Supplementary Table2:

	Within vs across category t-test
Between Cartoon and Helvetica	t(125) = 5.49, p = 2.1e-7
Between Cartoon and Tetris	t(89) = 19.15, p= 2.5e-33
Between Helvetica and Tetris	t(107) = 7.3, p = 6.14e-11

Table 1. Comparing the within-category and across-category Euclidean distances (within each hemisphere) between different patch centers-of-mass positions: We calculated the center-of-mass of each patch on each monkey on an inflated brain in CARET spherical coordinate system. CARET spherical coordinates were chosen for this measure because the cortical surface more accurately reflects cortical distances than volumetric coordinates. We compared the within-category and across-category Euclidean distances (within each hemisphere) between different patch centers-of-mass (Cartoon Face, Helvetica Symbols and Tetris Symbols) and found that, for all pairwise comparisons, within-category distances were significantly smaller than across-category distances.

	Along x axis	**Along Y axis**	**Along Z axis**
Between Cartoon and Helvetica	t(10) = -3.78, p = 0.0036	t(10) = -3.44, p =0.0064	t(10) = -4.42, p =0.0013
Between Cartoon and Tetris	t(10) =-7.54, p = 3.6e-5	t(10) = -6.47, p= 1.2e-4	t(10) = -6.26, p= 1.5e-4
Between Helvetica and Tetris	t(10) = -3.34, p=0.0065	t(10) = -2.85, p=0.0157	t(10) = -0.4, p=0.689

Table 2. Comparing the within-category and across-category distances between different patch centers-of-mass positions along each axis

We calculated a One-Way ANOVA to determine the effect of the stimulus category (Cartoon Face, Helvetica Symbols and Tetris Symbols) on the position of the center-of-mass of each patch. There was a significant effect of position along all three axes [X-axis: $F(2,15)= 23.7$, $p < 0.001$; Y-axis: $F(2, 15)= 18.58$, $p < 0.001$; Z-axis: $F(2,15) = 18.9$; $p<0.001$]. Hypothesis-driven tests showed that the positions of centers of trained patches (Cartoon Face, Tetris and Helvetica) along the three axes were significantly different except between Helvetica and Tetris patches along the Z-axis. The table below shows the values of these tests. The average center position in Caret flat map coordinates (which are systematically distorted) of the Cartoon face patch was 2mm anterior and 4mm dorsal to the average center position of the Helvetica patch and 9mm anterior and 9mm dorsal to the Tetris patch center. The average position of the Helvetica patch was 7mm anterior and 5mm dorsal to the Tetris patch.