine
ROCHESTER

PEDIATRIC RESEARCH DAY 2021

Our lab presented work at Einstein-Montefiore's Pediatric Research Day 2021.

Alaina, Ana, Seyda, and Shlomit also presented their research at Einstein-Montefiore's Pediatric Research Day 2021.

Click on the posters to enlarge and on their photos to read more about them.





COVID-19 Update

Research **remains open** here at the CNL, and our lab members are excited to have been vaccinated!

Ana & Douwe showing off their vaccination stickers!

If you're looking to get vaccinated, you can find available sites in NYC by clicking [here](#).



CODE UPDATE

It's been almost a year since our CODE (Community Outreach and Diversity Efforts) Committee was founded, and since then our members have been hard at work. Our current focus is in collaborating with other labs at Einstein to host a fun and educational event for local high school students in the Bronx!

To read more about CODE's founding and mission, click [here](#)!

Meet Eva:

future neuroscientist

Eva is a local 8th grade student who wants to be a neuroscientist when she grows up. We sat down with Eva to ask her about interests, aspirations, and even some of her own research studies!



Discovering Neuroscience:

Eva was sure she wanted to be a doctor when she was little, but as she's gotten older, her extracurricular activities (including her participation in research here at the CNL!) have made her increasingly interested in neuroscience and brain biology. From taking online courses to watching documentaries, Eva has become intrigued by the brain.



I like how there's different parts of the brain that are responsible for different, everyday things. And I just find it so interesting and fascinating how the brain can be so fast!



Outside of the Lab:

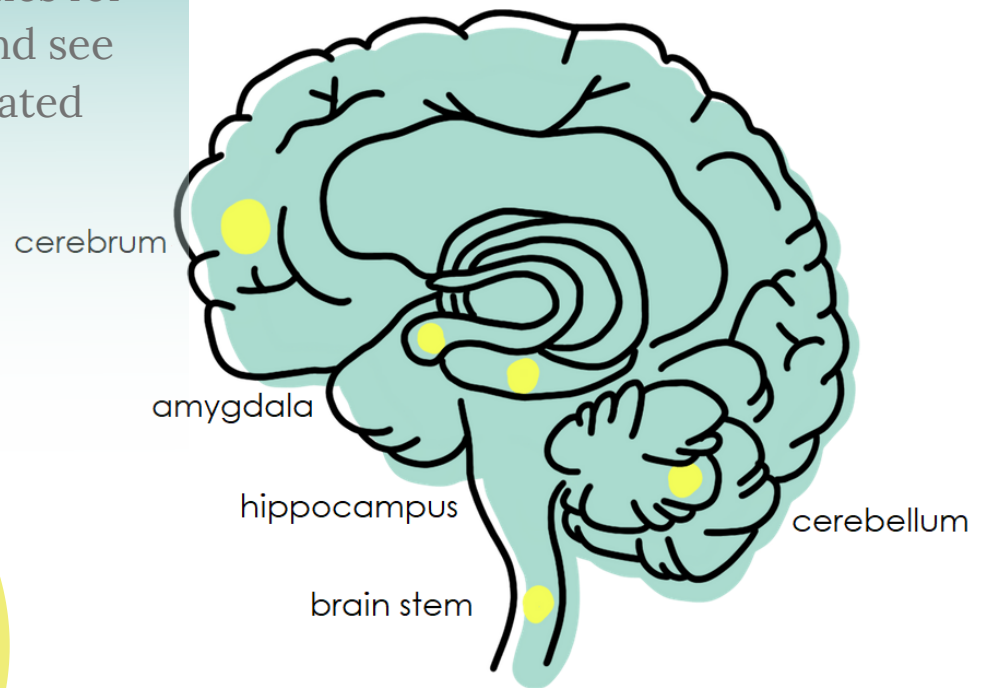
Outside of neuroscience, Eva enjoys going outside, skateboarding, hanging out with friends and family, watching TV (especially anime!) and baking!

Designing her own Research:

To learn more about the brain, Eva designed her own research study! Inspired by her grandmother and brother who experience memory difficulties, she created a memory task, and had her family, classmates, and even some members at the CNL participate! The project went viral at her school, and Eva was able to conclude that women and young people performed better than men and older participants! In the future, she's interested in studying the parts of the brain associated with language, and diagnoses such as autism and ADHD.

LEARN MORE!

Check out these names for parts of the brain and see where they are located



The **BRAIN STEM** connects the brain to the spinal cord and controls such things as heart rate and breathing.

The **CEREBRUM** helps you solve problems and make decisions. Deciding which game to play can be difficult but your cerebrum will help you to decide which one to play now and which one to play later.

The **CEREBELLUM** helps you with movement and balance. With practice and your cerebellum you won't need training wheels on your bicycle for long.

The **AMYGDALA** is involved with your emotions, like fear, anger and happiness. Watch out for that spider under the tree!

The **HIPPOCAMPUS** helps you remember past events – like the smell of your favorite cookies or the turns/directions to get home after school.



What is schizophrenia?

Schizophrenia is a serious mental illness that interferes with a person's ability to think clearly, manage emotions, make decisions and relate to others.

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The media have created inaccurate and sensationalized ideas of what schizophrenia is. And these ideas have a shattering impact on the existences of those living with the condition.

Even though people with schizophrenia can act unpredictably at times, most aren't violent. People with schizophrenia are more likely to be victims of violence.

A person with schizophrenia doesn't have two different personalities. Instead, they have false ideas or have lost touch with reality. Multiple personality disorder is unrelated.

Just because one of your parents has schizophrenia doesn't mean you're destined to get it. You might have a slightly higher risk, but genes are not the only cause.

People with schizophrenia have more trouble on tests of mental skills such as attention, learning, and memory. That doesn't mean they're not intelligent.

With the right medicine and therapy, 25% of people recover completely and 50% see improvement in their symptoms. Many people with the condition live full, productive lives.

NEW PUBLICATIONS

Orphanet Journal of
Rare Diseases

RESEARCH

Open Access

Assessing the integrity of auditory processing and sensory memory in adults with cystinosis (*CTNS* gene mutations)

Ana A. Francisco^{1*} , Alaina S. Berruti¹, Frederick J. Kaskel¹, John J. Foxe^{1,2,3} and Sophie Molholm^{1,2,3*}



We looked at basic auditory processing (the initial steps your brain takes to comprehend sound in your environment), sensory memory (the stage of memory that allows you to briefly remember these sounds), and involuntary attention (that attention without effort, you're not even noticing that you're paying attention) in adults with cystinosis.

We found no problems in basic auditory processing, but some subtle differences in sensory memory and involuntary attention. Which is not bad news: finding out which processes are being handled differently gives us the opportunity to intervene, to start developing strategies to address these differences and possibly improve daily and cognitive function.

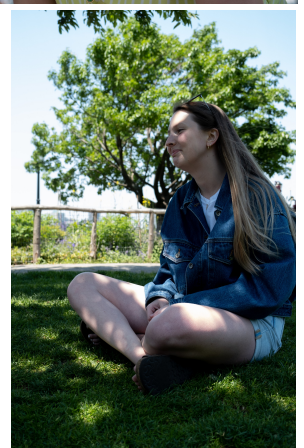
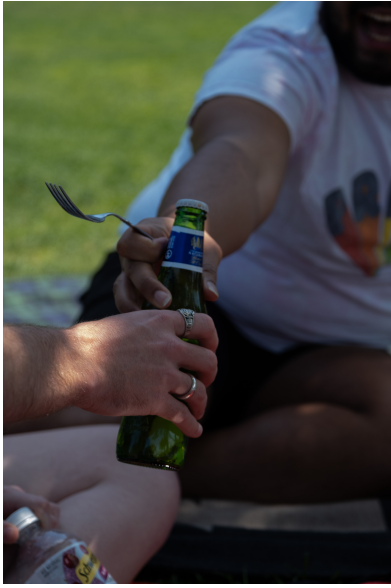
Another piece of the story is that these results are very similar to what we had reported for children and adolescents, suggesting that, at least in these brain processes, there is no decline with age in cystinosis.

More work is needed, of course. Particularly to understand what are the consequences of these differences. And that is what we plan to start in the next couple of months!

Click [here](#) to hear Ana talk about what's next for our cystinosis research!

lab picnic

may 2021



Wishing you a safe &
happy summer!

