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<u>Main Purpose</u>: Previous research has shown that scores on the General Social Outcome Measure (GSOM) improve after administration of propranolol in those with autism spectrum disorder (ASD), suggesting it induces an increase in general social functioning (Beversdorf et al, 2014). In a current open label study, eligible individuals participate in a 12-week, double blinded trial for propranolol. Throughout the trial, GSOM scores are measured before and after the 12-week period to measure an increase in social behavior. In ASD patients, Wernicke's Area and insular cortex are regions of interest (ROIs) due to their influence in social behavior and communication. This research evaluates biomarkers as an indicator in the efficacy of propranolol as an intervention for ASD.

<u>Procedure:</u> The sample consists of five participants recruited from the Thompson Center for Autism and Neurodevelopmental Disorders who are clinically diagnosed with ASD. The participants included are in an open label propranolol study. Structural MRIs were taken prior to drug administration in the open label study for propranolol. Free surfer was utilized to obtain gray matter volume. R analysis was performed to correlate the ROIs linearly to the change in GSOM over the course of the previous open label study.

<u>Results and Conclusions</u>: Significant relationships between gray matter volume and GSOM scores were found only within the Facial Expressions category. Left hemisphere insula volume was found to be significant, however, there were no significant relationships found between the left or right superior temporal gyrus and GSOM. Right hemisphere cingulate areas were found significant as well as multiple other regions across the frontal, temporal, and occipital lobes. Subcortical areas were significant in the right and left nucleus accumbens, and the caudate in the right hemisphere. These results indicate these areas could enhance how propranolol is used as an intervention for ASD in the future.