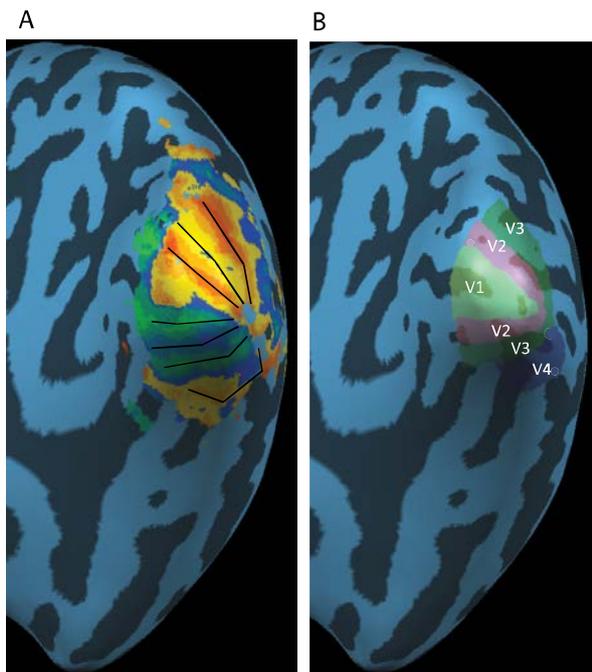
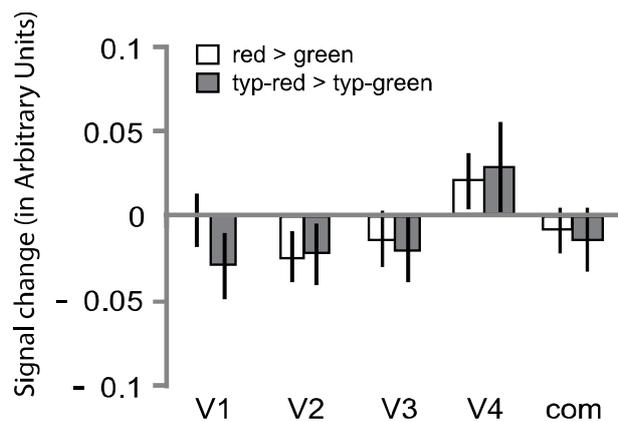


Supplementary figures



Supplementary figure 1. Regions of Interest. Each subjects' cortex was inflated and polar (A, depicted here on a representative subject) and eccentricity maps were projected onto the inflated surface. On the basis of these mappings, five Regions of Interest (ROIs: V1, V2, V3, V4, com) were identified for each subject (B, depicted here on the representative subject in A).



Supplementary figure 2. Univariate results. We calculated the contrast between red & green and between the typical-red and typical-green objects for each ROI (V1-V4, com). The contrast for red > green, or for typical-red objects > typical-green objects did not significantly differ from zero (note: error bars denote within-subject standard errors). This suggests that the MVPA were not driven by univariate differences between red and green that coincidentally matched univariate differences between typical-red and typical-green objects. Although the contrasts are not significant, the effects seem to point in the same direction. We therefore listed individual contrasts to show that also within participants, there is no consistent relation between red>green, typical-red>typical-green and decoding performance (see Supplementary table 2).

	ROIs				
Participants (ranked on performance)	V1	V2	V3	V4	com
1	+/-	-/-	-/-	+/+	+/-
2	-/-	-/-	-/-	+/-	-/-
3	-/+	-/+	-/+	-/+	-/+
4	+/-	-/-	-/-	-/-	-/-
5	-/-	-/-	+/-	+/-	+/-
6	+/+	+/+	+/+	+/+	+/+
7	-/-	-/-	-/-	-/+	-/-
8	+/-	-/-	-/-	+/-	-/-
9	+/-	-/-	-/-	-/-	-/-
10	+/-	+/+	+/+	+/+	+/+
Total congruent	4	9	8	5	7

Supplementary table 1. Number of individuals with congruent red>green and typical-red>typical-green univariate contrasts. Although the mean contrast difference of red>green and typical-red > typical-green were not significantly different from 0 (Supplementary Fig. 2), there could still be a congruency of these contrasts within participants: for example, if the mean activity for red is higher than the mean activity for green, and also the mean activity for typical-red is higher than for typical-green, this congruent effect could in theory drive the between-category decoding performance. We therefore sorted the participants according to average decoding performance (1 = highest performance, 10 = lowest performance) and determined whether the participants contrast for red>green was positive or negative (first plus or minus sign) and whether the contrast for typical-red>typical-green was positive or negative (second plus or minus sign). If the two signs are the same, the univariate effects were congruent, and thus between-category decoding performance could in theory be driven by this congruency. However, there were only 5 participants that had a congruent univariate effect for V4, and 9 that had a congruent effect for V2. Since in V2, we did not find above chance decoding performance whereas in V4 we did, it seems highly unlikely that a coincidental congruent univariate effect for red>green and typical-red>typical-green drove between-category

classification. Also, within V4, it is not the case that the participants who had the best decoding performance showed a congruent univariate effect while the participants with the lowest decoding showed an incongruent univariate effect. We can thus rule out any coincidental congruency in mean activity change between conditions to drive the between-category decoding results.