

Supplemental Material: Expectation modulates neural representations of valence throughout the human brain

Anatomical distribution of choice-direction selective electrodes To assess whether the broad and heterogeneous anatomical distribution of valence-encoding electrodes was a general feature of HFA signals, we performed a control analysis where we studied the anatomical distribution of electrodes that encoded left/right choice direction. We repeated our analysis used to identify valence encoding electrodes (*Results*, pages 14-15, Figure 2), however, we identified electrodes that demonstrated significant differences in HFA when the subject selected the left button, compared to when they selected the right button (“direction-encoding”). In contrast to the broad and heterogeneous anatomical distribution of valence-encoding electrodes (Figure 2), we found that the anatomical distribution of direction-encoding electrodes was localized and homogeneous (Suppl. Table 1). Right-encoding electrodes (greater activity during right choice, compared to left choice) were more frequently observed than chance in only two regions—the left sensori-motor and parietal ROIs (t 's > 4.02, FDR-corrected p 's < 0.005). Similarly, a significant frequency of left-encoding electrodes were only found in the right sensorimotor and parietal ROIs (t 's > 4.74, FDR-corrected p 's < 0.003). These results suggest that the broad and heterogeneous anatomical distribution associated with valence-encoding electrodes is not a general feature of HFA.

[Table 1 about here.]

Region of Interest	number of electrodes	number of subjects	frequency of left-selective contacts; counts <i>t</i> -test results	frequency of right-selective contacts; counts <i>t</i> -test results
L. OFC	48	15	0.02; $p > 0.2$	0.04; $p > 0.15$
R. OFC	67	16	0.05; $p > 0.2$	0.06; $p > 0.5$
L. dlPFC	223	21	0.06; $p > 0.5$	0.08; $p > 0.2$
R. dlPFC	246	19	0.06; $p > 0.5$	0.09; $p > 0.2$
L. vlPFC	92	18	0.16; $p > 0.15$	0.04; $p > 0.3$
R. vlPFC	65	16	0; $t(15) = -10.6, p < 0.001$	0.03; $p > 0.5$
L. anterior medial frontal	138	16	0.06; $p > 0.5$	0.08; $p > 0.4$
R. anterior medial frontal	149	18	0.05; $p > 0.2$	0.06; $p > 0.5$
L. posterior medial frontal	28	7	0.11; $p > 0.5$	0.39; $t(6) = 2.25, p = 0.065$
L. sensorimotor	277	23	0.04; $p > 0.5$	0.27 ; $t(22) = 4.29, p < 0.001$
R. sensorimotor	262	20	0.39 ; $t(19) = 5.98, p < 0.001$	0.04; $t(19) = -2.47, p = 0.023$
L. parietal	373	26	0.10; $p > 0.1$	0.17 ; $t(25) = 4.01, p < 0.001$
R. parietal	267	19	0.19 ; $t(18) = 4.74, p < 0.001$	0.05; $p > 0.5$
L. temporal	677	28	0.06; $p > .2$	0.07; $p = 0.06$
R. temporal	457	27	0.05; $p > 0.5$	0.06; $p > 0.4$
L. fusiform	98	23	0.02; $p > 0.2$	0.06; $p > 0.5$
R. fusiform	97	17	0.11; $p = 0.09$	0.10; $p > 0.15$
L. occipital	162	20	0.10; $t(19) = 2.52, p = 0.020$	0.19; $t(19) = 2.46, p = 0.02$
R. occipital	84	19	0.20; $t(18) = 2.36, p = 0.29$	0.19; $p = 0.072$
L. MTL	100	19	0.09; $p > 0.2$	0.09; $p > 0.2$
R. MTL	52	12	0.08; $p > 0.4$	0.06; $p > 0.5$

Table 1: **Frequency of choice-direction encoding electrodes** For each region, we list the number of electrodes (column 1), number of subjects (column 2), frequency of left-selective electrodes (column 3), and frequency of right-selective electrodes (column 4). Positive *t*-statistics indicate frequencies that are greater than expected, whereas negative *t*-statistics indicate a frequencies that are lower than expected. Bold text in columns 3 and 4 indicates regions that showed choice-direction encoding electrodes more frequently than expected by chance (FDR-corrected $p < 0.05$).