Measuring Brain Synchronization Between Children and their Parents while Drawing Pictures

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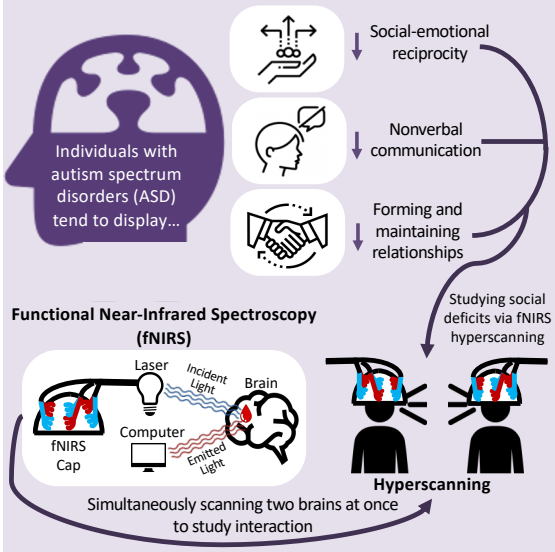
Background



Opportunity

Current studies haven't placed extensive focus on studying...

- **Socialization in ASD** using imaging tech
- The **social-cognitive brain** and its interactions

Objective

Using fNIRS hyperscanning during a collaborative drawing task done by ASD and typically developing (TD) parent-child dyads to determine differences in brain synchrony.

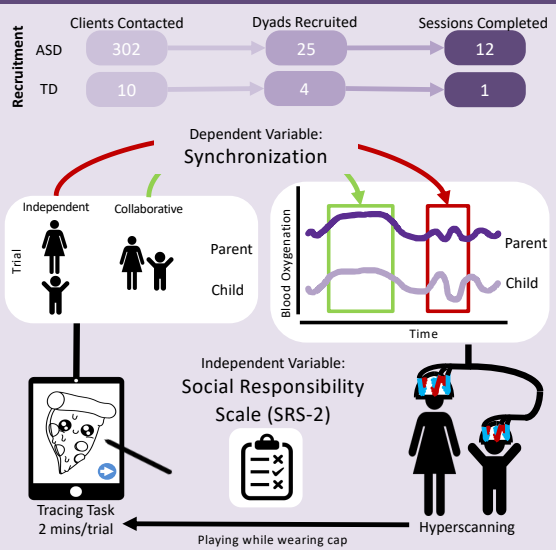
Hypotheses

1. Collaborative trials will show greater synchrony than individual trials for both TD and ASD dyads
2. TD dyads will demonstrate greater synchrony than ASD dyads overall

Think it is impossible to quantify social connection during an interaction?

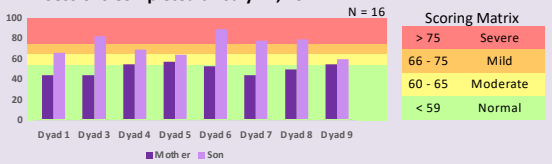
Think again.

Recruitment and Design



Preliminary Results

SRS-2 Total Scores for Sessions Completed till July 12, 2021

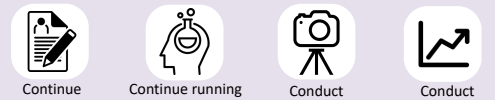


Scoring Matrix

> 75	Severe
66 - 75	Mild
60 - 65	Moderate
< 59	Normal

- All sons were formally diagnosed with ASD and had scores > 59 (demonstrates ASD traits)
- All mothers were not formally diagnosed with ASD and had scores < 59 (doesn't demonstrate ASD traits)
- Sons formally diagnosed with ASD tend to have higher scores than their mothers
- Sons with more severe ASD behavioral traits and diagnoses tend to have higher scores

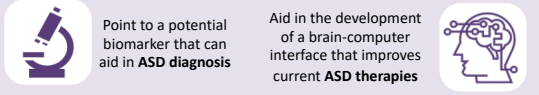
Next Steps



- Continue enrolling ASD and TD dyads
- Continue running sessions with ASD and TD dyads
- Conduct behavioral analysis of turn-taking
- Conduct imaging analysis of fNIRS waves

Relevance

Results may...



- Point to a potential biomarker that can aid in **ASD diagnosis**
- Aid in the development of a brain-computer interface that improves current **ASD therapies**

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prism lab

University of Toronto