INSIDE THE RESEARCH

Welcome and Update

Thank you for your interest and participation in our research! We are excited to announce the launch of four new NIH-funded research projects and are devoting this newsletter to sharing news about these exciting projects, updating you on our activities, and describing ways that families and individuals can be involved. Each of these new projects focuses on understanding the genetic, brain, cognitive, and environmental factors that contribute to language abilities in autism and fragile X syndrome (FXS). Our studies also focus on relatives who are genetic carriers and can help us understand how complex traits are transmitted across families. In the pages below, we provide more details on these projects. We hope to talk with you about participating - you can contact us by email at **familystudy@northwestern.edu** or by phone at **1-877-275-7187**, and please check out our website at **ndl.northwestern.edu** for more details and additional updates on findings from our existing projects!

A cross-linguistic study of language traits in autism: One of four new NIH-funded projects in the NDL!

A cross-linguistic study of language traits in autism

Study similarities and differences in language profiles in autism across language and cultures

Identify brain and cognitive contributors to cross-linguistic language patterns

Apply artificial intelligence techniques to identify cross-linguistic language patterns

Chicago

Hong Kong
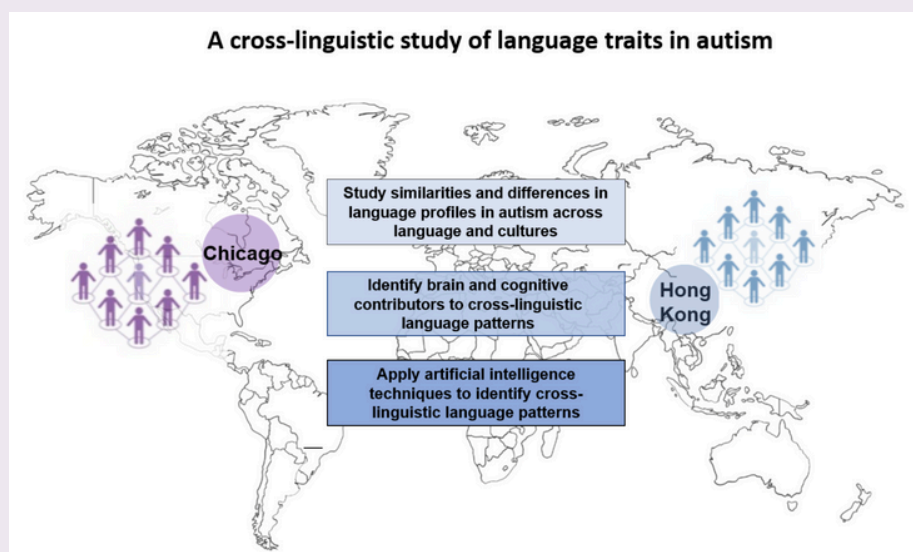
Northwestern | SCHOOL OF COMMUNICATION

Research Updates and Announcements

New Funding for The Family Study of Language in Autism

We were awarded the third competitive renewal of our Family Study of Language in Autism (R01DC010191), which was first funded in 2010 by NIH's National Institute on Deafness and Other Communication Disorders (NIDCD). The next phase of the project brings together basic, translational, and clinical scientists across several institutions to support critical research on social language skills that are most profoundly impacted in autism.

The project studies families, both parents and children, to understand how language profiles extend beyond traditional diagnostic boundaries. We examine how these profiles may be linked with differences in the ways that the brain processes speech and language, and how this may be tied to patterns of molecular genetic variation in all of us. We are also turning a major focus to studying girls and women, who have been historically underrepresented in studies of pragmatics in ASD, to understand how language skills may be impacted differently in autistic males and females.

Important goals for our team are to generate findings, resources, and tools from these studies that will lead to improved understanding of the causes of social communication challenges in autism, and shed light on the complex factors supporting social language use in us all.

Studying Language in Autism across Different Languages and Cultures

We were awarded a brand new grant (R01DC021849), also funded by the NIDCD, where we partner with collaborators at The Chinese University of Hong Kong to answer critical questions about how the expression of social language traits of autism may vary across different languages and cultures.

Specifically, we will study social language abilities and related neural and behavioral traits in autism across speakers of English and Cantonese. This cross-linguistic model will provide a unique lens to identify socially, clinically, and biologically important features of autism under strong biological influence, as well as those that are more susceptible to environmental influences, such as linguistic structure and cultural features.

Research Updates and Announcements

Continuation of The Family Study of Language in Autism and Fragile X Syndrome
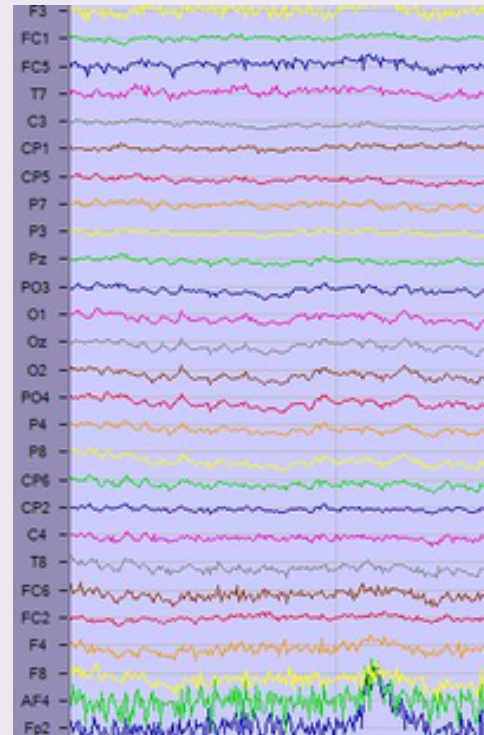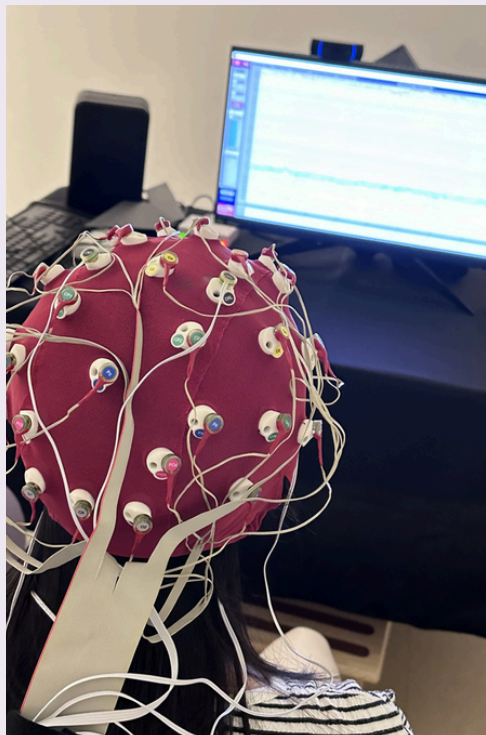
We are excited to have been awarded a third phase of funding for our Family-Genetic Study of Autism and Fragile X Syndrome (R01MH09113110), which was first funded in 2012 through the National Institute of Mental Health (NIMH). Findings from earlier stages of this work reported key overlapping traits among individuals with autism and FXS, as well as relatives of autistic individuals and carriers of the *FMR1* premutation, showing how variation in language and social traits associated with autism, including very subtle traits in those without clinical diagnoses, can be tied to the *FMR1* gene.

In the next phase of this project, we build on this work with sophisticated clinical-behavioral, computational, and neural measures (as well as tasks that are fun to do!). Findings from this project will help us to understand how the brain processes different aspects of speech and language in autism and *FMR1* conditions, broadening our understanding of underlying biological processes impacted in these conditions. This work will be important for developing more effective interventions and also help us to understand the genetic basis of complex traits in us all.

Early Career Research Award!

Research Assistant Professor Joe Lau received an Early Career Research Award from the National Institute on Deafness and Other Communication Disorders to support his project, "The Role of Context in the Neural Processing of Speech in Autism Spectrum Disorder" (R21DC022031).

This three-year grant will use innovative brain imaging techniques to examine brain mechanisms that contribute to speech and language processing styles that may contribute to challenges in communication and language styles in autistic individuals.

JULY 25 - 28, 2024
ORLANDO, FLORIDA
19TH NFXF INTERNATIONAL FRAGILE X CONFERENCE
WHERE THE MAGIC HAPPENS

ADVOCACY · EDUCATION · COMMUNITY · RESEARCH · TREATMENT

Our team is so excited to attend the 19th International Fragile X Conference in Orlando from July 25th – 28th, where we will be presenting new findings, sharing information on our newly funded NIH projects, and providing opportunities for families to participate in our studies.

We hope that this opportunity to participate and engage with our team may be both convenient and useful for families to contribute to exciting new FXS- and *FMR1* premutation-related research. We look forward to meeting members of the community and reconnecting with families who have previously participated in our research. Please contact us if you might be interested in participating in our research while we are in Orlando, and we can share more information about our studies, including compensation and what participation will look like. We can't wait to see you at the conference!

Welcoming New Staff Members

LINDSAY GOLDMAN: Lindsay is a research project coordinator at the NDL. While earning her bachelor's degree in Biopsychology, Cognition, and Neuroscience at the University of Michigan, she worked as an undergraduate research assistant at the NDL. Upon graduation, she excitedly joined the lab as a full-time research assistant, and soon after took on the position of research project coordinator. In her role in the NDL, Lindsay helps to lead our research projects focused on autism and fragile X. She has a particular interest in the psycholinguistic and neurocognitive mechanisms that contribute to the unique prosodic and pragmatic language profiles of individuals with autism and fragile X syndrome, as well as their relatives. Lindsay is so grateful for the opportunity to work closely with the amazing participants and families who make our important research possible!

KYLIE ROBINSHAW: Kylie is a research project assistant at the NDL who recently joined us after graduating with a bachelor's degree in Psychological Sciences from the University of Connecticut. In February, Kylie attended the Meeting on Language in Autism, where she presented her poster entitled "Gender Differences in Linguistic Measures Among Three-Year-Olds with ASD." After team members met Kylie and learned about her terrific work, they recruited her to join the NDL! As a research project assistant, Kylie helps with recruiting and testing participants, and she works with undergraduate members on processing our speech and language data. Kylie looks forward to enhancing her experience in autism and fragile X research at the NDL.

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Congratulations to Our Graduates!

EMILY LANDAU: Emily Landau is a doctoral student in the Clinical Psychology Ph.D. program at Northwestern University, and she has been a member of the NDL for 7 years. She has loved getting to work with so many amazing research participants over the years! Emily successfully defended her dissertation in June, 2024. Her dissertation project focused on sex differences in social language use in males and females with autism. Next year, she is completing a year-long clinical internship specializing in pediatric neuropsychology at the Kennedy Krieger Institute at John's Hopkins University School of Medicine in Baltimore, Maryland. Emily will be graduating from Northwestern in the summer of 2025, and she will greatly miss her time in the NDL!

JANNA GUILFOYLE: Janna is a doctoral student in the Clinical Psychology Ph.D. program at Northwestern University, and she has been a member of the NDL for 6 years. Janna successfully defended her dissertation in July, 2024. Her dissertation examined physiological mechanisms contributing to prosody and pragmatics in autism. Next year, she is completing a year-long clinical internship specializing in pediatric neuropsychology at the University of Austin Dell Medical School/Dell Children's Hospital. Janna will be graduating from Northwestern in the summer of 2025. Janna has loved working with the families who have participated in our research in the NDL over the years. She is excited to graduate but is going to miss the people and experiences she had in the lab!

JIAYIN XING: Jiayin Xing is a doctoral student in the Communication Sciences and Disorders Ph.D. program at Northwestern University, and she has been a member of the NDL for 6 years. Jiayin defended her dissertation successfully in January of 2024. Her dissertation project focused on multi-modal skill coordination in social communication in autism and their first-degree relatives. Jiayin will begin a post-doctoral fellowship at Langone Medical Center at New York University in fall 2024, where she will continue her research on early neural and behavioral predictors of social cognitive development in at-risk children. She graduated in June and already misses her time working in NDL with the families who have participated in our research!

New International Collaborators

At the Northwestern Neurodevelopmental Disabilities Laboratory, we are a team of researchers studying language and other abilities in autism, fragile X, and related conditions, as well as the connections with genes and environmental factors that influence language and other complex traits in these conditions. We work together with local research and clinical communities, as well as broader global networks, to advance science and care for individuals with autism and fragile X syndrome.

The Technion Israel Institute of Technology is among the world's top 10 science and technology universities. Our team collaborates with Dr. Joseph Keshet, who is a leading speech engineer at Technion, to apply artificial intelligence-based technologies to study speech profiles related to genetic variation associated with autism and fragile X.

The Chinese University of Hong Kong (CUHK) is ranked among the best universities in Hong Kong and is among the top five universities in Asia. We collaborate with Dr. Patrick Wong, the founding director of the Brain and Mind Institute of CUHK, in our newly funded cross-linguistic family study of language in autism.

Neurodevelopmental Disabilities Lab
NORTHWESTERN UNIVERSITY

Thank You to Participating Families from All of Us at the NDL!