**Supplementary Materials**

**Supplementary Tables**

Table S1. Checklist of Quality Assessment for Studies Included in the Meta-analysis

Tables S2 – S6. Details of Studies Included in the Systematic Review and Meta-Analysis for Big Five Personality Traits and Gray Matter Volume (uploaded in Excel document)

Tables S7 – S11. Details of Studies Included in the Systematic Review and Meta-Analysis for Big Five Personality Traits and Cortical Thickness (uploaded in Excel document)

\* *Note*. Studies that met the meta-analysis criteria were labeled with “MA,” although no meta-analysis was conducted for cortical thickness studies.

Tables S12 – S16. Details of Studies Included in the Systematic Review and Meta-Analysis for Big Five Personality Traits and Surface Area (uploaded in Excel document)

\* *Note*. Studies that met the meta-analysis criteria were labeled with “MA,” although no meta-analysis was conducted for surface area studies.

Table S17. Details of Patient Studies in the Systematic Review and Meta-Analysis (uploaded in Excel document)

Table S18. Details of Studies Examining Age Differences across Big Five Personality Traits and Three Brain Indices (uploaded in Excel document)

Table S19. Details of Studies Examining Sex Differences across Big Five Personality Traits and Three Brain Indices (uploaded in Excel document)

Table S20. Abbreviations Used in the Main Content and in the Supplementary Materials

**Table S1**

*Checklist of Quality Assessment for Studies Included in the Meta-analysis*

|  |  |
| --- | --- |
| Domain | Criterion Description |
| Sample | Participant inclusion/exclusion criteria were clearly stated and were evaluated prospectively; for studies only included healthy individuals, psychiatric and medical illnesses were excluded |
| Sample | Was the study sample information well described? Important variables (demographic and global brain measures) were controlled either via stratification or statistics  1 = if both demographic (e.g., age, sex, education, intelligence, socioeconomic status, etc.) and global brain measures (e.g., total brain/gray matter volume, intracranial volume, etc.)  0.5 = if only control for either demographic or global brain measures  0 = if did not control for any |
| Sample | Sample size: for single group  1 = *N* ≥ 50; 0.5 = 30 ≤ *N* < 50; 0 = *N* < 30 |
| Method | Measurements were clearly described so that they could be reproduced 1 = correct description of the measurement and with proper citation or clearly describe items and scoring  0.5 = no citation or clear description |
| Method | The imaging technique used (including processing) was clearly described so that it could be reproduced |
| Method | Scanner magnet strength  1 = 3T (or above); 0.5 = 1.5T; 0 < 1.5T |
| Method | MRI slice-thickness :  1 = thickness ≤ 3 mm; 0.5 = thickness > 3 mm |
| Method | Statistical analysis  1 = corrected for multiple comparison; 0.5 = uncorrected |
| Result | Statistical parameters for significant and important nonsignificant association were provided 0.5 = if the peaks coordinates and effect sizes (e.g., *t*, Z, *r*, or *p* values) were not provided |
| Discussion | Conclusions were consistent with the results obtained, consistency and/or discrepancy compared with literature, and the limitations (e.g., study design, methodology, analyses, etc.) were discussed |

**Table S20**

*Abbreviations Used in the Main Content and in the Supplementary Materials*

|  |  |
| --- | --- |
| General terms | |
| Cor | corrected result |
| F/M | Female/Male |
| fc | facet-only study |
| FFM | Five-Factor Model |
| l/r | left/right hemisphere |
| MA | meta-analysis study |
| n.d. | no difference |
| NA | not applicable |
| Neg | negative |
| NS | not specified |
| NSig | no significant result |
| Pos | positive |
| PRISMA | Preferred Reporting Items for Systematic reviews and Meta-Analyses guidelines |
| pt | patient study |
| SDM-PSI | seed-based d mapping with permutation of subject images software |
| SES | socioeconomic status |
| Data project | |
| ABIP | Aoba Brain Imaging Project |
| ADEPT | Adolescent Development of Emotions and Personality Traits |
| BLSA | Baltimore Longitudinal Study of Aging |
| BNU | project from Beijing Normal University, China |
| BRID | Brain Resource International Database |
| CHD | Ongoing project in Chengdu, China |
| CPLS | Cognition and Plasticity through the Life Span |
| CR | Cognitive Reserve study |
| ECP | Epilepsy Connectome Project |
| HCP | Human Connectome Project |
| LBC1936 | Lothian Birth Cohort 1936 |
| NESDA | Netherlands Study of Depression and Anxiety |
| NKI-RS | Nathan Kline Institute – Rockland Sample |
| PSoBiD | Psychological, social, and biological determinants of ill health |
| RANN | Reference Ability Neural Network |
| SBFS | Scottish Bipolar Family Study |
| SMAS | Sydney Memory and Ageing Study |
| SWU | Ongoing project in Southwest University, China |
| UGA | A lager project from University of Graz, Austria |
| Study sample | |
| ADL | adolescents |
| AUD | alcohol use disorders |
| BPD | borderline personality disorder |
| CD | Crohn's Disease |
| CPD | chronic pain disorder |
| EOD | early-onset depression |
| HC | healthy control |
| HR-MDD | familial high-risk who developed MDD |
| HR-well | familial high-risk who remained healthy |
| MDD | major depressive disorder |
| MS | multiple sclerosis |
| PD | panic disorder |
| PTN | painful trigeminal neuropathy |
| SCZ | schizophrenia |
| TLE | temporal lobe epilepsy |
| TMD | temporomandibular disorder |
| Big Five instrument | |
| 16PF | 16 Personality Factor Test |
| 50-IPIP | 50-item International Personality Item Pool |
| BFAS | Big Five Aspects Scale |
| BFI | Big Five Inventory |
| BFSI | Big Five Structure Inventory |
| EPQ-R | Eysenck Personality Questionnaire-Revised |
| EPQ-RSC | Eysenck Personality Questionnaire-Revised Short Scale for Chinese |
| EPQ-RSS | Eysenck Personality Questionnaire-Revised Short Scale |
| EPQ | Eysenck Personality Questionnaire |
| EPS-A | Eysenck Personality Scale – Adult |
| NEO-FFI | NEO-Five Factor Model |
| NEO-PI-R | NEO-Personality Inventory-Revised |
| Image data related | |
| AAL | automated anatomical labeling |
| BIS | BioImage Suite |
| Bonf | Bonferroni |
| BVR | brain volume ratio (relative to the "rest of the brain volume") |
| CCS | Connectome Computation System |
| CT | cortical thickness |
| FDR | false discovery rate |
| fMRI | functional magnetic resonance imaging |
| fROI | functional region of interest |
| FS SEG | FreeSurfer segmentation |
| FS | FreeSurfer |
| FSL | FMRIB Software Library |
| FWE | Family-Wise Error |
| FWHM | Full-Width at the Half Maximum |
| GMC/GMD | gray matter concentration/density |
| GMV | gray matter volume |
| HCP-PP | HCP preprocessing pipeline |
| ICV | intracranial volume |
| MCS | Monte Carlo simulation |
| MNI | Montreal Neurological Institute |
| NSTA | non-stationary |
| ROI | region of interest |
| SA | surface area |
| SBM | surface-based morphometry |
| SPM | Statistical Parametric Mapping |
| TAL | Talairach |
| TBV | total brain volume |
| TBVR | total brain volume ratio |
| TGMV | total gray matter volume |
| TGMR | total gray matter ratio |
| TSA | total surface area |
| Uncor | uncorrected threshold/result |
| VBM | voxel-based morphometry |
| WBA | whole-brain analysis |
| WBPAR | whole-brain parcellation |
| Brain region labels | |
| ACC/G | anterior cingulate cortex/gyrus |
| AINS | anterior insula |
| AMY | amygdala |
| ANG | angular gyrus |
| antOFC | anterior orbitofrontal cortex |
| ATC | anterior temporal cortex |
| BG | basal ganglia |
| blAMY | basolateral amygdala |
| BRS | brainstem |
| CAD | caudate |
| CAL | calcarine gyrus |
| cauMFG | caudal middle frontal gyrus |
| CING | cingulate |
| CNS | cuneus |
| CRB | cerebellum |
| dACC | dorsal anterior cingulate cortex |
| DCC | dorsal cingulate cortex |
| dHIP | dorsal hippocampus |
| DLPFC | dorsolateral prefrontal cortex |
| DMPFC | dorsomedial prefrontal cortex |
| ENT | entorhinal cortex |
| FP | frontal pole |
| FPFC | fronto-palor prefrontal cortex |
| FSF | fusiform gyrus |
| HIP | hippocampus |
| HSG | Heschl's gyrus |
| IFG | inferior frontal gyrus |
| infOFC | inferior orbitofrontal cortex |
| INS | insula |
| IOG | inferior occipital gyrus |
| IPL/G | inferior parietal lobule/gyrus |
| IPS | intraparietal sulcus |
| ITG | inferior temporal gyrus |
| LNG | lingual gyrus |
| LOG | lateral occipital gyrus |
| LOTG | lateral occipito-temporal gyrus |
| MCC/G | middle cingulate cortex/gyrus |
| medFG | medial frontal gyrus |
| medOFC | medial orbitofrontal cortex |
| medSFG | medial superior frontal gyrus |
| MFG | middle frontal gyrus |
| midOFC | middle orbitofrontal cortex |
| MOG | middle occipital gyrus |
| MPFC | medial prefrontal cortex |
| MTG | middle temporal gyrus |
| MTP | middle temporal pole |
| NAc | nucleus accumbens |
| OFC/G | orbitofrontal cortex/gyrus |
| PCC/G | posterior cingulate cortex/gyrus |
| PCL | paracentral lobule |
| PCN | precuneus |
| PFC | prefrontal cortex |
| PHC | parahippocampal gyrus |
| PLD | pallidum |
| POS | parieto-occipital sulcus |
| PRC | precentral gyrus |
| PSC | postcentral gyrus |
| PSVA | para-striate visual area |
| PUT | putamen |
| RCG | rectal gyrus |
| RLO | rolandic operculum |
| rosACC | rostral anterior cingulate cortex |
| rosMFG | rostral middle frontal gyrus |
| S1 | primary somatosensory cortex |
| SALN | salience network |
| sfAMY | superficial amygdala |
| SFS | superior frontal sulcus |
| sgACC | subgenual anterior cingulate cortex |
| SMA | supplementary motor area |
| SMG | supramarginal gyrus |
| SOG | superior occipital gyrus |
| SPL/G | superior parietal lobule/gyrus |
| STG | superior temporal gyrus |
| STS | superior temporal sulcus |
| supOFC | superior orbitofrontal cortex |
| THA | thalamus |
| TNCV | total neocortical volume |
| TP | temporal pole |
| venACC | ventral anterior cingulate cortex |
| VLPFC | ventrolateral prefrontal cortex |
| VMPFC | ventromedial prefrontal cortex |

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