

A brain-to-brain EEG pilot study of adolescent autistic friendships during dyadic collaboration

Caitlin M. Hudac & Cailee M. Nelson
 University of South Carolina
<https://b-radlab.com/>



Background

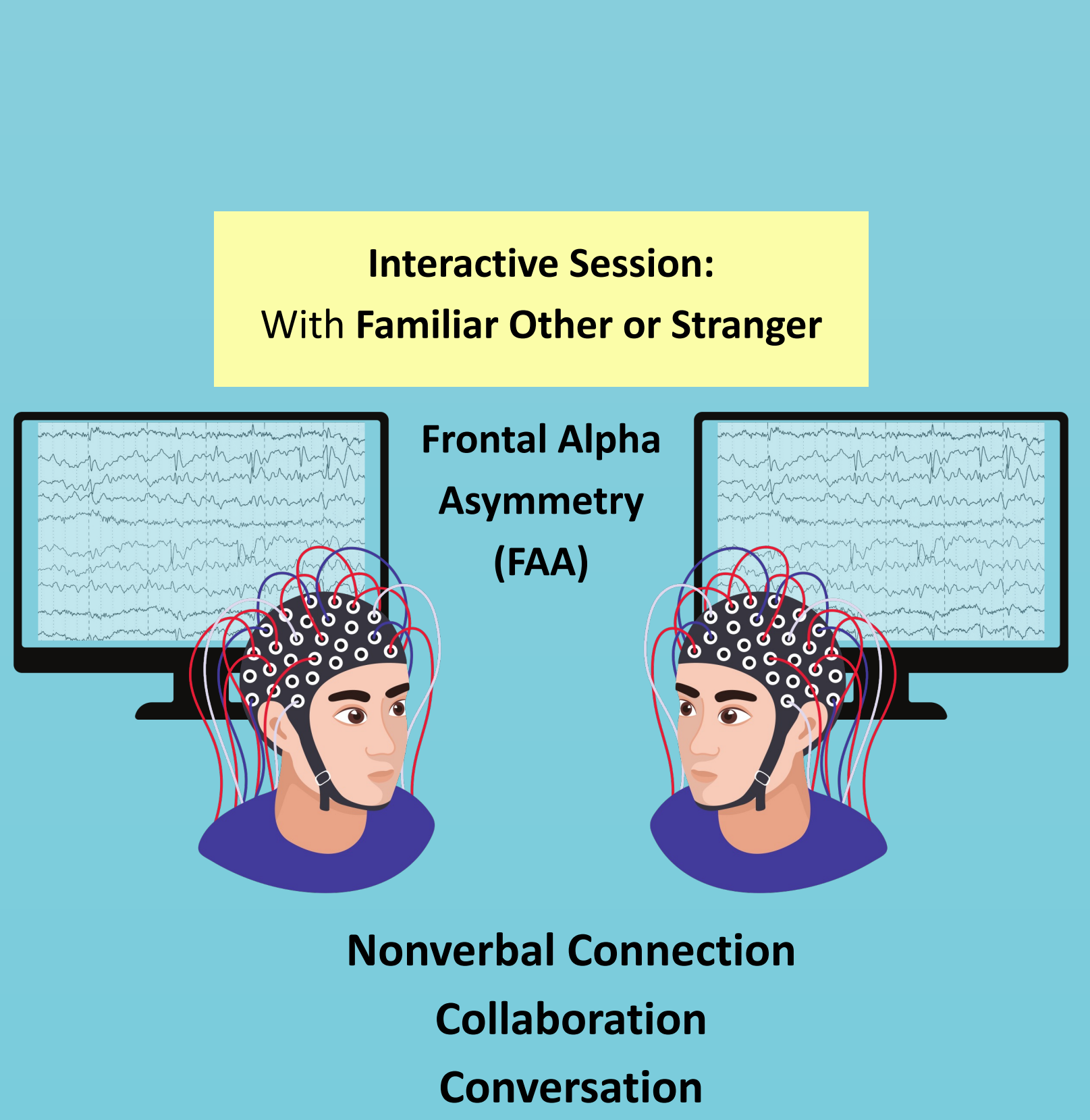
- Friendships rely on high-quality communication, particularly when working towards a shared goal (Brennan & Enns, 2015).
- Prior work using the Diapix task (Engen et al., 2010) demonstrated that autistic children and adolescents are less likely to match prosody of their partner (Lehnert-LeHouillier et al., 2020; 2022) and similar phonetic convergence as neurotypical peers (Hong et al., 2022).

Study goals

Our long-term goal is to link underlying biological foundations of social attention and cognition to real-life experiences to improve wellbeing in neurodiverse autistic populations. The objective here is to evaluate how social attention supports autistic friendships and contributes towards general wellbeing. **Here, we evaluate how brain correlates during collaboration relate to strength of social connection/s and wellbeing.**

Design

Adolescent participants are aged 10-17 years. Autistic individuals are invited to participate up to three times with a self-selected friend/family member or scheduled with a stranger.



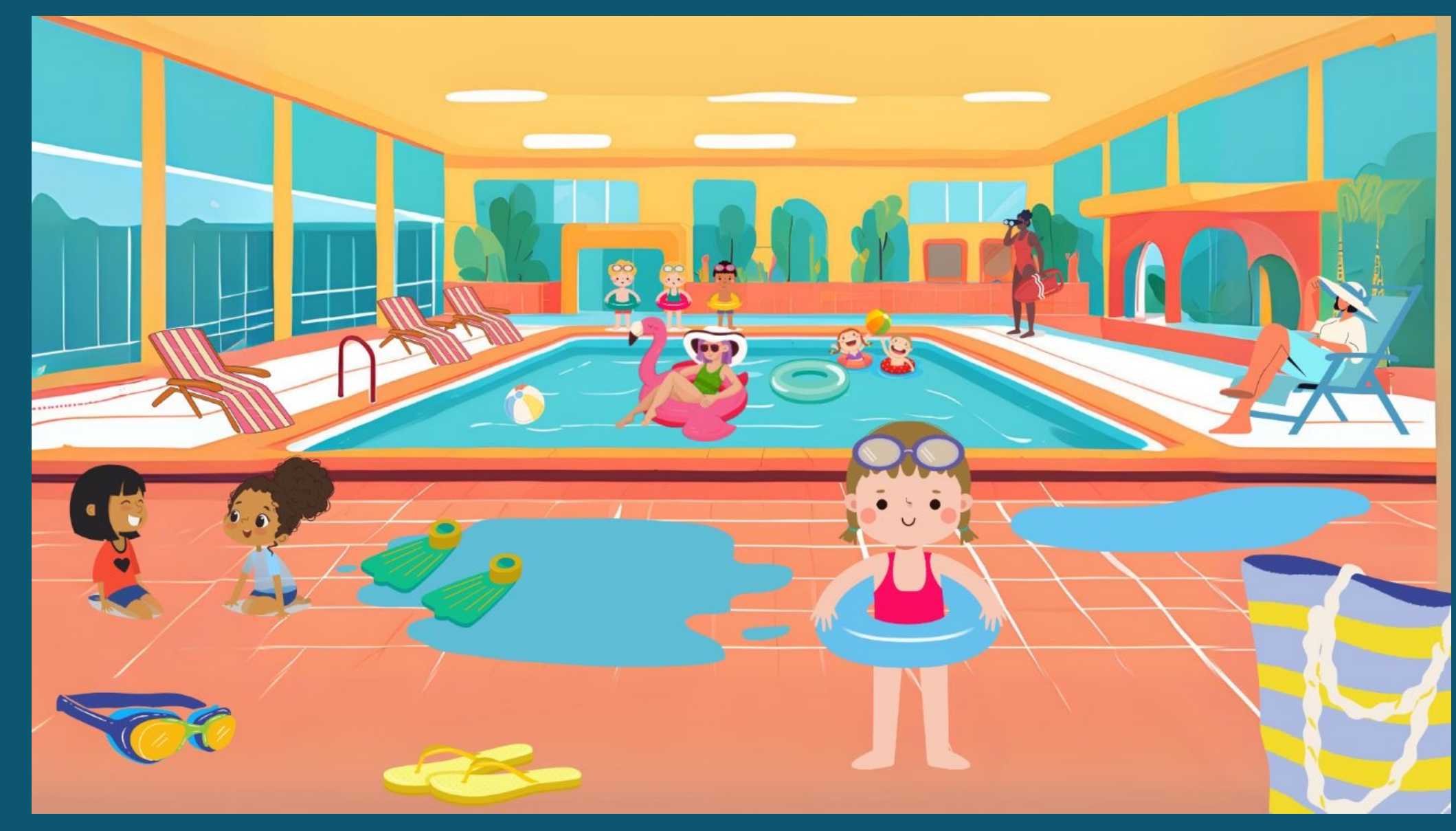
- Hemispheric Differences in Alpha Power**
 - 8-12 Hz
 - $\ln(\text{right alpha power}) - \ln(\text{left power})$
- Alpha Is Negatively Associated with BOLD response**
 - $> \text{right FAA} \sim \text{left hemodynamic activity}$
 - $> \text{left FAA} \sim \text{right hemodynamic activity}$
- FAA Is Representative of Approach and Avoidance**
 - $> \text{right FAA} \sim \text{approach}$
 - $> \text{left FAA} \sim \text{avoidance}$

Dyadic collaboration task

“Find the differences” between the images

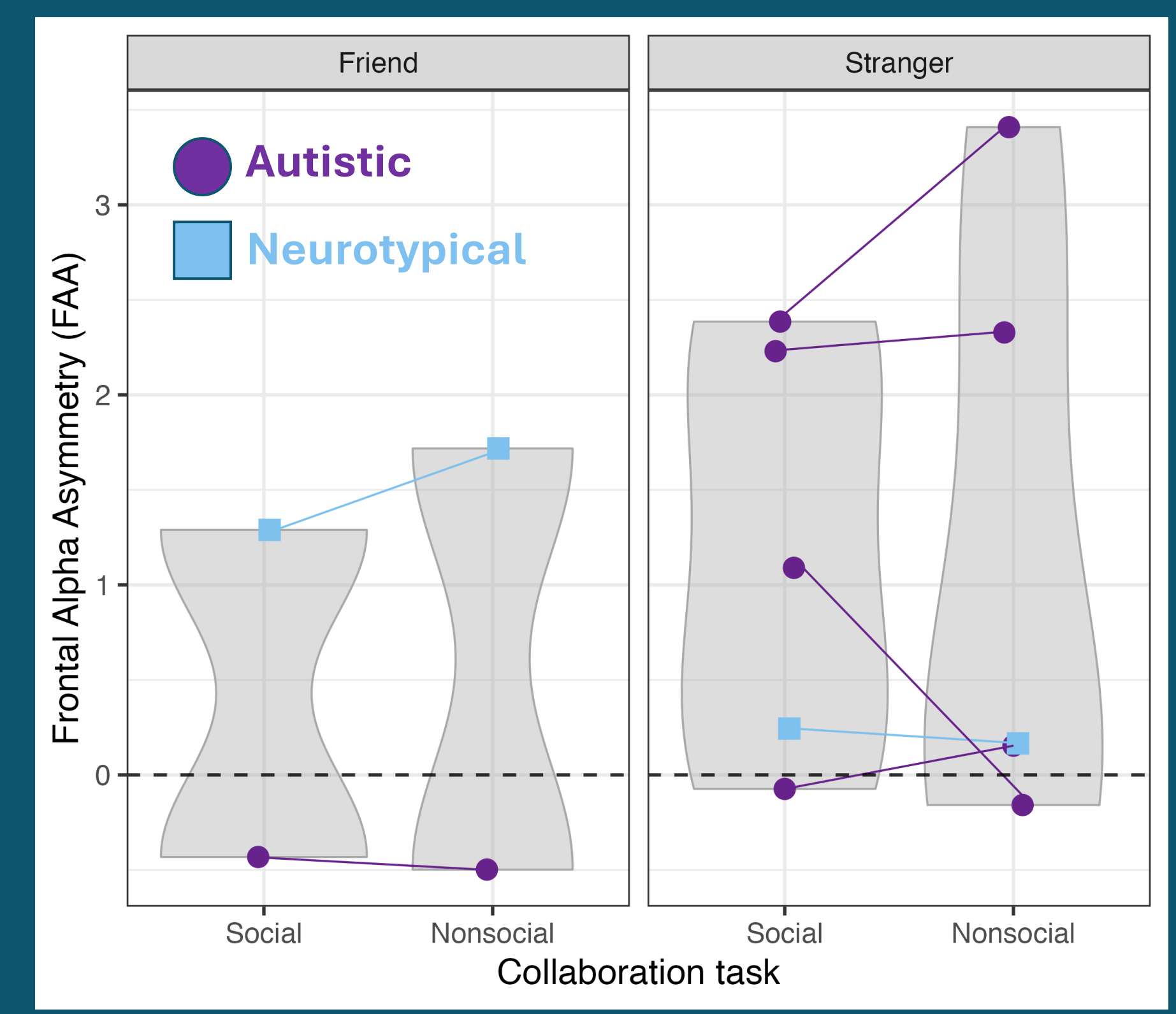
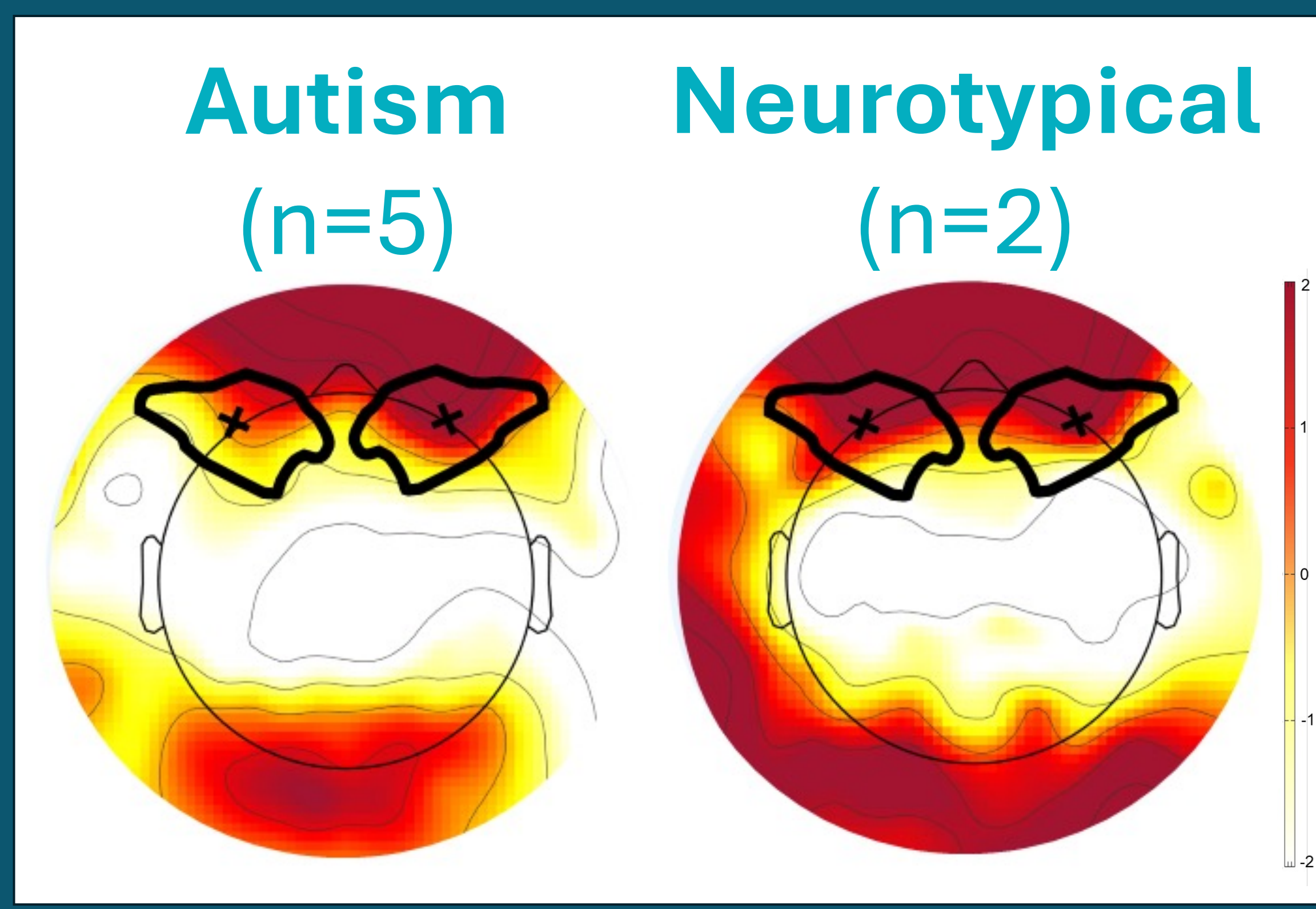
Participant A would see:

Participant B would see:



Preliminary findings

Frontal alpha asymmetry



Relationship to post-session connection & wellbeing

