

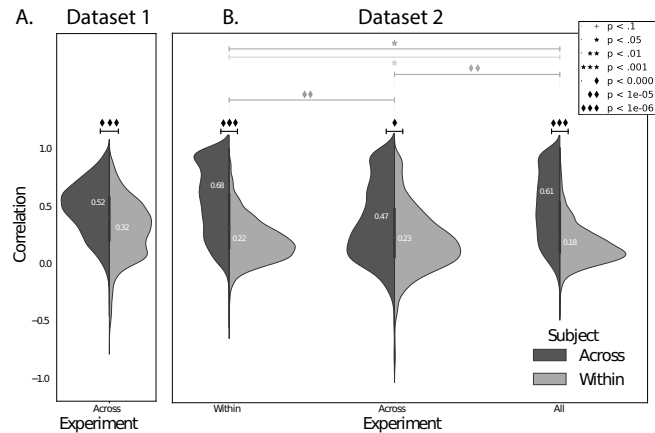
# Supplemental Figures for: A Gaussian process model of human electrocorticographic data

Lucy L. W. Owen<sup>1</sup>, Andrew C. Heusser<sup>1,2</sup>, and Jeremy R. Manning<sup>1\*</sup>

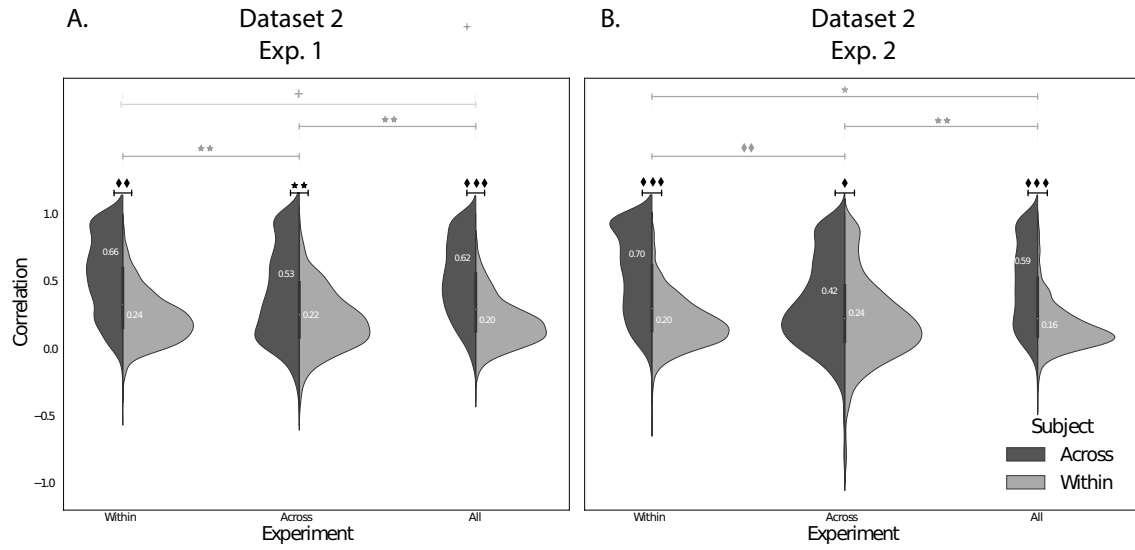
<sup>1</sup>Department of Psychological and Brain Sciences, Dartmouth College,  
Hanover, NH 03755, USA

<sup>2</sup>Akili Interactive,  
Boston, MA 02110, USA

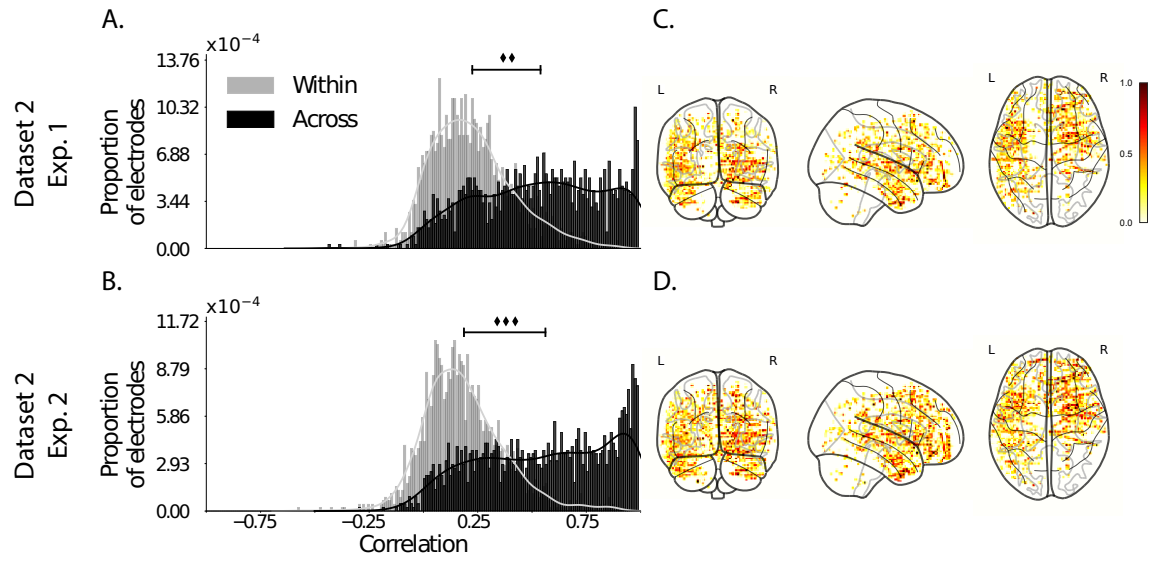
October 11, 2018



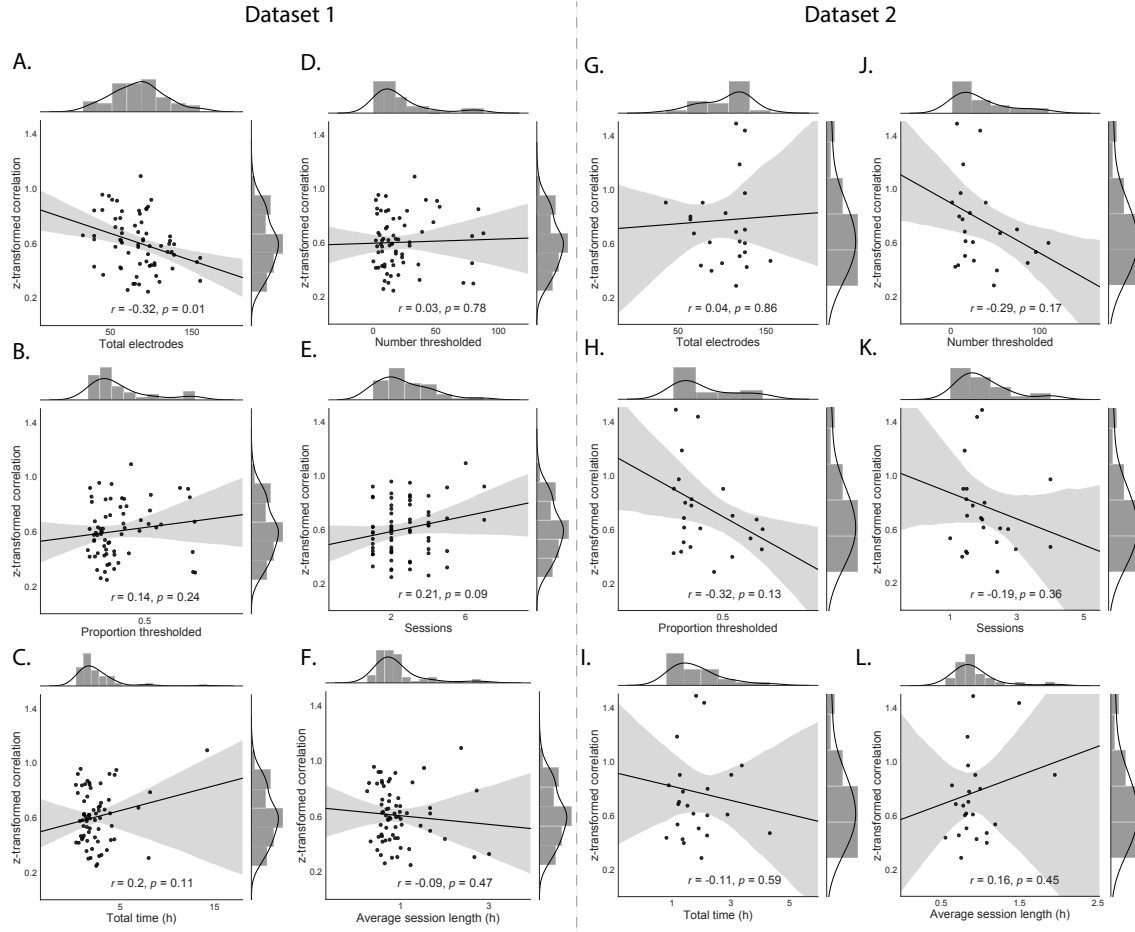
**Figure S1: Reconstruction quality for datasets 1 and 2. A. Distributions of correlations between observed versus reconstructed activity by electrode, for Dataset 1.** The split violin plot reflects the same data as Figure 3A, presented here for comparison. **B. Distributions of correlation between observed versus reconstructed activity by electrode, for Dataset 1.** The right-most split violin plot ("All") reflects the same data as Figure 3B, presented here for comparison. The "Within" plot reflects the same analyses, but limited to models that were trained and tested on the same Dataset 2 experiments. The "Across" plot reflects the same analyses, but limited to models that were trained and tested on *different* Dataset 2 experiments. All plots: the dark gray distributions denote across-subject correlations (model trained on all but one patient and tested on the held-out patient), and the light gray distributions denote within-subject correlations (model trained on all but one electrode from one patient, and tested on the held-out electrode). The horizontal bars denote *t*-tests between the corresponding distributions, and the white numbers reflect the distribution means. The symbols denote the corresponding *p*-values of those statistical tests.



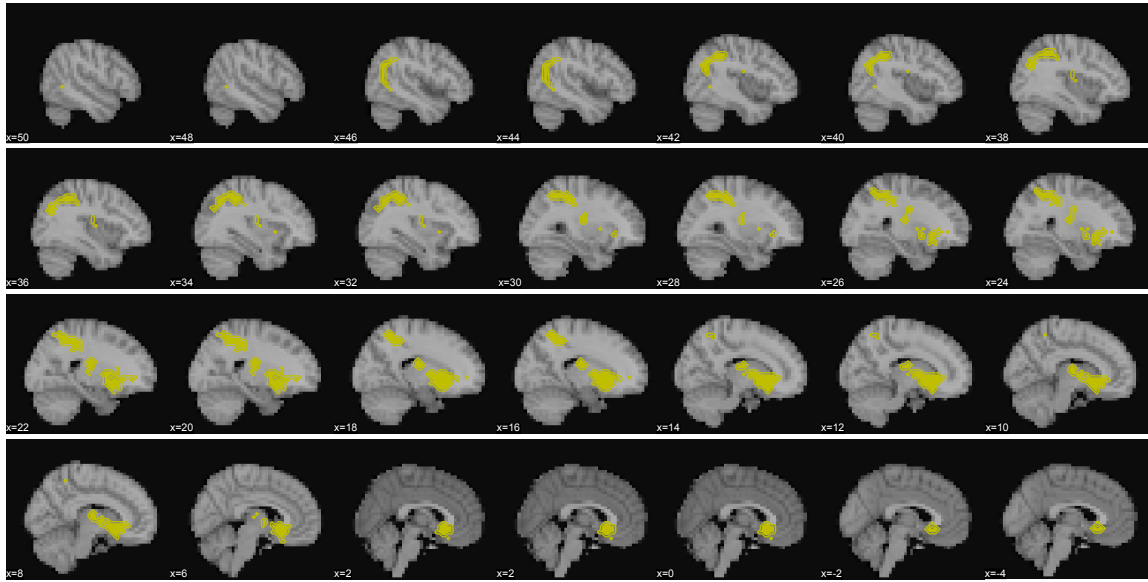
**Figure S2: Reconstruction quality for Dataset 2, Experiments 1 and 2. A. Distributions of correlations between observed versus reconstructed activity by electrode, for Experiment 1.** Each split violin plot and horizontal bar is in the same format as the plots in Figure S1. “Within” denotes within-subject correlations (model trained on all but one electrode from one patient, and tested on the held-out electrode); “Across” denotes across-subject correlations (model trained on all but one patient and tested on the held-out patient); “All” denotes a model trained on all data from all patients, except for one held-out electrode (and tested on the held-out electrode). **B. Distributions of correlations between observed versus reconstructed activity by electrode, for Experiment 2.** All of the plots and bars are in the same format as those in Panel A.



**Figure S3: Reconstruction quality for each experiment. A. & C. Distributions of correlation coefficients.** Across all electrodes from all patients in the labeled experiment from dataset 2, the panel displays the distribution of correlations between the observed and reconstructed LFP data using models trained on data from all other patients (Across, in black) and all other electrodes from the same patient (Within, in gray). **B. & D. Correlation maps.** The glass brain maps display the average correlation between the observed LFP data and the across-subjects model reconstructed data by location, for each labeled experiment.



**Figure S4: Reconstruction accuracy predicted by data features for each dataset. A.–F. Features from Dataset 1.** Features include: (A.) number of electrodes, (B.) proportion thresholded, (C.) total recording time, (D.) number thresholded, (E.) number of sessions, and (F.) average session length. The histograms report the distributions of the z-transformed correlation coefficients and the associated data feature. **G.–L. Features from Dataset 2.** Analogous format to Panels A–F.



**Figure S5: Top 10% most informative voxels.** Voxels in yellow indicate the intersections between the top 10% most informative voxels in each brain map from Figure 5, indicated by the white contours.