**Supplementary Table S1.** The ROI-based brain regions with significant differences.

The ROIs with significant differences(AAL template)

| Cohort 1 with PET (NC VS SCD) | | | Cohort 2 (NC VS SCD) | | |
|---|---|---|---|---|---|
| Regions | Anatomical classification | P value (corrected) | Regions | Anatomical classification | P value (corrected) |
| Superior frontal gyrus, medial orbital(left) | Prefontal | 0.041 | Middle temporal gyrus(left) | Temporal | <0.001 |
| Middle temporal gyrus(left) | Temporal | 0.021 | Middle temporal gyrus(right) | Temporal | <0.001 |

| Cohort 1 without PET (NC VS SCD) | | |
|---|---|---|
| Middle frontal gyrus(left) | Prefontal | 0.026 |
| Middle frontal gyrus(right) | Prefontal | 0.026 |
| Calcarine fissure and surrounding cortex(right) | Occipital | 0.031 |
| Superior occipital gyrus(left) | Occipital | 0.035 |
| Middle temporal gyrus(left) | Temporal | 0.026 |

Abbreviations: SCD, subjective cognitive decline; NC, normal control; ROI, region of interest; AAL, anatomical automatic labeling.

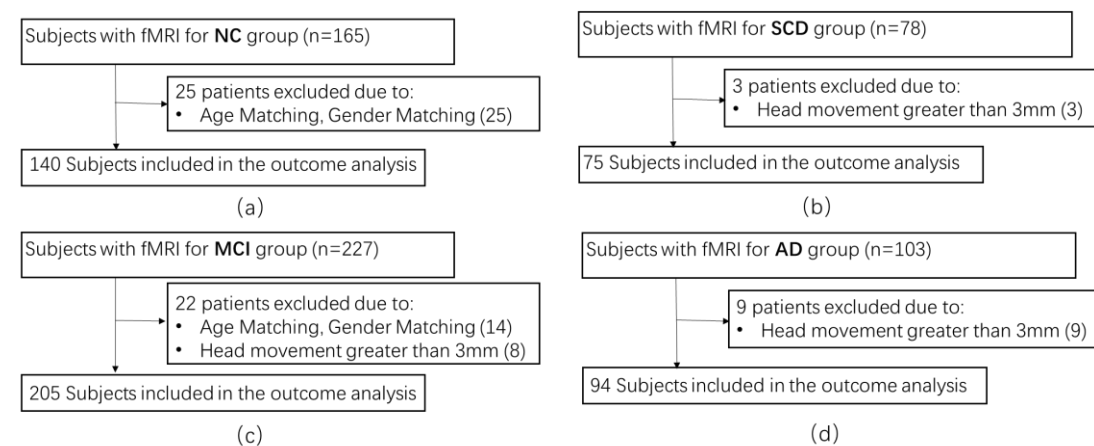**Supplementary Table S2.** Results of causal analysis.

| | SCD 1 | MCI 1 | AD 1 | SCD 2 | MCI 2 | AD 2 |
|---|---|---|---|---|---|---|
| P value | 0.845 | 0.878 | 0.942 | 0.782 | 0.474 | 0.101 |

Abbreviations: SCD, subjective cognitive decline; MCI, mild cognitive impairment; AD, Alzheimer's disease.

**Supplementary Table S3.** Correlation analysis of SUVR and proportional loss.

The ROIs with significant differences(AAL template)

Cohort 1 with PET (NC VS SCD)

| Regions | Anatomical classification | R | P value |
| --- | --- | --- | --- |
| Whole brain | | -0.176 | 0.119 |
| Hippocampus_L | Temporal | -0.259 | 0.020 |
| Hippocampus_R | Temporal | -0.281 | 0.012 |
| ParaHippocampal_L | Temporal | -0.165 | 0.143 |
| ParaHippocampal_R | Temporal | -0.227 | 0.043 |
| Amygdala_L | Temporal | 0.142 | 0.207 |
| Amygdala_R | Temporal | -0.202 | 0.073 |
| Fusiform_L | Temporal | -0.329 | 0.003 |
| Fusiform_R | Temporal | -0.299 | 0.007 |
| Heschl_L | Temporal | -0.173 | 0.126 |
| Heschl_R | Temporal | -0.216 | 0.054 |
| Temporal_Sup_L | Temporal | -0.201 | 0.074 |
| Temporal_Sup_R | Temporal | -0.196 | 0.082 |
| Temporal_Pole_Sup_L | Temporal | -0.072 | 0.526 |
| Temporal_Pole_Sup_R | Temporal | 0.209 | 0.063 |
| Temporal_Mid_L | Temporal | -0.245 | 0.029 |
| Temporal_Mid_R | Temporal | -0.200 | 0.075 |
| Temporal_Pole_Mid_L | Temporal | 0.059 | 0.606 |
| Temporal_Pole_Mid_R | Temporal | 0.053 | 0.640 |
| Temporal_Inf_L | Temporal | -0.217 | 0.053 |
| Temporal_Inf_R | Temporal | -0.123 | 0.275 |

Abbreviations: SCD, subjective cognitive decline; NC, normal control; ROI, region of interest; AAL, anatomical automatic labeling.



**Supplementary Figure S1.** Workflow show ADNI cohort participant selection details in (a) NC, (b) SCD, (c) MCI and (d) AD. Abbreviations: NC, normal control; SCD, subjective cognitive decline; MCI, mild cognitive impairment; AD, Alzheimer's disease.