Week 8 Synopsis
Dan Birman

LaRocque et al. were interested in the role of the MTL in recognition memory. They test the hypothesis that the hippocampus is a "pattern-separator" while the MTL is an "overlap-creator" (more or less). In less obscure terms, the hippocampus tries to differentiate individual objects while the MTL tries to combine individual objects into groups. This is consistent with the previous results we've read about for class suggesting two dissociable memory systems that underlie individual item and category memory separately. They computed within and across category correlations for each of the 96 items they showed using individual voxel t-values (computed from across-run Betas from a GLM with additional nuisance regressors) from specific ROIs for the MTL. They found strong within category coding in perirhinal and parahippocampal cortex but not in the hippocampus itself. Within regions higher similarity scores predicted better memory for items, except in the hippocampus where the opposite relationship was observed (i.e. very low similarity of patterns was correlated with better memory performance). They suggest that their results support the hypothesis outlined above, that the role of hippocampus and other sub-regions are opposite: in the sense that the hippocampus creates 'distinct' patterns while the MTL is an 'overlap' finder.

An open and interesting question would be to look more precisely at the relationship between behavior (memory recognition) and activity in these memory encoding regions. In this task the items were not attended specifically, but we might imagine that attention or salience of images could have been a confound here. Contrasting these results with a version where items were specifically attended might show interesting differences!