



YEAR-END UPDATES

from the GirlBAND Study
at Stanford University School of Medicine



Announcements for 2021

- Year 3 in-person research resumption (1 parent and 1 child)
 - Look out for our survey!
 - Hybrid visits: remote online assessments + 1 to 2 days in-person MRI and NIRS imaging
 - Building capacity: limited attendance permitted to ensure safety
 - Travel updates:
 - Hotels (certified COVID-safe policies)
 - Meals (meal delivery service available)
 - COVID-safe procedures:
 - Temperature checks, masks required, sanitization of equipment, and social distancing

NEW!

NIRS Scanning on Parent-Child Pairs

- To assess parent-child inter-brain synchrony during a conversation task
- Steps:
 1. Parent and child will each put on appropriate sized NIRS cap
 2. Parent-child pair will have conversations about school, sports, friends, games, and/or hobbies...etc



MANUSCRIPTS IN PROGRESS:



Thanks to your selfless contribution, we are able to fill the gaps in research on girls.

As a reminder, this study includes school-aged girls with similar characteristics that either have or don't have fragile X syndrome (FXS).

We are currently analyzing all of our data and here are the synopses of what we found:

Aberrant neural response during face processing in school-aged girls: Defining potential brain biomarkers for treatment studies

The goal of this project is to examine brain activity in school-aged girls using a portable brain imaging technique called functional near-infrared spectroscopy and explore how their social-emotional function is associated with this activity. The proposed study will be a major step forward towards understanding the brain correlates of social dysfunction in school-aged girls and providing a sensitive outcome measure for planning and conducting treatment trials in affected individuals.

Empathy and anxiety in girls

We found evidence that girls with FXS may experience more empathy and anxiety compare to girls who do not have FXS. On the other hand, girls with FXS who are better at perspective-taking and understanding other's emotion (i.e., cognitive empathy) appear to have less anxiety symptoms, which are commonly observed in FXS. One potential implication of these findings is that cognitive empathy could be a useful target for interventions aimed at reducing anxiety in girls with FXS.

Neuroanatomical profile of school-age and adolescent girls

Our results show that girls with FXS have significantly larger brain volumes (both gray and white matter) than girls who do not have FXS. In addition, the FXS group also showed significantly larger size in several brain regions associated with key cognitive functions. Conversely, the FXS group showed significantly smaller brain size in an area associated with social behavior than girls who do not have FXS. Associations between brain volumes in these regions and socio-emotional outcomes provide potential insight into gene-brain-behavior relationships underlying the FXS female phenotype.

Anxiety and depression in girls

We assessed anxiety and depression symptoms in school-aged girls with FXS or other learning and behavior challenges. We discovered that rates of anxiety and depression seem to increase for girls with FXS as they get older. This may be related to changes associated with puberty and/or increased social demands. The girls with learning and behavior challenges who do not have FXS did not exhibit this same increase in anxiety and depression symptoms associated with age.

Cognition and behavior in school-aged girls

Our assessment of school-aged girls with FXS and girls with learning differences revealed poorer performance on standardized measures of cognition and academic achievement for the FXS group. Group differences were most pronounced for visual spatial functioning, executive functioning, and math abilities, with the FXS group showing poorer performance than the comparison group. In conjunction with previous literature describing girls with FXS as prone to decline in cognitive scores, these data emphasize the importance of implementing targeted early intervention strategies in this population to promote optimal outcomes.

Impact of COVID-19 pandemic on mental health, daily functioning, and technology use in girls

To the best of our knowledge, this is the first study to examine mental health impacts of the COVID-19 pandemic for school-aged girls with FXS or other learning differences. We found that the pandemic-related worries of girls with FXS come from external sources, relationships, and skills. For girls with learning differences who do not have FXS, previous emotional and behavioral characteristics strongly predict level of worries or concerns in high stress situation and extreme change. Taken together, we intend to deepen the understanding of potential impacts of the pandemic on children and adolescents, particularly those with special needs, and to aid in developing targeted interventions and public health initiatives to promote emotional well-being and minimize negative impacts of the pandemic.

If you have not had a chance to read our first paper published in January 2019, you can access the [paper online here](#).

As soon as these papers are published we will send you a copy! We look forward to our next stage of our data analysis.

STAY IN TOUCH!

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