

Supplemental material for “Reward Network Function in Autism during Face Anticipation and Outcomes”, by Dichter, Richey, Rittenberg, Sabatino, & Bodfish.

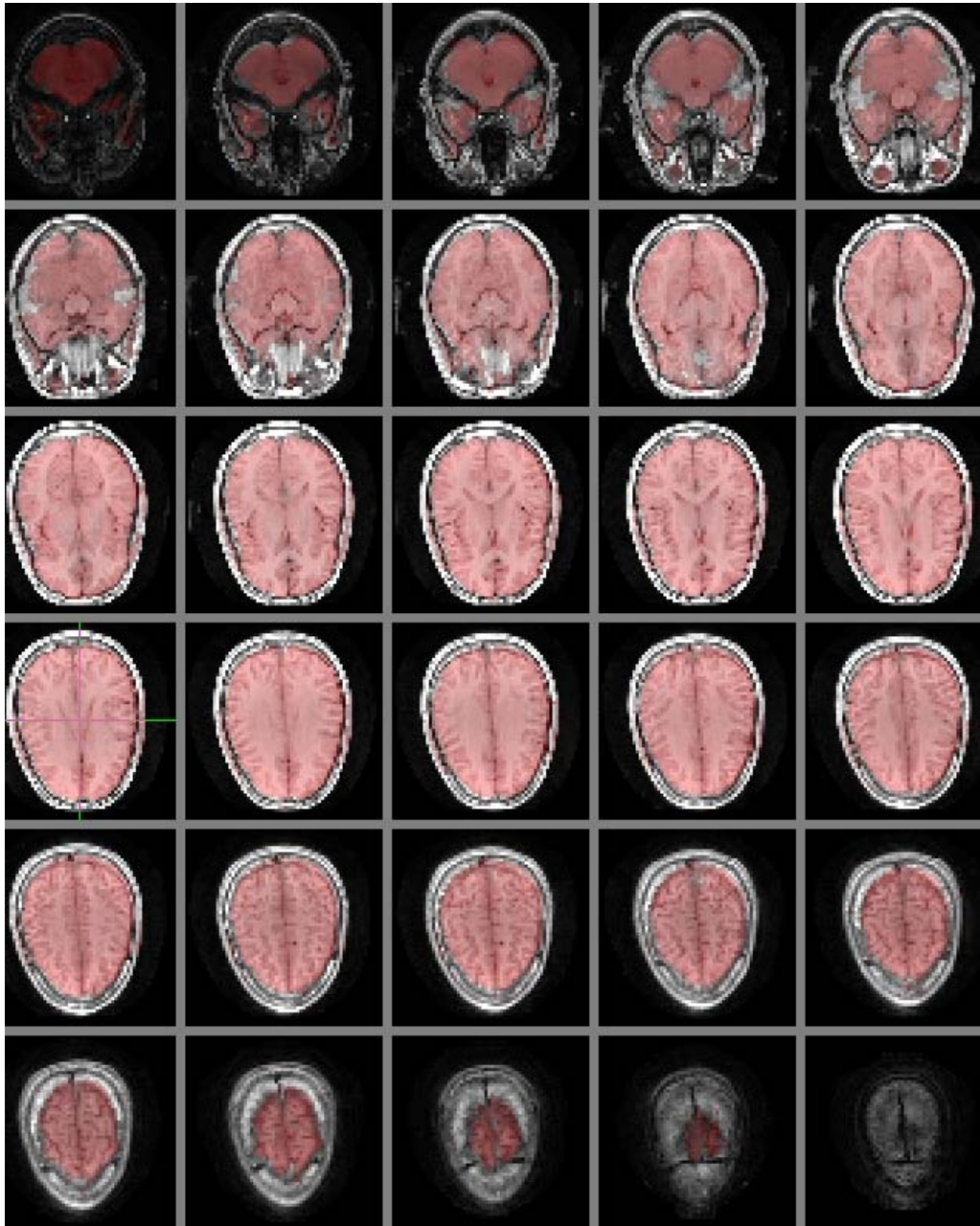


Figure 1: fMRI signal coverage in the orbital frontal cortex achieved with higher-order shimming applied to improve magnetic field homogeneity. The red color map is the reconstructed functional image from one participant thresholded at 50% of the peak signal intensity. This map is overlaid on the participant’s T1-weighted structural scan.

Control Results During Money Trials

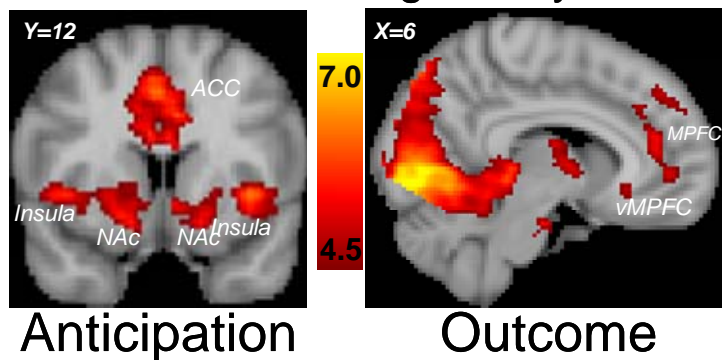


Figure 2: Activation maps for the control group alone in response to monetary anticipation (left) and monetary outcomes (right). The figure illustrates NAc activation during monetary anticipation and medial prefrontal cortex activation during monetary outcomes. NAc=nucleus accumbens; MPFC = medial prefrontal cortex; vMPFC=ventromedial prefrontal cortex.

Group (Autism, Control) X Reward (Money, Social)

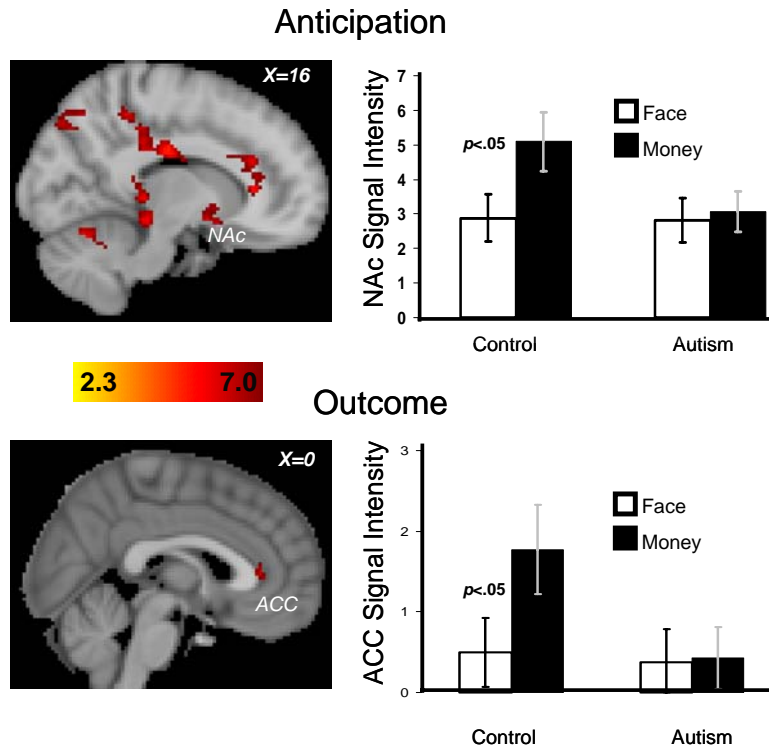


Figure 3: Brain areas predicting significant Group (Autism, Control) \times Reward (Money, Social) interaction terms during anticipation (top) and outcome phases of the task (bottom). Bar graphs depict z-score intensity values in the right NAc cluster identified by a significant interaction effect during anticipation (top) and in the ACC cluster identified by a significant interaction effect during outcomes (bottom). NAc=nucleus accumbens; ACC=Anterior Cingulate Cortex.

Comparison of Monetary and Social Rewards

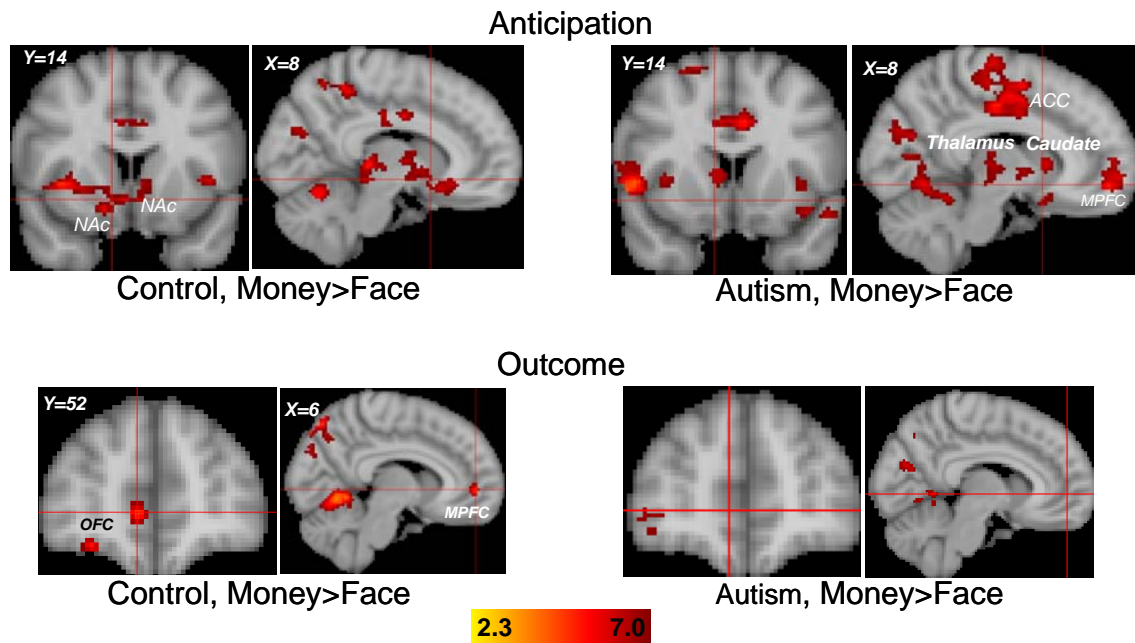


Figure 4: Brain areas with greater activation to money than faces in controls (left) and participants with ASD (right) during anticipation (top) and outcome (bottom) phases. The figure illustrates decreased reward circuitry activation to faces relative to money in both phases in control participants. ASD participants showed decreased reward circuitry activation to faces relative to money during anticipation, but not during outcomes. ACC=Anterior Cingulate Cortex; NAc=nucleus accumbens; MPFC = medial prefrontal cortex.

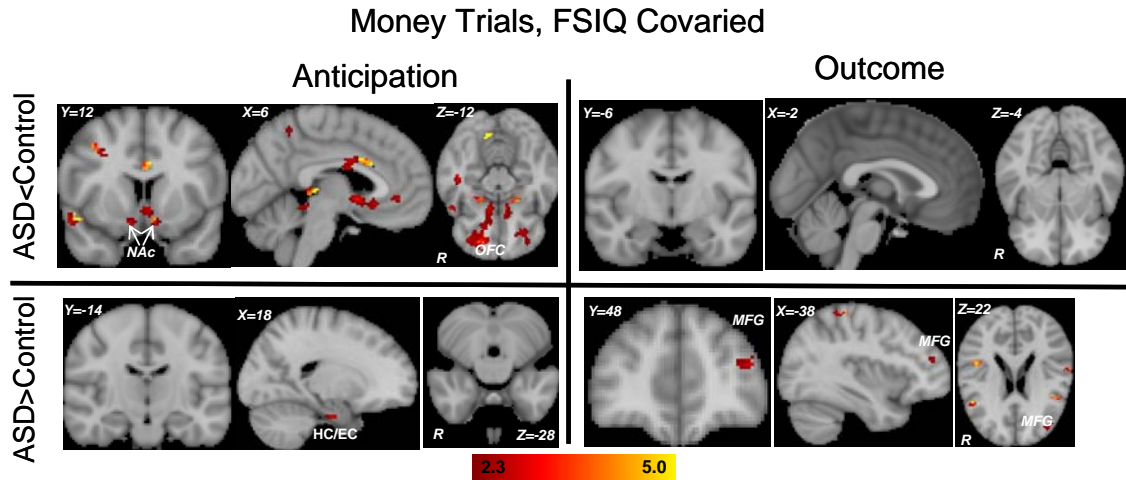


Figure 5 Brain areas showing significant group differences in response to monetary incentives, while controlling for estimated IQ, measured by the Wechsler Abbreviated Scale of Intelligence (WASI) (Wechsler, 1999). Anticipatory responses are on the left and outcome responses are on the right; clusters with relatively less activation in the ASD group are in the top panels, clusters with relatively greater activation in the ASD group are in the bottom panels. The patterns of results are highly similar to those without controlling for IQ. OFC: Orbital Frontal Cortex; NAc: Nucleus accumbens; HC/EC: Hippocampus / entorhinal cortex.

Face Trials, ASD>Control, FSIQ Covaried

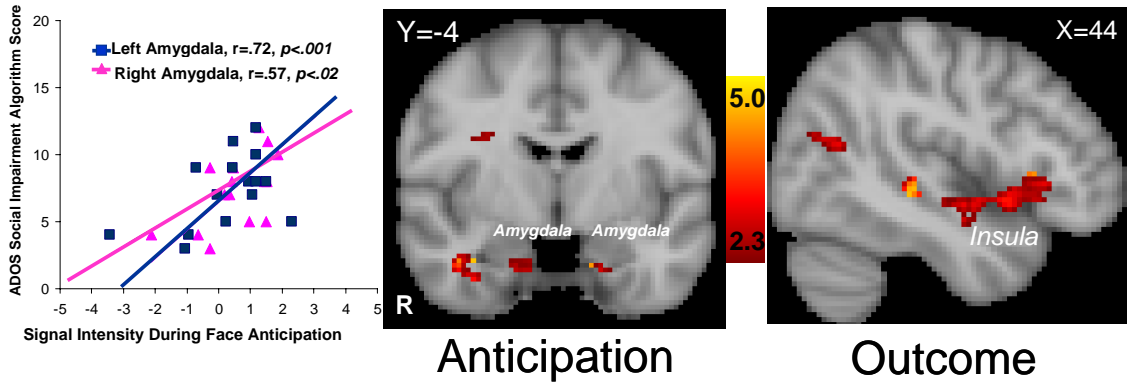


Figure 6 Brain areas showing significantly greater activation in ASD participants relative to control participants in response to face incentives, while controlling for estimated IQ, measured by the Weschler Abbreviated Scale of Intelligence (WASI) (Weschler, 1999).

Money Trials, Only Males

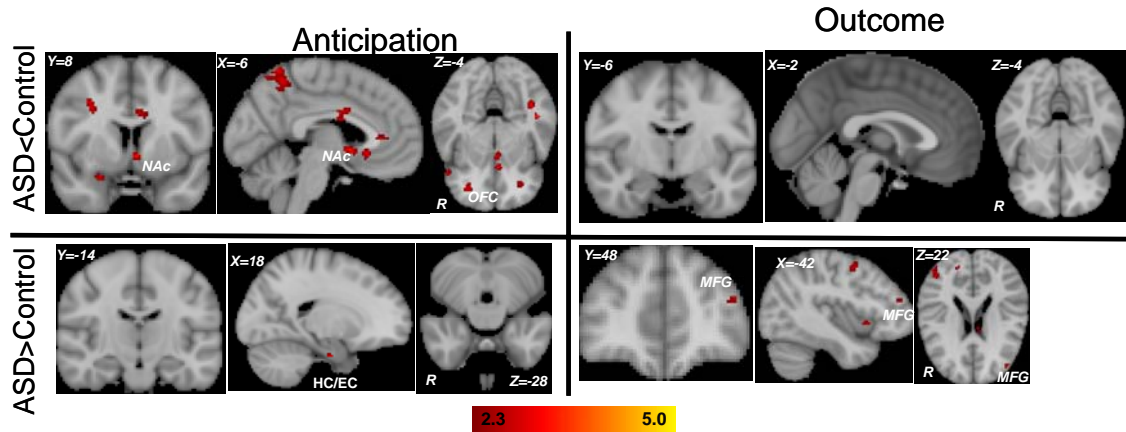


Figure 7: Brain areas showing significant group differences in response to monetary incentives in only male participants (control n=14, ASD n=14). Anticipatory responses are on the left and outcome responses are on the right; clusters with relatively less activation in the ASD group are in the top panels, clusters with relatively greater activation in the ASD group are in the bottom panels. The patterns of results are highly similar to results with females included. OFC: Orbital Frontal Cortex; NAc: Nucleus accumbens; HC/EC: Hippocampus / entorhinal cortex.

Face Trials, ASD>Control, Only Males

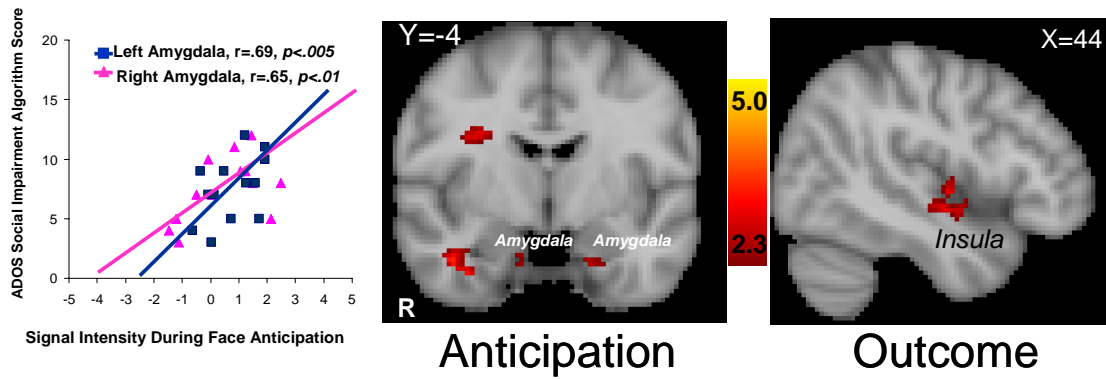


Figure 8: Brain areas showing relatively greater activation in the ASD group in response to face incentives, in only male participants (control $n=14$, ASD $n=14$). The patterns of results are highly similar to results with females included .