# Supplementary Tables and Figures

**Table S1.** The subject INDI database identifiers and the corresponding gender, age.

| Subject | Gender | Age | Subject | Gender | Age | Subject | Gender | Age | Subject | Gender | Age |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1013090 | male | 41 | 1903493 | female | 64 | 3313349 | female | 22 | 4099085 | male | 74 |
| 1034049 | male | 9 | 1915832 | male | 53 | 3315657 | male | 19 | 4100790 | male | 43 |
| 1097782 | female | 29 | 1931386 | female | 47 | 3328556 | male | 23 | 4119751 | male | 23 |
| 1125244 | female | 13 | 1935851 | male | 43 | 3329569 | female | 50 | 4143704 | male | 41 |
| 1150497 | female | 67 | 1940084 | male | 81 | 3346545 | female | 16 | 4188346 | female | 41 |
| 1264721 | female | 31 | 1943306 | male | 12 | 3362208 | male | 17 | 4277600 | male | 40 |
| 1271401 | female | 22 | 2005303 | female | 15 | 3366302 | male | 21 | 4288245 | male | 22 |
| 1288657 | male | 20 | 2009256 | female | 60 | 3374719 | male | 7 | 4290056 | female | 26 |
| 1292527 | male | 14 | 2113846 | male | 44 | 3409284 | male | 64 | 4323037 | female | 36 |
| 1309257 | male | 46 | 2132437 | female | 78 | 3431295 | female | 13 | 4417007 | female | 17 |
| 1334556 | male | 24 | 2160826 | male | 55 | 3431940 | female | 28 | 4791943 | male | 41 |
| 1334913 | male | 13 | 2221971 | male | 34 | 3466763 | female | 25 | 5108043 | female | 77 |
| 1351931 | female | 29 | 2286053 | male | 47 | 3486362 | male | 25 | 5161117 | male | 15 |
| 1366839 | male | 71 | 2328270 | male | 63 | 3492484 | female | 12 | 5205221 | male | 68 |
| 1427581 | female | 27 | 2403029 | female | 14 | 3566919 | male | 9 | 6539040 | male | 72 |
| 1438912 | male | 75 | 2436415 | male | 46 | 3594255 | male | 70 | 6709880 | male | 23 |
| 1445797 | male | 14 | 2457957 | female | 23 | 3606220 | female | 42 | 6913939 | female | 53 |
| 1476437 | male | 23 | 2524225 | male | 46 | 3695138 | female | 51 | 7055197 | female | 22 |
| 1494230 | female | 32 | 2631208 | male | 37 | 3701005 | male | 34 | 8691891 | female | 71 |
| 1508861 | female | 21 | 2652676 | male | 14 | 3729976 | male | 22 | 9006154 | male | 21 |
| 1522653 | male | 41 | 2678751 | female | 10 | 3773269 | male | 82 | 9536886 | female | 61 |
| 1523112 | female | 33 | 2731081 | male | 21 | 3804254 | female | 19 | 9630905 | female | 36 |
| 1525492 | male | 19 | 2784584 | male | 15 | 3808535 | male | 25 | 9645370 | female | 26 |
| 1601547 | female | 8 | 2788776 | female | 20 | 3811036 | female | 20 | 9716792 | female | 55 |
| 1616468 | female | 47 | 2799329 | male | 30 | 3815065 | male | 22 |  |  |  |
| 1654606 | female | 50 | 2861923 | male | 41 | 3895064 | female | 66 |  |  |  |
| 1709141 | male | 46 | 2970212 | female | 10 | 3911767 | female | 19 |  |  |  |
| 1713513 | female | 85 | 2986140 | male | 47 | 3927656 | female | 21 |  |  |  |
| 1734822 | female | 32 | 3033715 | female | 61 | 3934325 | female | 22 |  |  |  |
| 1742775 | female | 16 | 3070385 | female | 74 | 3965194 | male | 21 |  |  |  |
| 1753435 | female | 16 | 3094481 | male | 14 | 4015919 | male | 48 |  |  |  |
| 1781836 | female | 13 | 3106263 | male | 23 | 4077433 | male | 33 |  |  |  |
| 1793622 | male | 60 | 3166395 | female | 69 | 4087509 | female | 83 |  |  |  |
| 1834799 | male | 54 | 3304648 | male | 54 | 4097119 | male | 81 |  |  |  |

**Figure S1.** Age and sex distribution. The X-axis represents age in 3-yr bands. The Y-axis represents the number of participants in the different age groups.
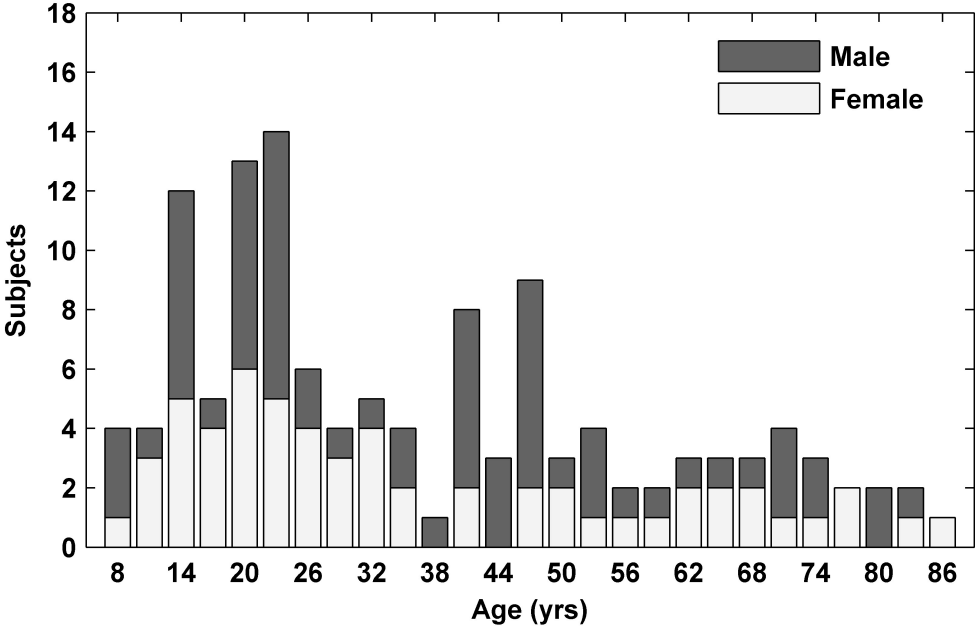
**Figure S2.** The mean frame-wise displacement (meanFD) significantly correlated with age. The dark dots represent the meanFD of each subject. The curve fits are shown by the dark lines.
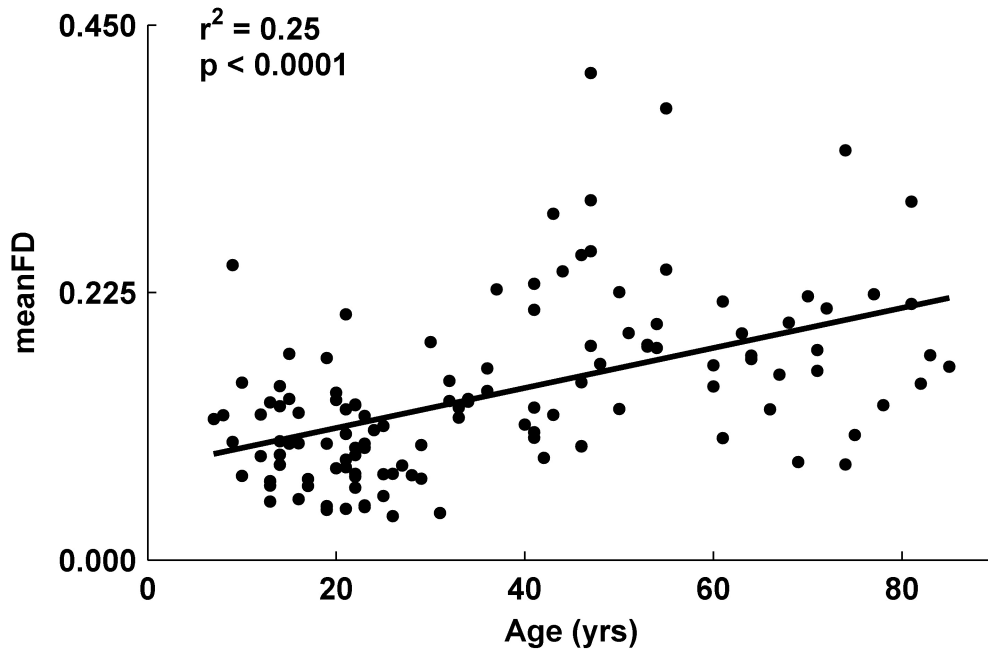
**Figure S3.** The lifespan trajectory of the normalized rich-club coefficient, $\Phi_{norm}$, under other hub thresholds. (A) Changing trajectories under the hub threshold: rFCS > 0.5 SD + mean. (B) Changing trajectories under the hub threshold: rFCS > 0.75 SD + mean. (C) Changing trajectories under the hub threshold: rFCS > 1.25 SD + mean. (D) Changing trajectories under the hub threshold: rFCS > 1.5 SD + mean. The dark dots represent the results of each subject after adjusting for sex, head motion and data quality. The curve fits are shown by the dark lines; the red pentagrams represent the peak age. The solid lines show the significant relationships, while the dotted lines show the non-significant trends.
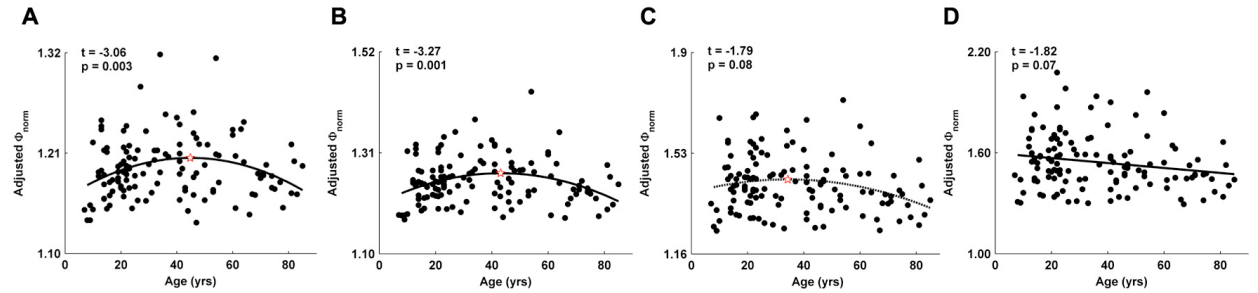
**Figure S4.** Lifespan rFCS changes with significant threshold of p = 0.01, uncorrected. (A) The regions showing the significant linear effects of age. (B) The regions showing the significant quadratic effects of age.
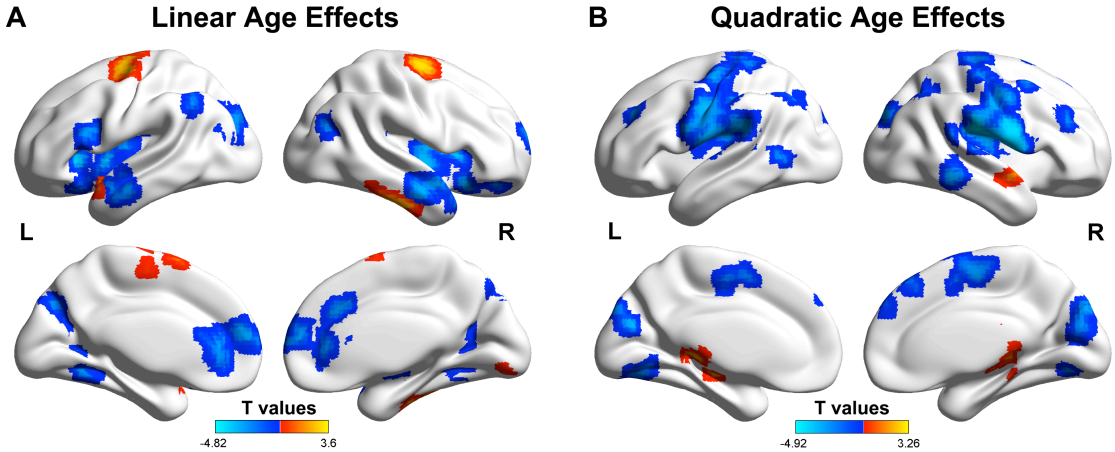
**Figure S5.** The gender effect on functional network properties. Women were found to have a significantly lower network efficiency (both absolute and relative), density and connectivity strength compared with men. Notably, all results here were calculated after adjusting for the effects of age, head motion and image quality, using a general linear model.
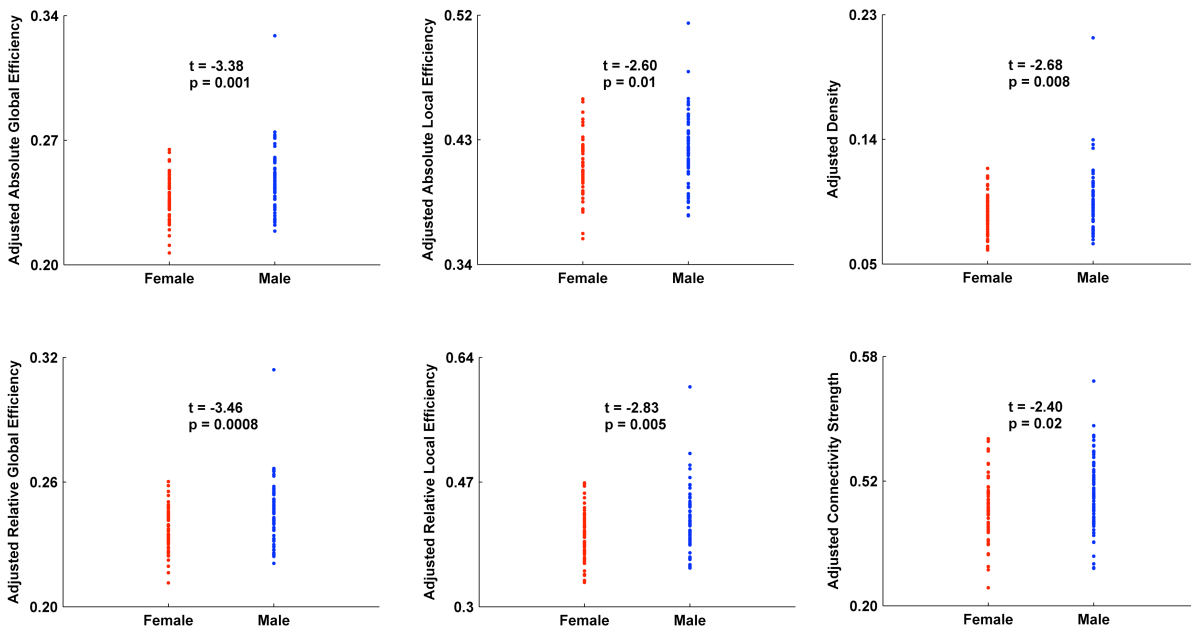
**Figure S6**. The lifespan trajectories of network properties without global signal regression. The dark dots represent the adjusted results of each subject after regressing out sex, head motion and data quality. The curve fits are shown by the dark lines; the red pentagrams represent the peak age. The solid line shows the significant relationships, while the dotted lines show the non-significant trends. The results of the normalized rich-club coefficient under the threshold of rFCS > 1 SD + mean.