**Table S1** Differences in Cognitive Trajectories Between Migrants and Non-migrants

| Mixed Effect | β (SE) |  |  | |
| --- | --- | --- | --- | --- |
|  | Total cognition | Mental status | Episode Memory | |
| Fixed effect |  |  |  |
| Constant | 11.43(0.10)\*\*\* | 7.91(0.08)\*\*\* | 3.56(0.05)\*\*\* |
| Time | -0.85(0.05)\*\*\* | -0.49(0.05)\*\*\* | -0.36(0.03)\*\*\* |
| Migrant | 0.16(0.22) | 0.25(0.16) | -0.09(0.09) |
| Female | -2.08(0.12)\*\*\* | -1.85(0.10)\*\*\* | -0.23(0.06)\*\*\* |
| Age65~70 (Ref. Age60~) | -0.76(0.11)\*\*\* | -0.42(0.09)\*\*\* | -0.37(0.05)\*\*\* |
| Age>70 (Ref. Age60~) | -2.61(0.12)\*\*\* | -1.66(0.09)\*\*\* | -1.05(0.05)\*\*\* |
| Migrant x Time | 0.16(0.12) | 0.06(0.10) | 0.11(0.06) |
| Female x Time | -0.14(0.08) | -0.10(0.10) | -0.05(0.04) |
| Migrant x Female | 0.61(0.27)\* | 0.43(0.22)\* | 0.18(0.12) |
| Migrant x Time x Female | -0.15(0.16) | -0.08(0.14) | -0.07(0.08) |
| Random effect |  |  |  |
| ID | 2.16 | 1.63 | 0.90 |
| Time | 0.35 | 0.20 | 0.32 |

\* *P*<0.05; \*\* *P*<0.01; \*\*\* *P*<0.001;

**Table S2** Longitudinal Association Between the Mental Status and Migrant Status in Female Subjects

| Mixed Effect | β (SE) |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Model1 | Model2 | Model3 | Model4 | Model5 |
| Fixed effect |  |  |  |  |  |
| constant | 6.10(0.09)\*\*\* | 5.03(0.12)\*\*\* | 5.03(0.16)\*\*\* | 5.43(0.18)\*\*\* | 5.40(0.19)\*\*\* |
| Time | -0.59(0.04)\*\*\* | -0.59(0.04)\*\*\* | -0.59(0.04)\*\*\* | -0.59(0.04)\*\*\* | -0.59(0.04)\*\*\* |
| Migrant (Ref. Non-migrants) | 0.66(0.12)\*\*\* | 0.41(0.10)\*\*\* | 0.41(0.11)\*\*\* | 0.32(0.10)\*\* | 0.29(0.10)\*\* |
| Age65~70 (Ref. Age60~) | -0.47(0.12)\*\*\* | -0.47(0.11)\*\*\* | -0.48(0.11)\*\*\* | -0.44(0.10)\*\*\* | -0.43(0.10)\*\*\* |
| Age>70 (Ref. Age60~) | -1.69(0.13)\*\*\* | -0.92(0.12)\*\*\* | -0.88(0.13)\*\*\* | -0.88(0.12)\*\*\* | -0.84(0.12)\*\*\* |
| **SES** |  |  |  |  |  |
| Education level (Ref. illiterate) |  |  |  |  |  |
| Some primary school |  | 1.72(0.12)\*\*\* | 1.72(0.12)\*\*\* | 1.70(0.12)\*\*\* | 1.68(0.12)\*\*\* |
| Finished primary school |  | 3.03(0.13)\*\*\* | 3.02(0.13)\*\*\* | 2.93(0.13)\*\*\* | 2.89(0.13)\*\*\* |
| Higher than primary school |  | 3.78(0.23)\*\*\* | 3.75(0.23)\*\*\* | 3.61(0.22)\*\*\* | 3.59(0.22)\*\*\* |
| Retired (Ref. no) |  | -0.02(0.10) | 0.01(0.10) | 0.01(0.10) | 0.05(0.10) |
| Household annual income (Ref. low) |  |  |  |  |  |
| Medium |  | -0.13(0.10) | -0.07(0.11) | -0.15(0.11) | -0.15(0.11) |
| High |  | 0.28(0.13)\* | 0.42(0.14)\*\* | 0.24(0.14)\* | 0.23(0.14) |
| **Family connections** |  |  |  |  |  |
| Coupled household |  |  | 0.02(0.11) | 0.03(0.11) | 0.02(0.11) |
| Living with child |  |  | -0.33(0.10)\*\*\* | -0.27(0.10)\*\* | -0.27(0.10)\*\* |
| Caring for grandchildren |  |  | 0.19(0.09)\* | 0.21(0.09)\* | 0.22(0.09)\* |
| **Social attachment** |  |  |  |  |  |
| Civic participation (Ref.no) |  |  |  | 0.60(0.51) | 0.51(0.51) |
| Leisure activities (Ref.no) |  |  |  | 0.55(0.15)\*\*\* | 0.52(0.15)\*\*\* |
| Friendships (Ref.no) |  |  |  | 0.16(0.09) | 0.12(0.09) |
| **Depression** |  |  |  | -0.04(0.01)\*\*\* | -0.04(0.01)\*\*\* |
| **Health** |  |  |  |  |  |
| ADLs |  |  |  |  | -0.13(0.04)\*\*\* |
| Chronic diseases (Ref. Non-disease) |  |  |  |  | -0.06(0.10) |
| **Health behavior** |  |  |  |  |  |
| Smoking (Ref. Non-smoker) |  |  |  |  |  |
| Light/moderate smokers |  |  |  |  | 0.17(0.21) |
| Heavy smokers |  |  |  |  | 0.14(0.33) |
| Alcohol consumption (Ref. Non-drinker) |  |  |  |  |  |
| ≤1 drink per month |  |  |  |  | -0.01(0.22) |
| >1 drink per month |  |  |  |  | -0.02(0.16) |
| Afternoon napping (Ref. Non-napper) |  |  |  |  |  |
| Short napper |  |  |  |  | 0.37(0.17)\* |
| Moderate napper |  |  |  |  | 0.25(0.10)\* |
| Extend napper |  |  |  |  | -0.09(0.14) |
| Random effect |  |  |  |  |  |
| ID | 1.72 | 1.30 | 1.28 | 1.21 | 1.20 |
| Time | 0.12 | 0.06 | 0.05 | 0.08 | 0.08 |
| AIC | 30385 | 29717 | 29708 | 29645 | 29639 |

Abbreviations: AIC Akaike Information Criterion, SES socioeconomic status, ADL activity of daily living disability

Model 1: Adjusted for age group and time of follow-up; Model 2: Model 1 + socioeconomic status; Model 3: Model 2 + family connections; Model 4: Model3 + social attachment + depression; Model 5: Model 4 + health and health behaviours.

\* *P*<0.05; \*\* *P*<0.01; \*\*\* *P*<0.001;

**Table S3** Longitudinal Association Between the Total Cognitive Trajectory and Migrant Status in Male Subjects

| Mixed Effect | β (SE) |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Model1 | Model2 | Model3 | Model4 | Model5 |
| Fixed effect |  |  |  |  |  |
| constant | 11.36(0.12)\*\*\* | 8.86(0.19)\*\*\* | 8.70(0.24)\*\*\* | 9.08(0.26)\*\*\* | 8.92(0.28)\*\*\* |
| Time | -0.81(0.05)\*\*\* | -0.81(0.05)\*\*\* | -0.81(0.05)\*\*\* | -0.81(0.05)\*\*\* | -0.81(0.05)\*\*\* |
| Migrant (Ref. Non-migrants) | 0.28(0.17) | 0.22(0.15) | 0.21(0.15) | 0.18(0.15) | 0.16(0.15) |
| Age65~70 (Ref. Age60~) | -0.68(0.16)\*\*\* | -0.64(0.14)\*\*\* | -0.65(0.14)\*\*\* | -0.56(0.14)\*\*\* | -0.53(0.14)\*\*\* |
| Age>70 (Ref. Age60~) | -2.52(0.17)\*\*\* | -1.58(0.16)\*\*\* | -1.57(0.16)\*\*\* | -1.57(0.16)\*\*\* | -1.54(0.16)\*\*\* |
| **SES** |  |  |  |  |  |
| Education level (Ref. illiterate) |  |  |  |  |  |
| Some primary school |  | 1.80(0.17)\*\*\* | 1.79(0.17)\*\*\* | 1.75(0.16)\*\*\* | 1.74(0.17)\*\*\* |
| Finished primary school |  | 3.22(0.16)\*\*\* | 3.19(0.16)\*\*\* | 3.10(0.16)\*\*\* | 3.07(0.16)\*\*\* |
| Higher than primary school |  | 4.36(0.20)\*\*\* | 4.31(0.20)\*\*\* | 4.09(0.19)\*\*\* | 4.04(0.19)\*\*\* |
| Retired (Ref. no) |  | -0.53(0.15)\*\*\* | -0.48(0.15)\*\* | -0.46(0.15)\*\* | -0.42(0.15)\*\* |
| Household annual income (Ref. low) |  |  |  |  |  |
| Medium |  | 0.18(0.14) | 0.23(0.14) | 0.23(0.14) | 0.24(0.14) |
| High |  | 0.01(0.18) | 0.16(0.20) | -0.01(0.19) | 0.01(0.19) |
| **Family connections** |  |  |  |  |  |
| Coupled household |  |  | 0.26(0.17) | 0.20(0.17) | 0.20(0.17) |
| Living with child |  |  | -0.31(0.13)\* | -0.23(0.13) | -0.24(0.13) |
| Caring for grandchildren |  |  | 0.08(0.13) | 0.07(0.12) | 0.06(0.12) |
| **Social attachment** |  |  |  |  |  |
| Civic participation (Ref.no) |  |  |  | 0.67(0.59) | 0.61(0.59) |
| Leisure activities (Ref.no) |  |  |  | 0.68(0.15)\*\*\* | 0.63(0.15)\*\*\* |
| Friendships (Ref.no) |  |  |  | 0.55(0.13)\*\*\* | 0.51(0.13)\*\*\* |
| **Depression** |  |  |  | -0.07(0.01)\*\*\* | -0.07(0.01)\*\*\* |
| **Health** |  |  |  |  |  |
| ADLs |  |  |  |  | -0.17(0.06)\* |
| Chronic diseases (Ref. Non-disease) |  |  |  |  | 0.09(0.13) |
| **Health behavior** |  |  |  |  |  |
| Smoking (Ref. Non-smoker) |  |  |  |  |  |
| Light/moderate smokers |  |  |  |  | 0.12(0.15) |
| Heavy smokers |  |  |  |  | 0.27(0.14) |
| Alcohol consumption (Ref. Non-drinker) |  |  |  |  |  |
| ≤1 drink per month |  |  |  |  | 0.07(0.22) |
| >1 drink per month |  |  |  |  | -0.20(0.12) |
| Afternoon napping (Ref. Non-napper) |  |  |  |  |  |
| Short napper |  |  |  |  | 0.23(0.21) |
| Moderate napper |  |  |  |  | 0.18(0.14) |
| Extend napper |  |  |  |  | 0.07(0.16) |
| Random effect |  |  |  |  |  |
| ID | 2.03 | 1.57 | 1.57 | 1.44 | 1.44 |
| Time | 0.45 | 0.38 | 0.38 | 0.42 | 0.42 |
| AIC | 29626 | 29093 | 29090 | 28988 | 28991 |

Abbreviations: AIC Akaike Information Criterion, SES socioeconomic status, ADL activity of daily living disability

Model 1: Adjusted for age group and time of follow-up; Model 2: Model 1 + socioeconomic status; Model 3: Model 2 + family connections; Model 4: Model3 + social attachment + depression; Model 5: Model 4 + health and health behaviours.

\* *P*<0.05; \*\* *P*<0.01; \*\*\* *P*<0.001;

**Table S4** Longitudinal Association Between the Mental Status and Migrant Status in Male Subjects

| Mixed Effect | β (SE) |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Model1 | Model2 | Model3 | Model4 | Model5 |
| Fixed effect |  |  |  |  |  |
| constant | 7.87(0.09)\*\*\* | 5.88(0.15)\*\*\* | 5.78(0.19)\*\*\* | 6.05(0.20)\*\*\* | 5.82(0.22)\*\*\* |
| Time | -0.48(0.04)\*\*\* | -0.48(0.04)\*\*\* | -0.48(0.04)\*\*\* | -0.48(0.04)\*\*\* | -0.48(0.04)\*\*\* |
| Migrant (Ref. Non-migrants) | 0.30(0.13)\* | 0.23(0.12) | 0.22(0.12) | 0.20(0.11) | 0.19(0.12) |
| Age65~70 (Ref. Age60~) | -0.36(0.12)\*\* | -0.32(0.11)\*\* | -0.32(0.11)\*\* | -0.26(0.11)\* | -0.24(0.11)\* |
| Age>70 (Ref. Age60~) | -1.61(0.13)\*\*\* | -0.85(0.12)\*\*\* | -0.84(0.12)\*\*\* | -0.84(0.12)\*\*\* | -0.82(0.12)\*\*\* |
| **SES** |  |  |  |  |  |
| Education level (Ref. illiterate) |  |  |  |  |  |
| Some primary school |  | 1.53(0.13)\*\*\* | 1.53(0.13)\*\*\* | 1.50(0.13)\*\*\* | 1.48(0.13)\*\*\* |
| Finished primary school |  | 2.61(0.12)\*\*\* | 2.59(0.13)\*\*\* | 2.53(0.12)\*\*\* | 2.51(0.12)\*\*\* |
| Higher than primary school |  | 3.22(0.15)\*\*\* | 3.18(0.15)\*\*\* | 3.02(0.15)\*\*\* | 2.98(0.15)\*\*\* |
| Retired (Ref. no) |  | -0.44(0.12)\*\*\* | -0.39(0.12)\*\*\* | -0.38(0.12)\*\*\* | -0.35(0.12)\*\* |
| Household annual income (Ref. low) |  |  |  |  |  |
| Medium |  | 0.13(0.11) | 0.18(0.11) | 0.19(0.10) | 0.18(0.11) |
| High |  | 0.02(0.14) | 0.18(0.15) | 0.06(0.15) | 0.07(0.15) |
| **Family connections** |  |  |  |  |  |
| Coupled household |  |  | 0.17(0.13) | 0.13(0.13) | 0.12(0.13) |
| Living with child |  |  | -0.30(0.10)\*\* | -0.25(0.10)\* | -0.24(0.10)\* |
| Caring for grandchildren |  |  | 0.11(0.10) | 0.10(0.09) | 0.09(0.10) |
| **Social attachment** |  |  |  |  |  |
| Civic participation (Ref.no) |  |  |  | 0.52(0.46) | 0.49(0.46) |
| Leisure activities (Ref.no) |  |  |  | 0.58(0.12)\*\*\* | 0.53(0.12)\*\*\* |
| Friendships (Ref.no) |  |  |  | 0.31(0.10)\*\* | 0.29(0.10)\*\* |
| **Depression** |  |  |  | -0.05(0.01)\*\*\* | -0.05(0.01)\*\*\* |
| **Health** |  |  |  |  |  |
| ADLs |  |  |  |  | -0.12(0.05)\* |
| Chronic diseases (Ref. Non-disease) |  |  |  |  | 0.13(0.10) |
| **Health behavior** |  |  |  |  |  |
| Smoking (Ref. Non-smoker) |  |  |  |  |  |
| Light/moderate smokers |  |  |  |  | 0.07(0.11) |
| Heavy smokers |  |  |  |  | 0.20(0.11) |
| Alcohol consumption (Ref. Non-drinker) |  |  |  |  |  |
| ≤1 drink per month |  |  |  |  | -0.04(0.17) |
| >1 drink per month |  |  |  |  | -0.08(0.10) |
| Afternoon napping (Ref. Non-napper) |  |  |  |  |  |
| Short napper |  |  |  |  | 0.21(0.16) |
| Moderate napper |  |  |  |  | 0.22(0.11)\* |
| Extend napper |  |  |  |  | 0.15(0.13) |
| Random effect |  |  |  |  |  |
| ID | 1.53 | 1.16 | 1.15 | 1.07 | 1.07 |
| Time | 0.31 | 0.26 | 0.27 | 0.29 | 0.28 |
| AIC | 27275 | 26751 | 26745 | 26661 | 26662 |

Abbreviations: AIC Akaike Information Criterion, SES socioeconomic status, ADL activity of daily living disability

Model 1: Adjusted for age group and time of follow-up; Model 2: Model 1 + socioeconomic status; Model 3: Model 2 + family connections; Model 4: Model3 + social attachment + depression; Model 5: Model 4 + health and health behaviours.

\* *P*<0.05; \*\* *P*<0.01; \*\*\* *P*<0.001;