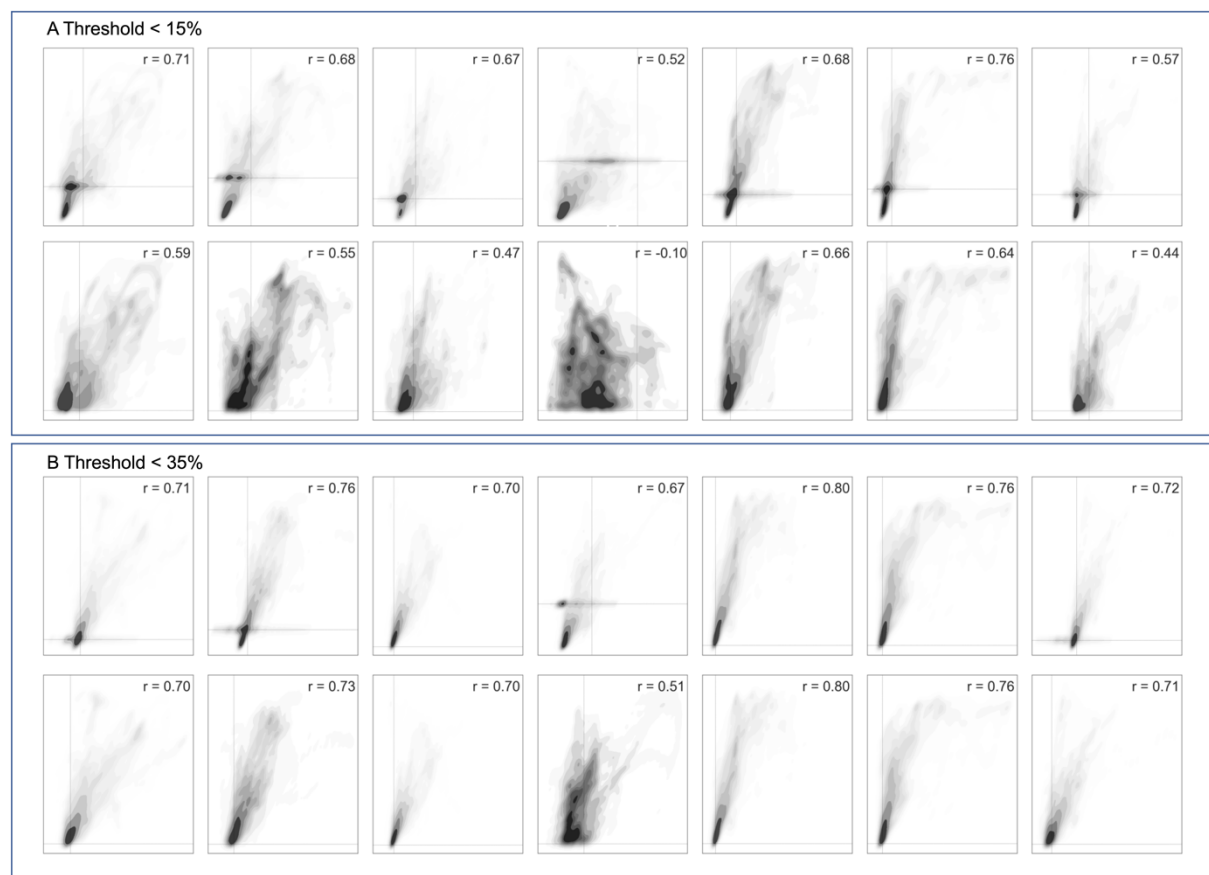
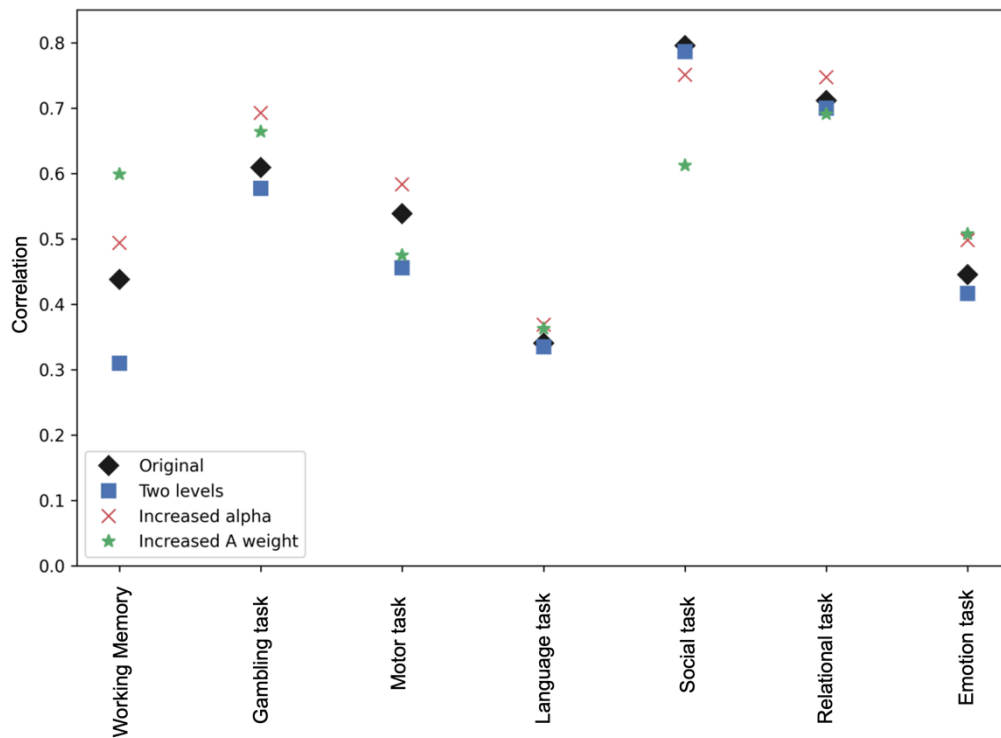


Supplementary figure 1: Spatial prediction from task-positive activity patterns. **A)** Vertices with the highest ($> 25\%$) group-average task activation were used to form a predictor mask. **B)** Spatial regression was used to predict task activity at all remaining vertices, and compared to **C)** the true pattern of activity across all vertices.



Supplementary figure 2: Spatial prediction from task-positive activity patterns with different thresholds. **A)** Vertices with the lowest (<15%) group-average task activation were used to form a predictor mask: top, all vertices not in predictor mask; bottom, only positive vertices. **B)** Vertices with the lowest (<35%) group-average task activation were used to form a predictor mask: top, all vertices not in predictor mask; bottom, only positive vertices.



Supplementary figure 3: Predictive performance on out-of-mask, positive vertices for different LatticeKrig model parameters. Three parameters were varied: (i) the number of levels for the multiresolution lattice (3 in the original or 2); (ii) the alpha parameters controlling the relative variances of the different levels ([1, 0.25, 0.01] for the original or [1, 0.5, 0.1]; (iii) the AWeight (corresponding to the correlation range of the spatial autoregression model) which was either 1.01 in the original or 6.01.