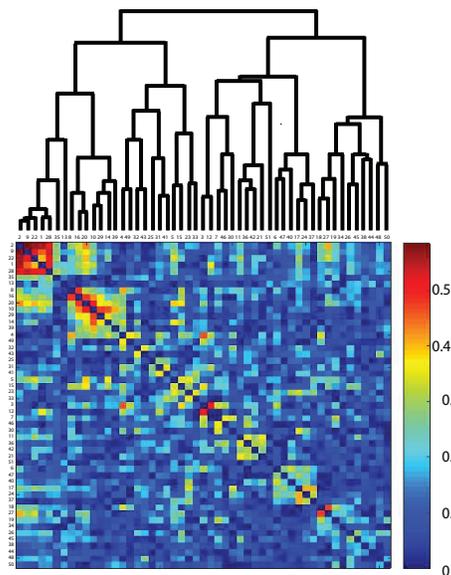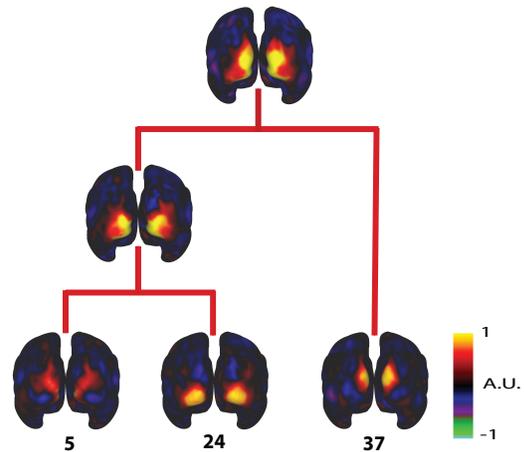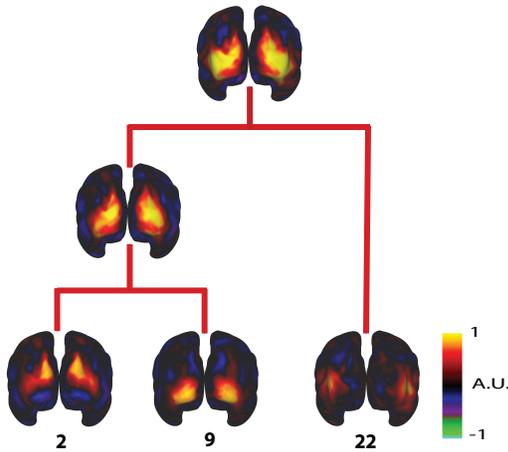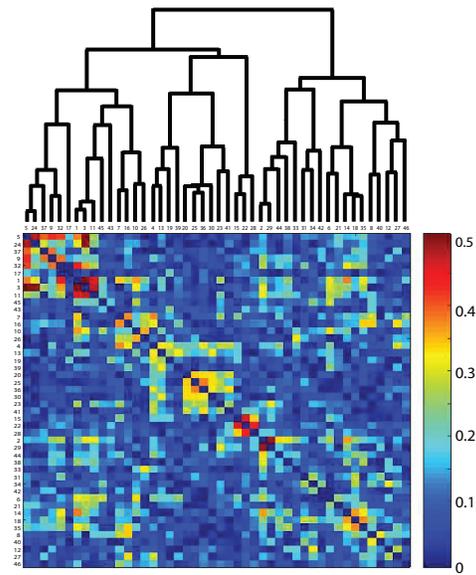# Whole Brain Clustering

A. Resting-State

B. Task

**Figure S1.** Hierarchical clustering of whole-brain (gray-matter) cortical networks during the resting state (A) and the natural vision task (B). For both A) and B), the top shows the dendrogram obtained from hierarchical clustering of spatially independent components; the middle shows the correlation matrix between independent components; the bottom shows the examples of visual cortical networks merging in a hierarchical manner.

Components used in GM-WM Coupling
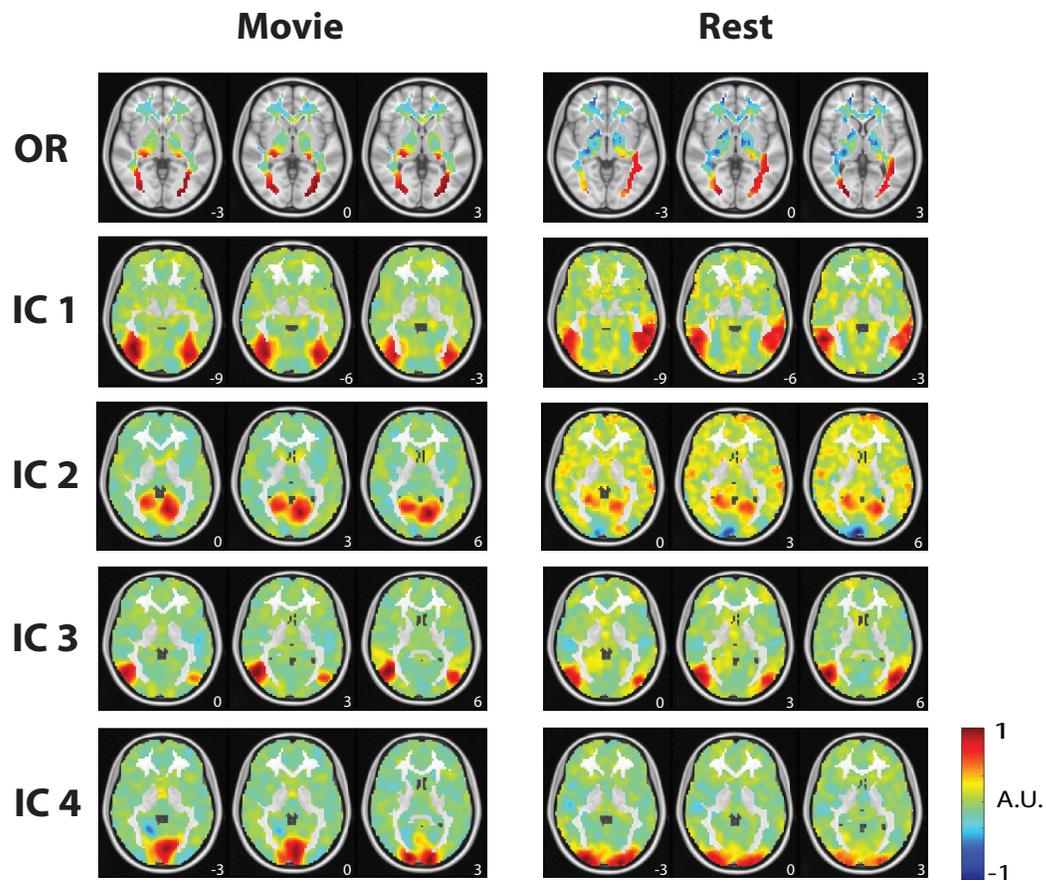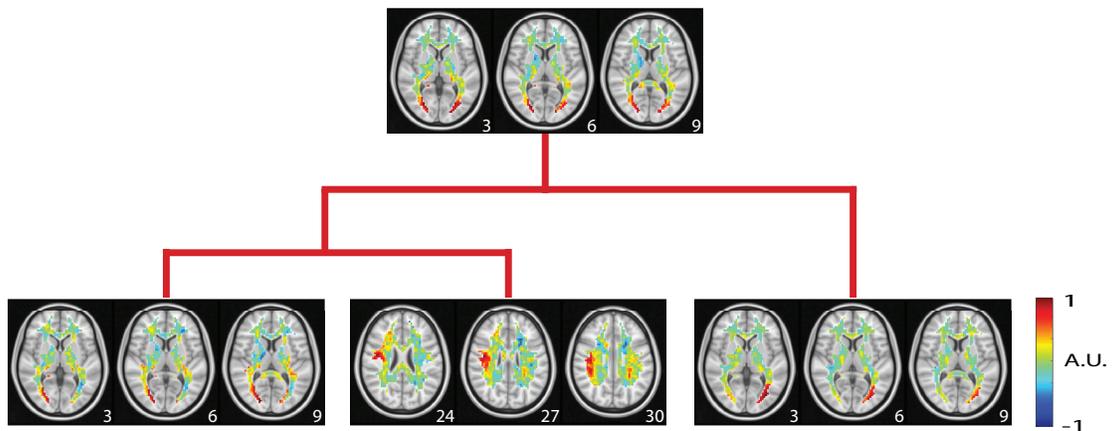

Figure S2. White-matter (the first row) and gray-matter (the second through forth row) components derived from the fMRI data in the natural-vision state (left) and the resting state (right).
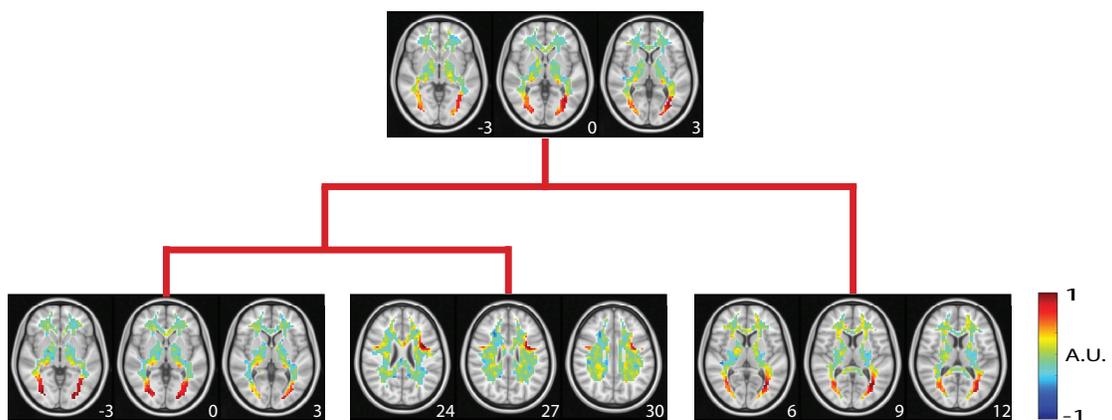
A. Components Are Less Reproducible without Smoothing
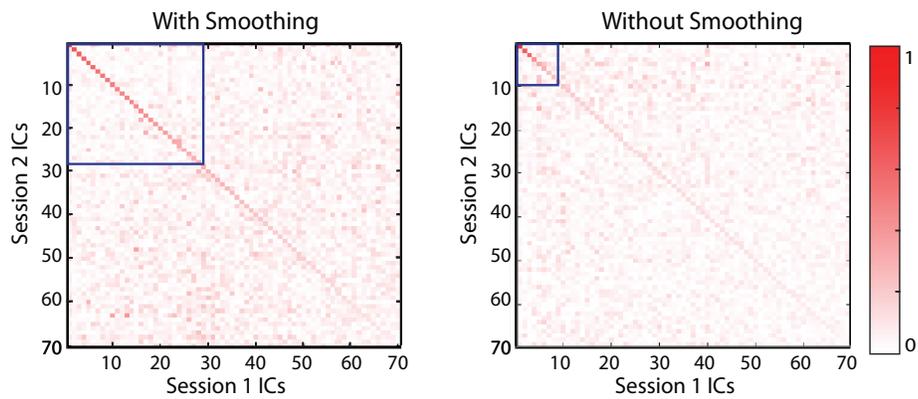
## B. Optic Radiations Remain Unilateral During Rest-State

C. Optic Radiations Remain Bilateral During the Visual Task

Figure S3. WM ICA without smoothing. **A.** Components are less reproducible without smoothing. The spatial maps between session 1 and session 2 were optimally matched into pairs sorted in descending order of their spatial cross correlations. The matrices show the spatial correlations of one session's 70 components to the other session's 70 components for the resting state, with (left) and without smoothing (right). The diagonal elements are the spatial correlations between individually 'paired' components. The blue box represents the extent of the paired components that were reproducible; the 'paired' components generated with spatial smoothing demonstrated stronger spatial correlations with one another than without smoothing (right). **B.** Using the best matched 29 'paired' components for consistency, the un-smoothed optic radiations components obtained during resting-state remained unilateral, and were clustered together to form a bilateral tract. The components that formed part of this branch on the dendrogram are shown. The z-value (mm) of the position of each axial image is shown in the lower right corner. **C.** Using the best matched 28 'paired' components for consistency, the un-smoothed optic radiations components obtained during the task remained bilateral. Interestingly, the components were split into a superior and inferior components, and those were clustered together. The components that formed part of this branch on the dendrogram are shown. The z-value (mm) of the position of each axial image is shown in the lower right corner.

Whole Brain ICA: WM Components
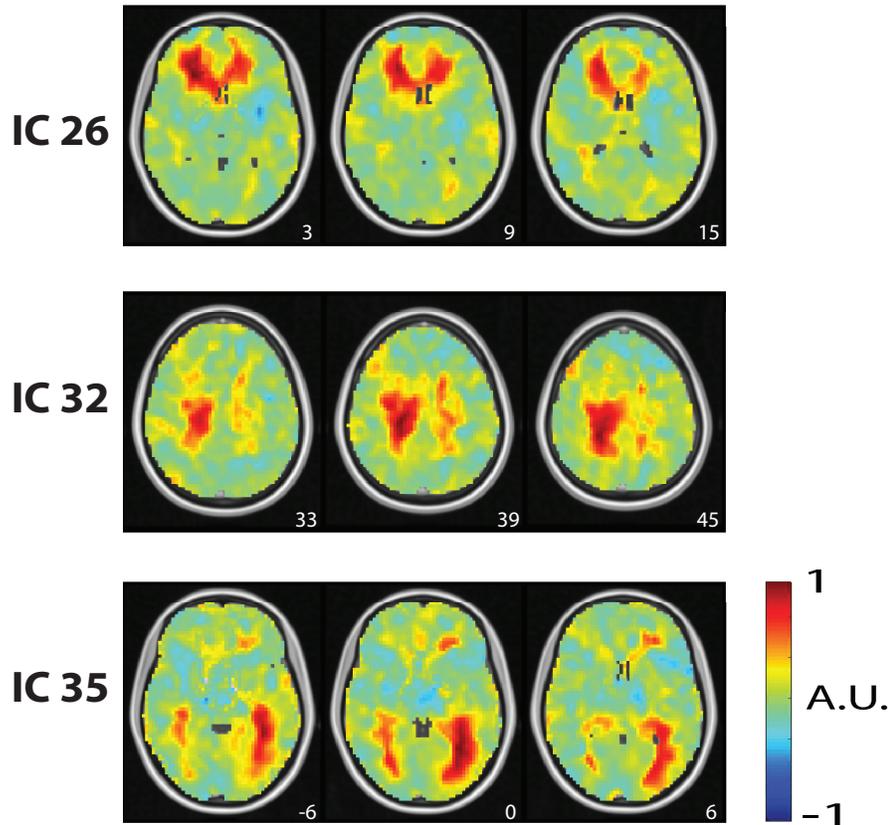
Figure S4. Three ICA maps with activity in white matter regions that were obtained with the whole brain (i.e. without masking out white matter) are shown. The z-value (mm) of the position of each axial image is shown in the lower right corner.