

Supplementary Information For

“Mapping brain function during naturalistic viewing using high-density diffuse optical tomography”

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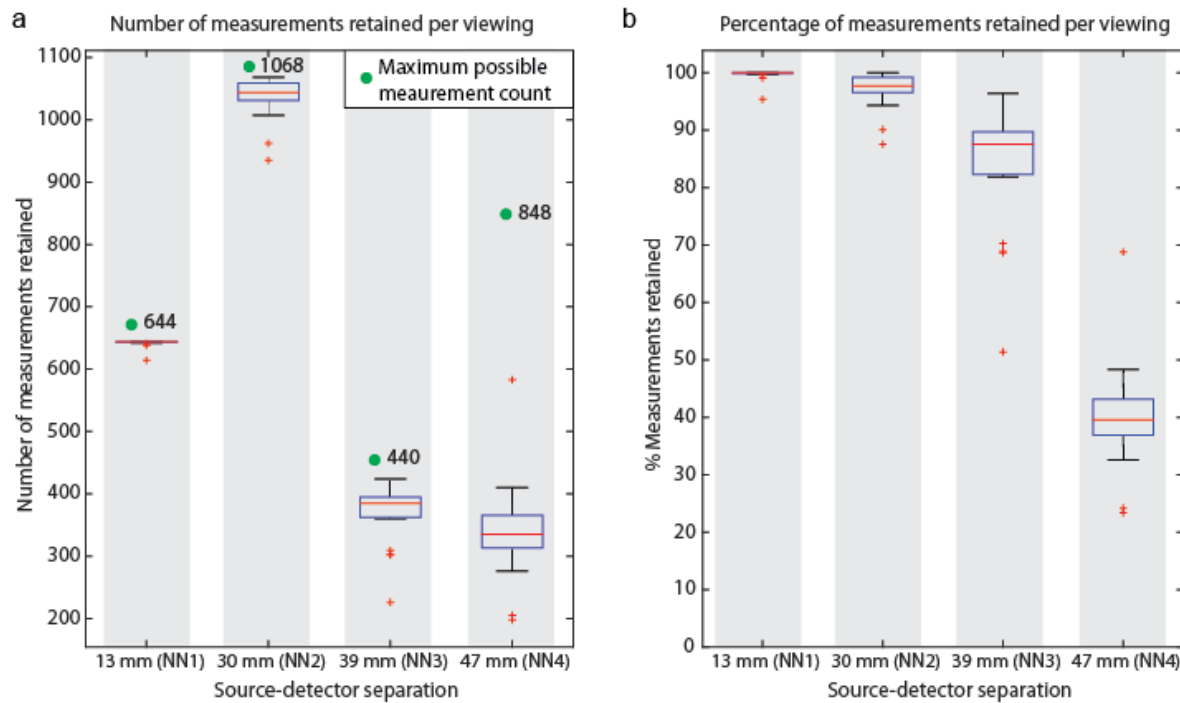
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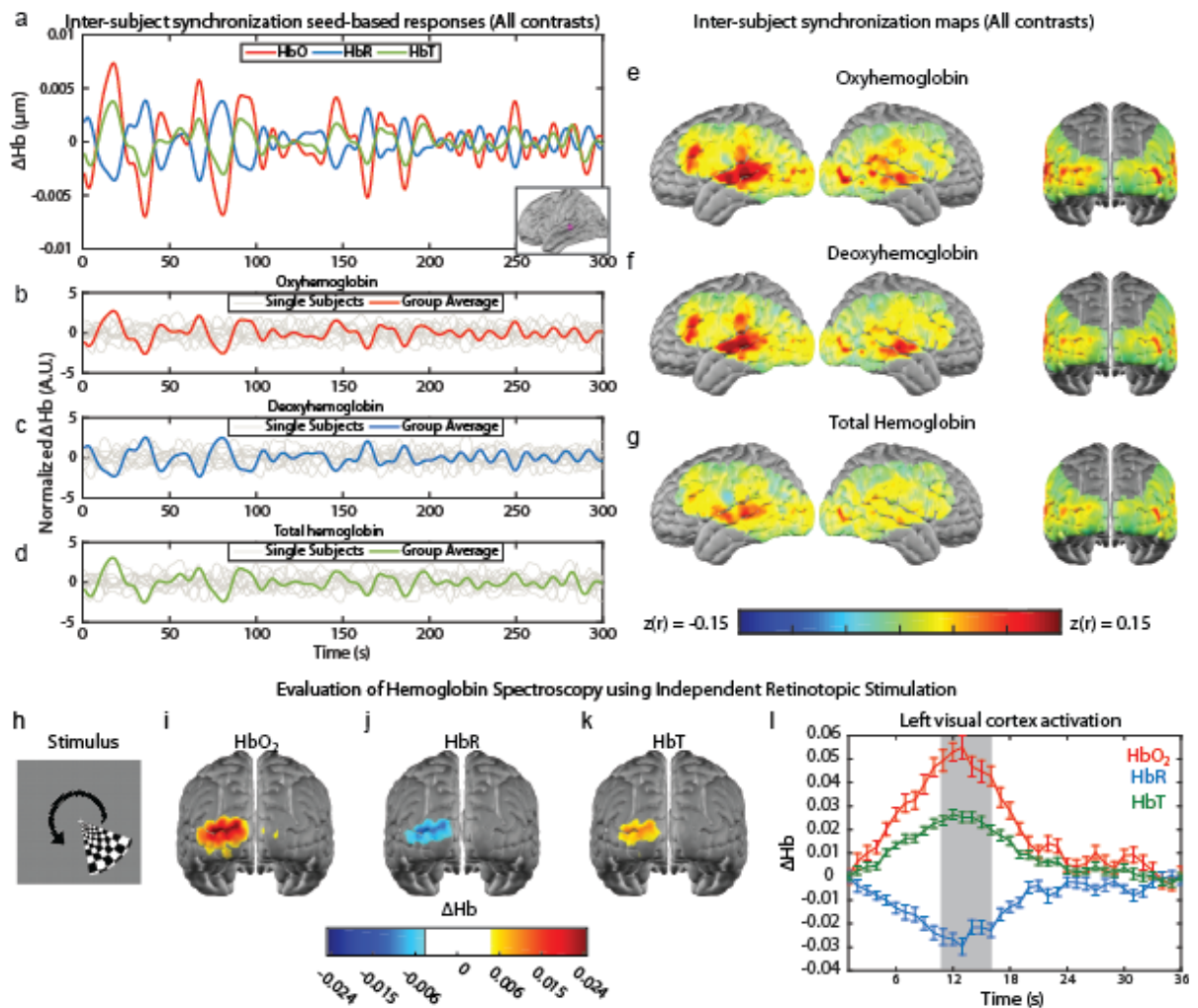
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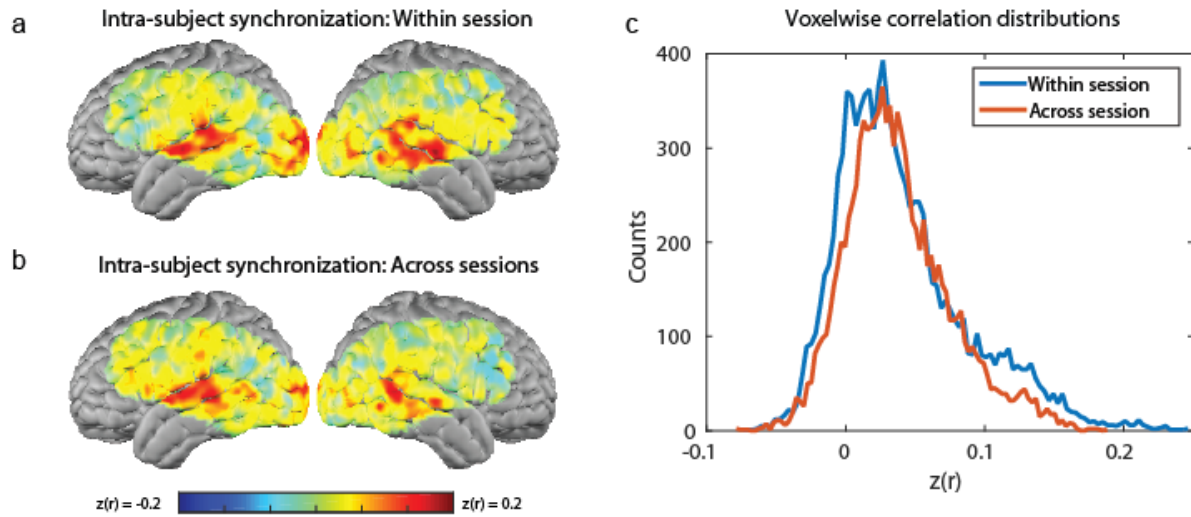


Supplemental Figure 1 Measurement retention across all passive movie viewing runs. **A:** Box plots show the distributions for the number of measurements retained at the first four nearest-neighbor separations, with a mean of 642/644 NN1, 1034/1065 NN2, 368/440 NN3, and 339/848 NN4 measurements retained across all runs. **B:** Box plots show the percentage of measurements retained for the first four nearest-neighbor separations.



Supplemental Figure 2 Inter-subject synchronization assessed across all oxy-hemoglobin, deoxy-hemoglobin, and total hemoglobin contrasts. **A**: Timeseries for all three contrasts from a seed region in temporal cortex (inset) during a five-minute subset of the passive movie viewing experiment. **B**: The oxy-hemoglobin timeseries from the seed region during passive movie viewing in all 10 individual subjects (grey lines) and the group averaged oxy-hemoglobin response (red line). **C**: The deoxy-hemoglobin timeseries from the seed region during passive movie viewing in all 10 individual subjects (grey lines) and the group averaged deoxy-hemoglobin response (blue line). **D**: The total-hemoglobin timeseries from the seed region during passive movie viewing in all 10 individual subjects (grey lines) and the group averaged total-hemoglobin response (green line). **E**: Group averaged spatial map of correlation coefficients for the inter-subject synchronization analysis performed using the oxy-hemoglobin contrast. Voxel values represent Fisher's Z-transformed correlation coefficients.

F: Group averaged spatial map of correlation coefficients for the inter-subject synchronization analysis performed using the deoxy-hemoglobin contrast. **G:** Group averaged spatial map of correlation coefficients for the inter-subject synchronization analysis performed using the total hemoglobin contrast. **H:** Retinotopic mapping stimulus used for evaluation of hemoglobin spectroscopy in a subset of passive movie viewing participants (N = 5). **I:** Posterior view of the group-level block-averaged oxy-hemoglobin response, averaged over the shaded timepoints in Panel L. **J:** Posterior view of the group-level block-averaged deoxy-hemoglobin response, averaged over the shaded timepoints in Panel L. **K:** Posterior view of the group-level block-averaged total-hemoglobin response, averaged over the shaded timepoints in Panel L. **L:** Activation time traces from left visual cortex for the oxy-hemoglobin, deoxy-hemoglobin, and total hemoglobin contrasts.



Supplemental Figure 3 Intra-subject synchronization assessed separately for runs collected within the same session and runs collected across separate imaging sessions. **A:** Map of Fisher z-transformed Pearson's correlations for passive movie viewing runs within a single imaging session. **B:** Map of Fisher z-transformed Pearson's correlations for passive movie viewing runs across multiple imaging sessions. **C:** Voxelwise distributions of Fisher z-transformed Pearson's correlations for maps shown in **A** and **B**.