Supplementary Figures

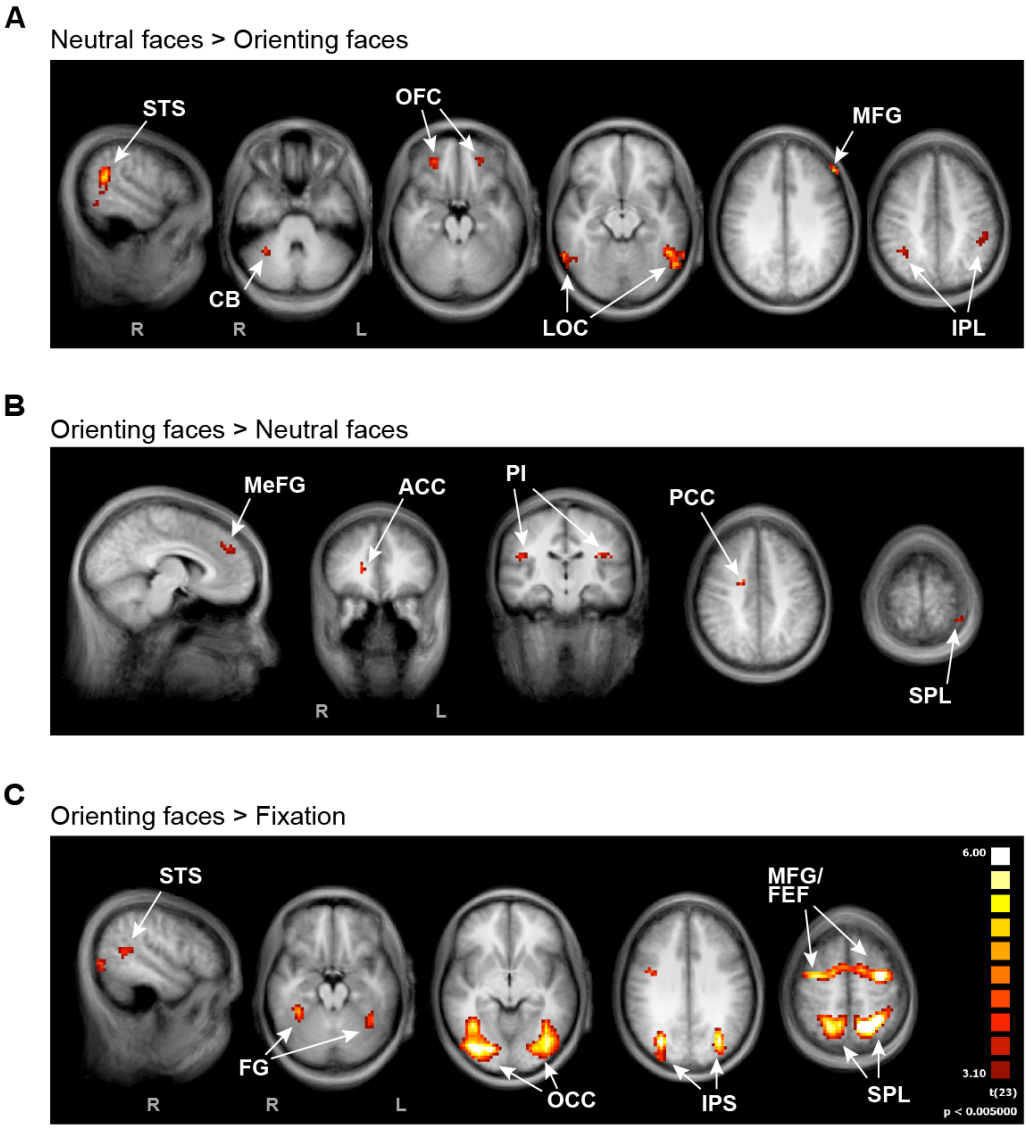

Figure S1. Whole-brain analyses of cue processing. Throughout the main text, we focused on responses to the scenes rather than the face cues. Beyond our primary interest in the attentional components of memory encoding for the scenes, we did not report cue-related activity due to the absence of an appropriate control condition. The Neutral cues may have provided such a control, given that they did not require shifts of attention. However, an unforeseen problem with these cues is that they differed from the Orienting cues in another way: Neutral faces consisted of a face making eye contact with the subject, while Orienting faces consisted of a face with diverted gaze. Eye contact is a powerful social signal that elicits robust brain activity (Pelphrey et al., 2004), thus confounding the comparison of Neutral and Orienting cues. (A) This was apparent in our data in the contrast of Neutral cues > Orienting cues (all *p*s<0.05, cluster-size corrected), which revealed robust responses in brain regions that implement social functions, such as the superior temporal sulcus (STS), as well as more broadly in object-selective lateral occipital

complex (LOC), orbitofrontal cortex (OFC), and attention-related areas of frontoparietal cortex (middle frontal gyrus, MFG; inferior parietal lobule, IPL). (B) Indeed, we would expect the reverse contrast of Orienting > Neutral to show robust responses in the dorsal attention network if these two conditions differed only in terms of the need for a shift of spatial attention. However, dorsal network activity was entirely absent, except for a small cluster on the edge of the brain near superior parietal lobule (SPL). The remaining regions were either in the ventral network, or not central to either attention network: medial frontal gyrus (MeFG), anterior cingulate cortex (ACC), posterior insula (PI), and posterior cingulate cortex (PCC). Despite not eliciting greater activity than Neutral cues, we are confident that the Orienting cues were effective in shifting attention: behavior and neural activity differed dramatically between Cued and Uncued scenes. In other words, the cues worked as expected, but Neutral provided an inappropriate baseline. (C) Consistent with this view, Orienting cues elicited robust dorsal network activity relative to Fixation, in the intraparietal sulcus (IPS), middle frontal gyrus/frontal eye fields (MFG/FEF), and superior parietal lobule (SPL). Moreover, as expected, visual responses to Orienting cues were observed in occipital cortex (OCC), and in face-selective STS and fusiform gyrus (FG). Future studies that employ symbolic or auditory cues could better examine the role of cue processing regions in memory encoding (see also Uncapher et al., 2011). The same color scale applies to all panels.

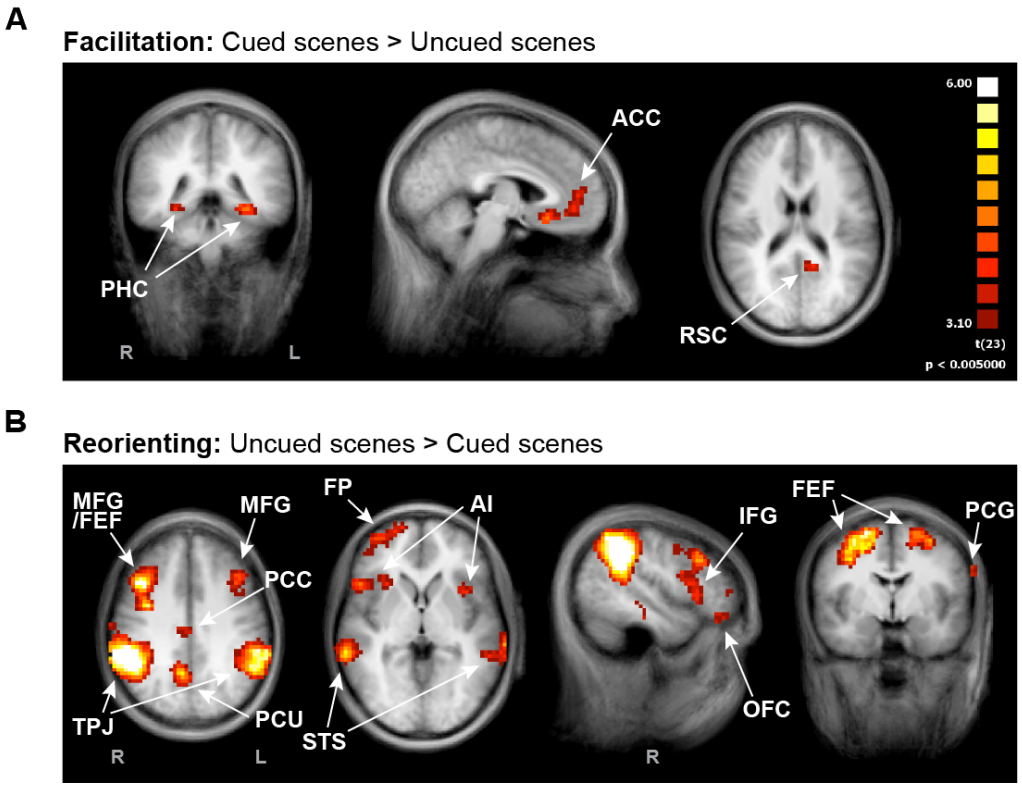

Figure S2. Whole-brain analyses using all memory conditions. The facilitation and reorienting ROIs in the main text were defined using only Cued scenes that received an Unsure memory response, in order to avoid non-independence errors when later comparing Cued-Remembered versus Cued-Forgotten. To demonstrate that Cued-Unsure provided a good approximation of how Cued scenes were processed in general, we repeated the same whole-brain contrasts collapsing across memory response. (A) The contrast of Cued > Uncued revealed clusters that mirrored four of five main facilitation ROIs (all *p*s<0.05, cluster-size corrected): parahippocampal cortex (PHC), ACC, and retrosplenial cortex (RSC). Only the transverse occipital sulcus was absent. (B) The contrast of Uncued > Cued revealed clusters covering all main reorienting ROIs: temporoparietal junction (TPJ), MFG/FEF, precuneus (PCU), PCC, STS, frontal pole (FP), anterior insula (AI), inferior frontal gyrus (IFG), OFC, precentral gyrus (PCG). The same color scale applies to both panels.

Supplementary References

Pelphrey, K. A., Viola, R. J., McCarthy, G., 2004. Processing of mutual and averted social gaze in the superior temporal sulcus. Psychol Sci 15, 598-603.

Uncapher, M. R., Hutchinson, J. B., Wagner, A. D., 2011. Dissociable effects of top-down and bottom-up attention during episodic encoding. J Neurosci 31, 12613-12628.