

Supplementary information to the research article “Identifying task-relevant spectral signatures of perceptual categorization in the human cortex”

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Figures

All supplementary figures are available in an online public figshare.com repository¹. The repository contains the following items:

- (a) figures similar to Figure 2a of the paper, showing that only a portion of responsive probes is predictive,
DOI: <https://doi.org/10.6084/m9.figshare.11413965.v1>,
- (b) all figures showing the difference between polypredictive and monopredictive neural locations,
DOI: <https://doi.org/10.6084/m9.figshare.8223398.v1>,
- (c) all figures of normalized TF activity with importance contour overlay,
DOI: <https://doi.org/10.6084/m9.figshare.8223389.v1>,
- (d) all clustering figures of important activity into spectral signatures,
DOI: <https://doi.org/10.6084/m9.figshare.8223383.v1> and
- (e) all time-frequency importance maps, organized into average, per-subject, and per-area groups,
DOI: <https://doi.org/10.6084/m9.figshare.8223356.v1>.

The original stimuli images that were used in the experiment are available from the authors upon request.

¹https://figshare.com/projects/Supplementary_Figures_for_identifying_task-relevant_spectral_signatures_of_perceptual_categorization_in_the_human_cortex/64523

Tables

BA	Area ¹	house	face	anim	scene	tool	pseud	chars	scram	All
0	Out of BA atlas	1 ²³²	6 ²²⁸	8 ²⁴⁴	4 ²²⁷	3 ²³⁴	25 ²⁶⁹	6 ²⁰⁸	6 ²⁴⁰	59 ¹⁸⁸²
1	Primary somatosensory	0 ²	0 ²	0 ²	0 ²	0 ²	0 ¹	0 ²	0 ²	0 ¹⁵
2	Primary somatosensory	0 ¹⁶	0 ¹⁶	0 ¹⁹	0 ¹⁷	0 ¹⁷	1 ¹⁷	0 ¹⁶	0 ¹⁷	1 ¹³⁵
3	Primary somatosensory	0 ²⁴	0 ²¹	0 ²²	0 ²⁴	0 ¹⁷	0 ²³	0 ¹⁸	0 ²¹	0 ¹⁷⁰
4	Primary motor	0 ¹⁸	0 ¹⁶	0 ¹⁵	0 ¹⁶	0 ¹⁶	0 ¹⁵	0 ¹⁴	0 ¹⁶	0 ¹²⁶
5	Somatosensory association	0 ⁵	0 ³	0 ⁴	0 ⁴	0 ³	0 ⁴	0 ⁴	0 ⁵	0 ³²
6	Premotor cortex	0 ⁴⁷	0 ⁴⁷	5 ⁴²	0 ⁴³	0 ⁴²	2 ⁵⁴	0 ⁴¹	0 ⁴²	7 ³⁵⁸
7	Secondary sensorimotor	0 ¹⁰	0 ⁴	1 ⁶	0 ⁶	3 ¹¹	0 ¹⁰	0 ⁴	0 ³	4 ⁵⁴
8	Frontal eye fields	0 ⁵	0 ⁵	0 ⁶	0 ⁷	0 ⁹	0 ⁸	0 ⁶	0 ⁶	0 ⁵²
9	Dorsolateral prefrontal	0 ¹⁵	0 ¹⁷	1 ¹⁷	0 ¹⁵	0 ¹⁵	0 ¹⁵	0 ¹⁴	0 ¹³	1 ¹²¹
10	Anterior prefrontal	0 ¹²	0 ⁹	0 ⁹	0 ¹⁰	0 ¹³	0 ¹⁵	0 ¹⁰	0 ¹²	0 ⁹⁰
11	Orbitofrontal area	0 ⁴²	2 ⁴¹	2 ⁴⁷	0 ⁴¹	0 ⁴⁵	1 ⁵⁰	1 ³⁶	2 ⁴⁰	8 ³⁴²
12	Orbitofrontal area	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰
13	Insular cortex	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰
14		0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰
15		0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰
16	Insular cortex	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰
17	Primary visual (V1)	0 ¹²	1 ⁹	0 ¹¹	1 ¹⁴	0 ⁹	3 ⁹	2 ⁷	9 ¹⁴	16 ⁸⁵
18	Secondary visual (V2)	9 ⁴¹	10 ³³	4 ³⁶	1 ³⁸	3 ³⁰	10 ³¹	3 ²⁷	19 ³³	59 ²⁶⁹
19	Inferior occipital (V3, V4)	9 ⁹²	29 ⁷⁶	35 ⁹⁶	13 ⁸⁴	17 ⁹⁰	15 ⁷³	17 ⁵²	28 ⁷¹	163 ⁶³⁴
20	Inferior temporal	1 ¹⁹⁵	24 ²⁰⁹	11 ¹⁸⁶	1 ²⁰³	12 ¹⁹⁸	12 ²³⁸	1 ¹⁷⁶	1 ²⁰⁵	63 ¹⁶¹⁰
21	Middle temporal	0 ⁷⁸	5 ⁷⁷	1 ⁸⁴	0 ⁸⁴	0 ⁸⁶	5 ⁸⁹	0 ⁷⁴	0 ⁸⁰	11 ⁶⁵²
22	Superior temp., Wernicke's	0 ³⁶	0 ³³	0 ³²	0 ³⁶	0 ³⁵	8 ³⁶	0 ³²	0 ³⁴	8 ²⁷⁴
23	Cingulate cortex	0 ¹⁹	0 ²²	0 ²⁰	0 ²²	0 ²²	0 ²¹	0 ²³	0 ²⁰	0 ¹⁶⁹
24	Cingulate cortex	0 ⁵	0 ⁵	1 ⁶	0 ⁷	0 ⁷	0 ⁶	0 ⁴	0 ⁷	1 ⁴⁷
25	Subgenual area	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰
26	Retrosplenial region	0 ²	0 ³	0 ³	0 ³	0 ³	0 ⁴	0 ²	0 ³	0 ²³
27	Piriform cortex	0 ²	0 ³	0 ¹	0 ³	1 ²	0 ²	0 ⁴	0 ²	1 ¹⁹
28	Cingulate cortex	0 ⁴	2 ³	0 ²	0 ⁵	0 ²	0 ²	0 ²	0 ³	2 ²³
29		0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰
30	Posterior cingulate	1 ³	3 ⁴	2 ⁶	0 ⁵	3 ⁶	3 ⁷	0 ¹	2 ⁴	14 ³⁶
31		0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰
32		0 ²¹	0 ²³	1 ²⁶	0 ²⁰	0 ²¹	0 ²⁵	0 ²²	0 ²⁴	1 ¹⁸²
33	Cingulate cortex	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰	0 ⁰
34	Dorsal entorhinal	0 ¹⁰	3 ⁹	0 ⁹	0 ⁹	0 ¹⁰	0 ¹⁰	0 ¹⁰	0 ⁹	3 ⁷⁶
35	Perirhinal, ectorrhinal	0 ⁸	0 ⁴	0 ⁵	0 ⁵	0 ⁶	0 ⁶	0 ⁴	0 ⁶	0 ⁴⁴
36	Perirhinal, ectorrhinal	0 ¹⁹	5 ¹⁹	4 ²⁴	0 ²²	4 ²⁴	1 ²⁰	0 ¹⁷	0 ¹⁹	14 ¹⁶⁴
37	Fusiform gyrus	25 ¹⁵⁷	55 ¹⁶⁵	43 ¹⁷⁴	22 ¹⁶³	31 ¹⁷⁹	55 ¹⁵⁷	30 ¹¹⁷	46 ¹⁵⁵	307 ¹²⁶⁷
38	Temporal pole	0 ¹⁵	1 ¹⁶	0 ¹⁴	0 ¹²	0 ¹⁸	0 ¹⁶	0 ¹⁰	0 ¹⁵	1 ¹¹⁶
39	Angular gyrus	0 ¹⁶	2 ¹⁵	2 ¹⁹	0 ¹⁵	0 ¹⁶	2 ¹⁶	1 ¹⁴	2 ¹⁵	9 ¹²⁶
40	Supramarginal gyrus	0 ²⁶	0 ²³	0 ²⁵	0 ²⁷	0 ²⁹	2 ²⁵	0 ²⁴	0 ²⁷	2 ²⁰⁶
41	Primary auditory	0 ¹⁰	0 ¹¹	0 ¹²	0 ¹²	0 ¹¹	0 ¹³	0 ¹⁰	0 ¹⁰	0 ⁸⁹
42	Primary auditory	0 ⁷	0 ⁷	0 ⁷	0 ⁷	0 ⁷	2 ⁷	0 ⁷	0 ⁷	2 ⁵⁶
43	Primary gustatory	0 ⁴	0 ³	0 ⁴	0 ⁴	0 ⁴	0 ⁴	0 ³	0 ⁴	0 ³⁰
44	Broca's area	0 ³	0 ³	0 ⁵	0 ³	1 ⁴	0 ⁴	0 ³	0 ⁴	1 ²⁹
45	Broca's area	0 ¹²	0 ¹¹	2 ¹³	0 ¹¹	0 ¹¹	1 ¹²	0 ¹⁰	1 ¹¹	4 ⁹¹

46	Dorsolateral prefrontal	0 ₁₇	0 ₂₀	1 ₂₁	0 ₁₅	0 ₁₉	0 ₁₉	0 ₁₆	0 ₁₉	1 ₁₄₆
47	Inferior frontal	0 ₂₅	2 ₂₃	0 ₂₈	0 ₂₃	0 ₂₅	0 ₂₇	0 ₂₄	0 ₂₁	2 ₁₉₆
48	Retrosubicular area	0 ₁₈₈	2 ₁₉₀	6 ₁₈₆	0 ₁₈₂	0 ₁₈₅	14 ₂₂₄	0 ₁₇₅	0 ₁₈₆	22 ₁₅₁₆
All		46 ₁₄₅₅	152 ₁₄₂₈	130 ₁₄₈₈	42 ₁₄₄₆	78 ₁₄₈₃	162 ₁₅₈₄	61 ₁₂₄₃	116 ₁₄₂₅	787 ₁₁₅₅₂

Table 1. Number of responsive and predictive probes across categories (columns) and Brodmann areas (rows). Format “Predictive_{responsive}” shows the number of predictive probes in a large font and the number of responsive probes in a small font.

References

1. BELL, D. & Gaillard, F. Brodmann areas (2018).