**INTRO**

- Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by clinically recognized deficits in social communication, repetitive behaviors, and restricted interests. Biological indicators of the disorder are essential in pinpointing the neural activity that gives rise to the disorder’s hallmarks. Resting state electroencephalography (EEG) studies suggest altered default signaling associated with ASD (Lefebvre 2018), with particular deviations in the power of the alpha frequency band (8-13 Hz) thought to reflect social and cognitive impairments. Previous work has produced contradictory findings (Lefebvre 2018), though many studies have found reduced alpha power (Murias 2017, Tierney 2012).

- **Objective:** We sought to determine whether alpha power among individuals with ASD, as compared to neurotypical individuals, was consistent across different methods of measurement, specifically average power and peak power.

- **Hypothesis:** We predict group differences when measuring alpha by average power but not when measuring by peak power.

**METHODS**

- 219 participants completed this study and were recruited from previous studies or via advertisements.
- EEG data was collected via Electrical Geodesic Inc. (EGI) high-density sensor nets during an eyes-open resting task in which participants viewed slow moving shapes of various colors. The experiment included three 1-minute resting segments.
- Basic EEG processing included filtering (0.3-40 Hz, 1 s segmentation, artifact correction, and average referencing.
- Fast Fourier transformation (FFT) was used to compute power values

**RESULTS**

Mixed Multi-Level Models using full factorial design conducted using SAS 9.4.

- Pairwise comparisons explained the significant Group x Measurement interaction. Measuring by peak power produced higher values than measuring by average power in both ASD, t(4183) = 24.92, p < .0001, as well as TD, t(4183) = 21.78, p < .0001.
- There were no significant group differences in either peak alpha, t(222) = 0.13, p = .90, or average alpha, t(222) = 0.38, p = .70.
- The extent of the measurement effect (peak > average) was larger for TD relative to ASD, t(4183) = 2.15, p = .013.

**CONCLUSIONS**

Measuring alpha by average power and peak power produced similar results in ASD and TD groups.

Future directions:
- Standardize alpha range
- Sample differences (IQ, gender, etc.)
- Need for more sophisticated models to study alpha during social context (Lefebvre 2018).