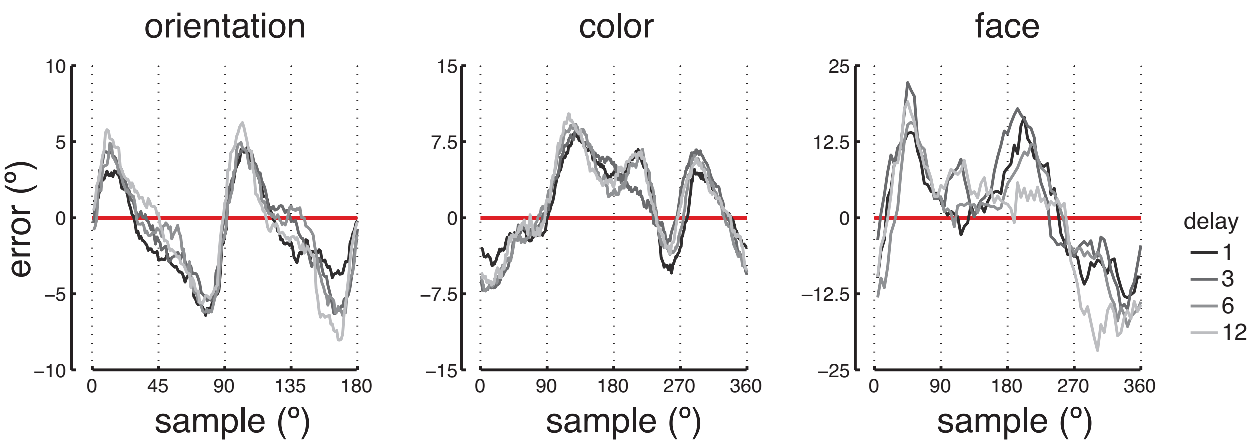
Supplemental Material (unpublished)

The following analysis concerns the stimulus-specific variability in mnemonic precision (Bae et al. 2014, 2015; Hardman et al. 2017; Pratte et al. 2017; Wei & Stocker, 2016, 2017). Most relevant to this point, Bae et al. (2015) found that category-specific variability was present both for a no-delay condition and a delay condition, but this variability was larger for the delay condition relative to the no-delay condition. Analogously, an increase in these biases might occur at longer delays. One basis for this hypothesis is that subjects show a greater reliance on prior knowledge (assuming a prior is causing these biases) as uncertainty increases (i.e. delay is longer). The first figure below shows data for orientation, color, and faces (Experiments 1A, 2, and 3, respectively). Here, we calculated the error at each stimulus orientation over a sliding window (collapsed across all participants). The size of the sliding window was standardized to yield ~10 observations per bin (resulting in window sizes of 19°, 41°, and 9° for orientation, color, and faces, respectively). Also, because here we were interested in directly comparing biased reports across retention intervals when participants were not guessing, we removed errors > 3 standard deviations, before calculating the sliding window. The response errors calculated in this manner (y-axis) are plotted against the stimulus value of the memory sample (x-axis) for different delay durations (shades grey), demonstrating clear systematic biases across stimulus space. At a first glance, memory biases appear exaggerated as a function of delay interval, but these effects seem small relative to the overall magnitude of the biases.



We aimed to quantify the biases by calculating something akin to an "area under the curve" estimate. As can be seen from the above figures, fitting these biases with some known shape would have been intractable, especially for color and face memory. The AUC's plotted below indicate the average (across individual subjects) sum (normalized to the number of degrees in the space) of the absolute distances at each degree in a space (i.e. orientation/color/face space) relative to 0° (the red line in the plots above, i.e. "no bias"). Visual inspection of biases quantified as such indicates a slight trend towards stronger biases at longer delays. However, this trend did not reach statistical significance for our orientation experiment, as evaluated with an ANOVA (permutation testing; $F_{(3,33)} = 0.387$, $p = 0.249$). However, for both color ($F_{(3,33)}=3.278$, $p = 0.034$)

and face stimuli ($F_{(3,33)} = 5.182$, $p = 0.006$) we did find that systematic biases in people's reports were larger at longer delays.