Supplementary Figure S1. Equivalent noise plots for orientation averaging and (maximum likelihood) model fits. Different rows correspond to different observers and different columns correspond to different display durations. Each small symbol represents the just-classifiable angle (as clockwise or anti-clockwise) between an 8-Gabor array's expected orientation and the probe, as estimated from a single block of trials. These thresholds are the values of $\sigma$ that best fit the function $Pr(\text{"ACW"}) = \delta + (1 – 2\delta)\Phi(-\mu/\sigma)$ for probe onsets before (blue), simultaneous with (amber), and after (magenta) that of the array. Solid curves illustrate the performance of the noisy, inefficient observer, independently (maximum-likelihood) fit to the corresponding data within each panel. (This is the "least nested" fit described in the main text.) Black, dashed lines illustrate thresholds for the ideal observer.
Supplementary Figure S2. Maximum-likelihood estimates of the effective set size $M$ (or efficiency, $M/N$) for voluntarily averaging the orientations in an array of $N=8$ Gabor patterns. Each panel shows estimates for a single observer. Blue, amber, and magenta symbols denote probe onsets before, simultaneous with, and after that of the array, respectively. Error bars contain two standard errors of each estimate. Specifically, the top and bottom of each error bar represents the maximum and minimum values of $M$, allowing a reduction of $F_{\chi^2(1)}^{-1}[\Phi^{-1}(-1)] = 0.46$ in (natural) log likelihood, where $\Phi^{-1}(\cdot)$ and $F_{\chi^2(1)}^{-1}[\cdot]$ are the inverse standard normal and chi-square cumulative distribution functions, the latter having 1 degree of freedom.