Supplemental materials related to the FreeSurfer Methods

FreeSurfer (version 5.1.0) software was used to conduct automatic preprocessing and data analysis pipeline. Briefly, the five MPRAGE T1-weighted images were first co-registered and averaged. The averaged image from each subject was then processed following the volume-based stream and surface-based stream analyses including: an affine registration with MNI305 space, skull stripping, B1 bias field correction, gray-white matter segmentation, reconstruction of cortical surface models (gray-white boundary surface and pial surface), labeling of regions on the cortical surface, as well as subcortical brain structures, and nonlinear registration of the cortical surface of an individual with a stereotaxic atlas. Cortical and subcortical as well as T1-weighted white matter volumes as well as hypointensities volumetric measures (equivalent to bright hyperintensities on T2-weighted images) were extracted for further group analysis. Image processing steps were visually inspected (such as skull-stripping errors and gray/white matter boundary) to ensure they had been carried out correctly.

We focused our regions of interest (ROI) data analyses on bilateral hippocampus, entorhinal cortex, parahippocampus, and white matter and non-white matter hypointensity volumes. To further explore the relevance of brain volumetric changes in other brain regions with neuroticism, we also included cortical thickness of frontal regions segmented based on Desikan/Killiany atlas in the data analysis, specifically, frontal pole, medial orbitofrontal cortex, lateral orbitofrontal, pars orbitalis, pars triangularis, pars opercularis, rostral middle frontal cortex, caudal middle frontal cortex, superior frontal cortex, rostral anterior cingulate, and caudal anterior cingulate, posterior cingulate and isthmus cingulate. Finally, in order to avoid ROI selective bias, we also conducted volumetric and cortical thickness analyses using mri\_glmfit program of FreeSurfer (described in the statistical methods section). All structural volumes were normalized (divided by) total cortical volume, and hypointensity volumes were normalized by total intracranial volume.