

Supplementary Material

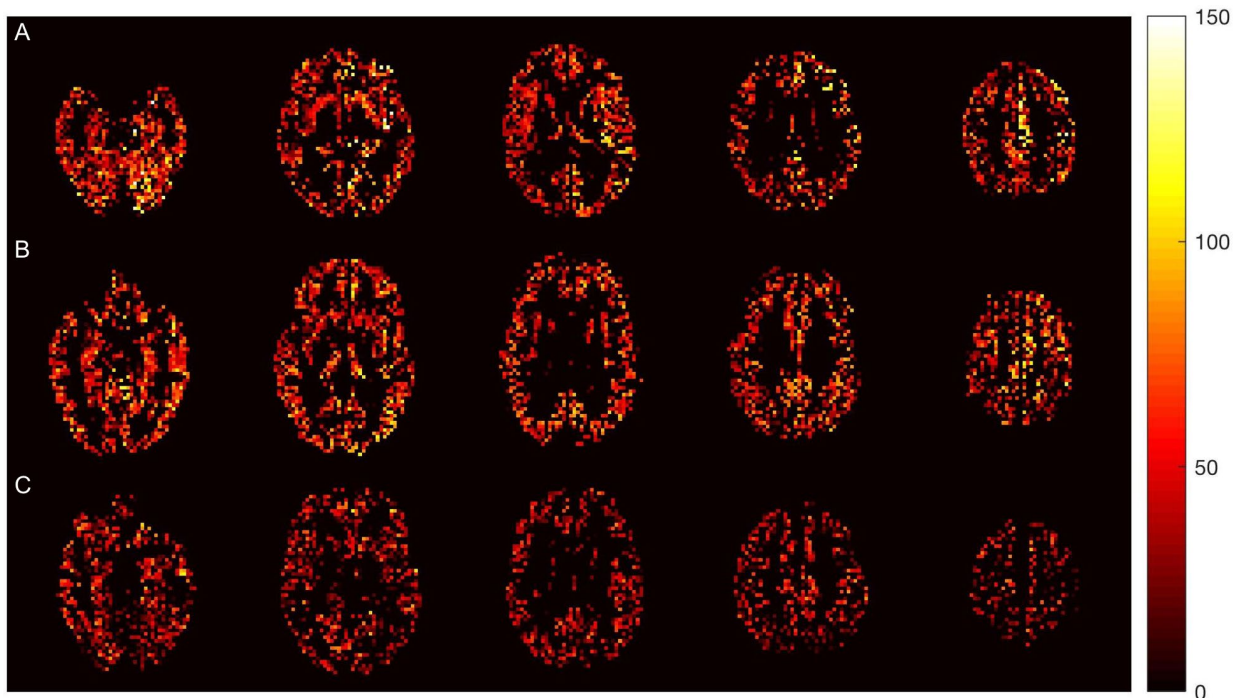


Fig. S1. Examples of absolute gray matter CBF maps from NC, MCI, and AD groups. A representative CBF map in the inferior to superior direction from (A) the control group, (B) the MCI group, and (C) the AD group. Color bar is shown on the right (from 0 to 150 ml/100g-min).

Cross-sectional study

A customized analysis of variance (ANOVA) was performed to examine the baseline CBF differences for the gray matter voxels between NC, MCI, and AD groups (58, 50, and 40 participants, respectively) on a voxel-by-voxel basis. Age and gender were included as confounding variables. The voxel-level significance threshold was set to $p < 0.01$. In order to guard against any false positive findings from the multiple comparisons, the corrected cluster-level p values were calculated by calling the SPM8 subroutine and taking into account the voxel-level threshold, spatial extent, smoothness,

and average degrees of freedom in each cluster. Only the clusters with a corrected cluster-level p-value < 0.05 were defined as significant clusters.

The twelve clusters identified from the above cross-sectional analysis [59] were: right hippocampus (RH), left hippocampus (LH), right superior medial frontal (RSMF), left superior medial frontal (LSMF), bilateral superior medial frontal (BSMF), right temporoparietal (RTP), left temporoparietal (LTP), right inferior frontal and insular (RIFI), left inferior frontal and insular (LIFI), right inferior parietal (RIP), bilateral posterior and middle cingulate and parietal regions (BPMP), and bilateral posterior cingulate extending to precuneus (BPCP). The anatomical locations are shown in Supplementary Fig. S2. We removed RSMF and LSMF regions for the longitudinal regions of interest (ROIs) because they are neighboring locations and have a large overlap with BSMF. Hence, ten ROIs were used in the longitudinal analysis.

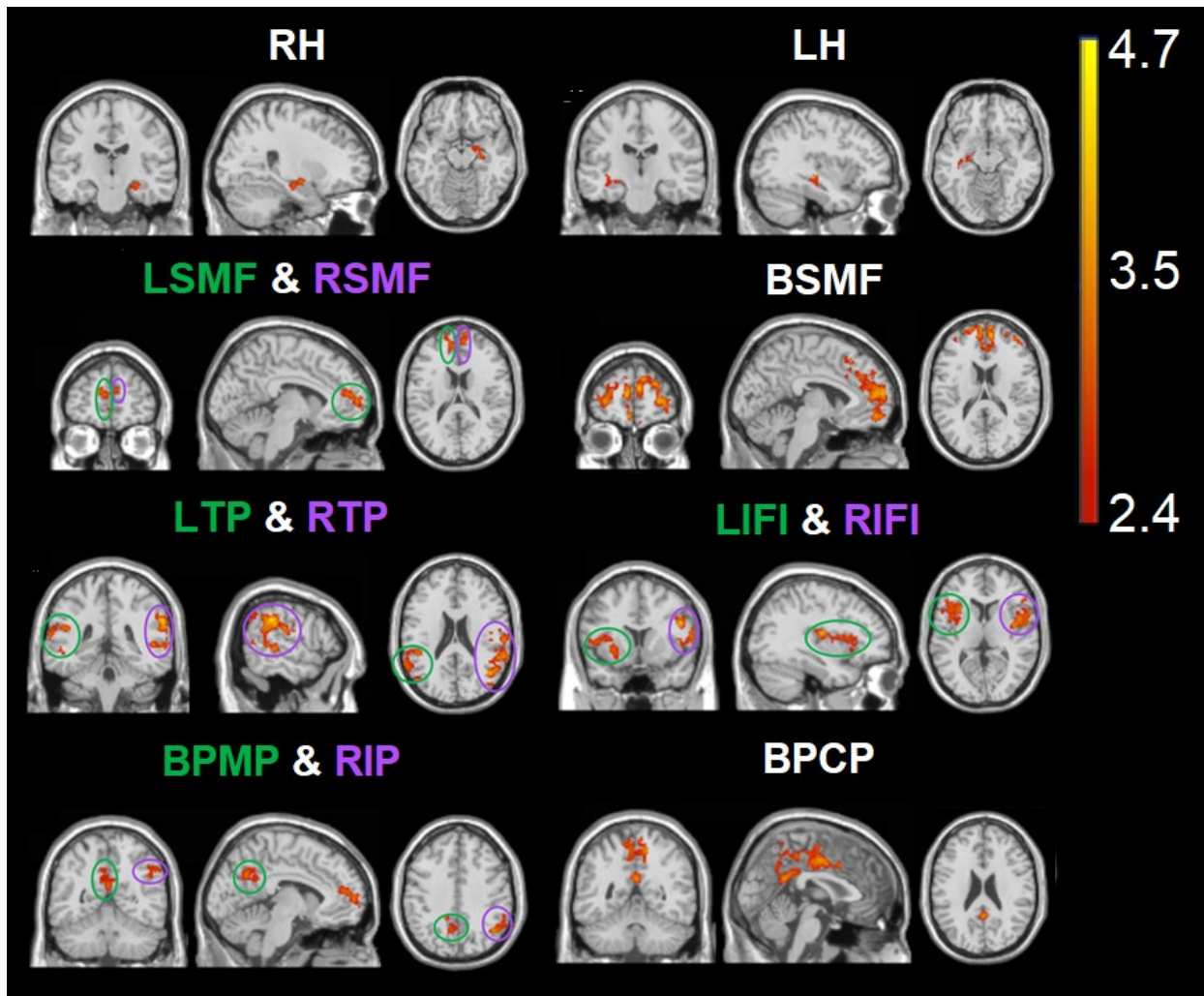


Fig. S2. Twelve regions of interest (ROIs) were identified from the baseline voxel-by-voxel analysis: right hippocampus (RH), left hippocampus (LH), right superior medial frontal (RSMF), left superior medial frontal (LSMF), bilateral superior medial frontal (BSMF), right temporoparietal (RTP), left temporoparietal (LTP), right inferior frontal and insular (RIFI), left inferior frontal and insular (LIFI), right inferior parietal (RIP), bilateral posterior and middle cingulate and parietal regions (BPMP), and bilateral posterior cingulate extending to the precuneus (BPCP). RSMF and LSMF were removed from the ROIs and so ten ROIs were used in the longitudinal study.

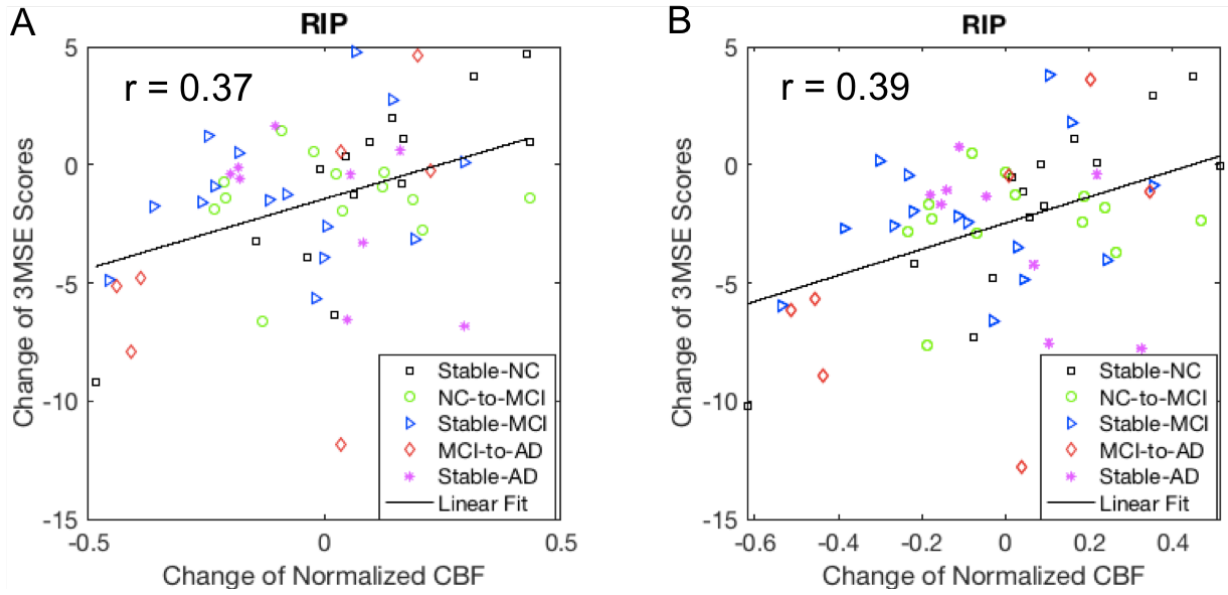


Fig. S3. Correlation of rCBF change with 3MSE score change. Greater longitudinal rCBF declines (A) without PVC and (B) with PVC at the follow-up were associated with smaller 3MSE scores in the RIP region using all of the subjects. Note that two participants (one MCI and one AD) had very large 3MSE score decreases and were among the three participants with very low 3MSE scores at follow-up.