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Supplemental Information

Color Space Geometry Uncovered

with Magnetoencephalography

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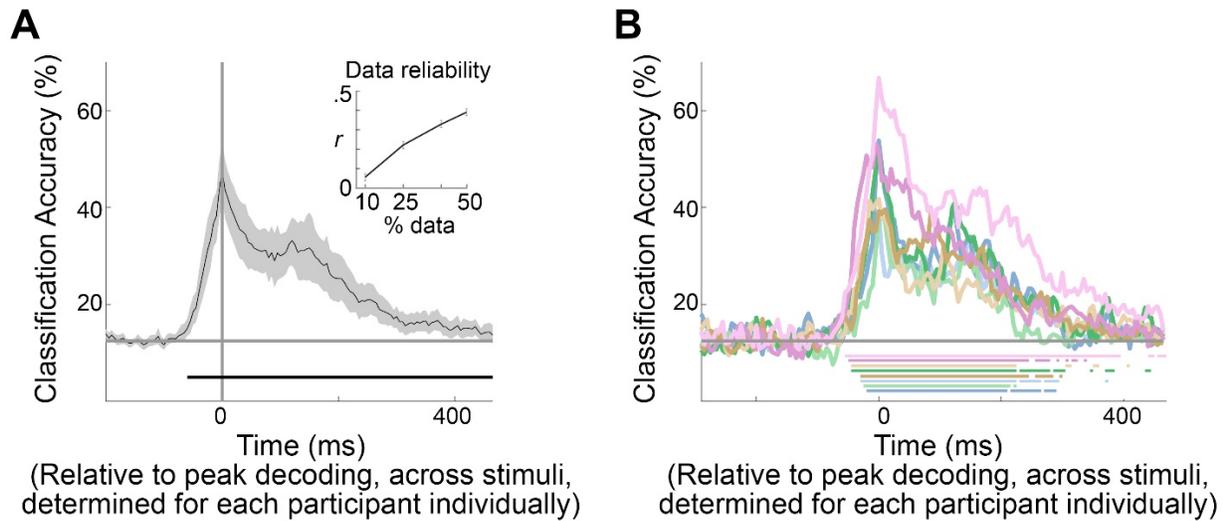


Figure S1. Classification accuracy curves, computed relative to the time-to-peak decoding.

Related to Figure 2. a, Average classification accuracies for decoding the color of the 8 spirals, averaged over all 8 classification problems (N=18 participants; chance = 1/8; shading shows 95% C.I.). Classifier performance was evaluated relative to the time to peak decoding computed separately for each participant, rather than to stimulus onset as shown in Figure 2a. 0 on the x-axis corresponds to the time point of peak decoding. The peak decoding time point for each person was constrained to correspond to stimulus onset (not stimulus cessation); other conventions as in Figure 2a. Inset shows the correlation between pairs of independent data sets, as a function of the amount of data in the data set. For a given pair of data sets, the y-axis shows the correlation coefficient comparing the decoding magnitude at each point in the decoding time course. The graph provides a measure of data reliability [76]. Note that the absolute correlation is not as informative as how this correlation changes as a function of the amount of data. The graph shows (1) that the data are significantly reliable (the test-retest estimates are significantly above chance); (2) that the experiments have sufficient power to extract close to as much signal as is possible given the experimental conditions (the test-retest curve comes close to plateau when extrapolated to 100% of the data); and (3), to decode color, one needs relatively many trials. **b,** Average classification accuracy for decoding each of the 8 colors (line color corresponds to stimulus color); other conventions as for panel (a).

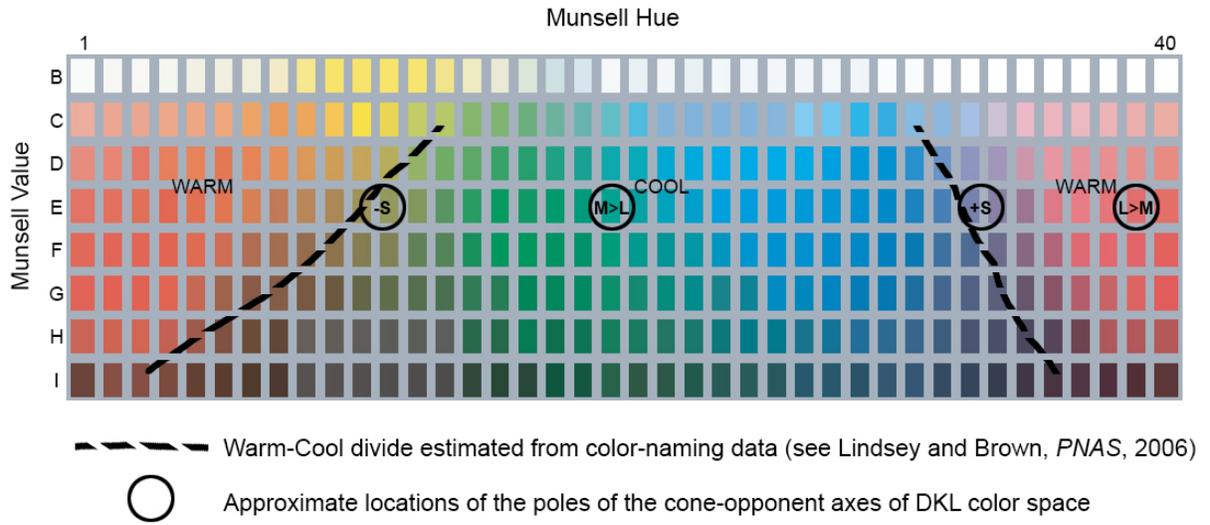


Figure S2. Designation of colors as “warm” and “cool”. Related to Figure 2f. The figure shows the array of Munsell color chips used in the World Color Survey of color naming. The dashed line shows the contiguous chips with significantly lower concordance in color naming across the 110 languages of the Survey; these concordance data divide the color space into the two most basic color categories, warm and cool (figure made using original data from Lindsey and Brown, 2006). The circles show the approximate location of the colors corresponding to the poles of the cone-opponent dimensions that define DKL color space. The -S and +S colors fall on or close to the boundary of warm and cool colors, consistent with the notion we assert that the best empirical designation of “warm” and “cool” is the extent of L-M modulation. Note that yellow is a warm color, but not the center of the warm color category (focal yellow is near chip C10 in English).