**Online Supplementary Material**

**Continuity of genetic and environmental influences on clinically assessed major depression from ages 18 to 45**

F. A. Torvik, K. Gustavson, E. Ystrom, T. H. Rosenström, N. Gillespie, T. Reichborn-Kjennerud, K. S. Kendler

**Table S1.** Number of observations in each two-year age bin by birth **Page 2**

year, excluding individuals with at least one registered entry of bipolar

disorder or schizophrenia.

**Table S2.** Description of the sample by zygosity. **Page 3**

**Table S3.** Phenotypic tetrachoric pairwise correlations by age. **Page 4**

**Table S4.** Results from biometric structural equation model fitting. **Page 5**

**Table S1.** Number of observations in each two-year age bin by birth year, excluding individuals with at least one registered entry of bipolar disorder or schizophrenia.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Age** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Born** | **16-17** | **18-19** | **20-21** | **22-23** | **24-25** | **26-27** | **28-29** | **30-31** | **32-33** | **34-35** | **36-37** | **38-39** | **40-41** | **42-43** | **44-45** | **46-47** |
| 1991 | 452 | 452 | 452 | 452 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1990 | 483 | 483 | 483 | 483 | 483 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1989 | 0 | 459 | 459 | 459 | 459 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1988 | 0 | 422 | 422 | 422 | 422 | 422 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1987 | 0 | 0 | 467 | 467 | 467 | 467 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1986 | 0 | 0 | 409 | 409 | 409 | 409 | 409 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1985 | 0 | 0 | 0 | 461 | 461 | 461 | 461 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1984 | 0 | 0 | 0 | 411 | 411 | 411 | 411 | 411 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1983 | 0 | 0 | 0 | 0 | 404 | 404 | 404 | 404 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1982 | 0 | 0 | 0 | 0 | 459 | 459 | 459 | 459 | 459 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1981 | 0 | 0 | 0 | 0 | 0 | 376 | 376 | 376 | 376 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1980 | 0 | 0 | 0 | 0 | 0 | 412 | 412 | 412 | 412 | 412 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1979 | 0 | 0 | 0 | 0 | 0 | 0 | 329 | 329 | 329 | 329 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1978 | 0 | 0 | 0 | 0 | 0 | 0 | 399 | 399 | 399 | 399 | 399 | 0 | 0 | 0 | 0 | 0 |
| 1977 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 321 | 321 | 321 | 321 | 0 | 0 | 0 | 0 | 0 |
| 1976 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 394 | 394 | 394 | 394 | 394 | 0 | 0 | 0 | 0 |
| 1975 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 405 | 405 | 405 | 405 | 0 | 0 | 0 | 0 |
| 1974 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 474 | 474 | 474 | 474 | 474 | 0 | 0 | 0 |
| 1973 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 536 | 536 | 536 | 536 | 0 | 0 | 0 |
| 1972 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 534 | 534 | 534 | 534 | 534 | 0 | 0 |
| 1971 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 562 | 562 | 562 | 562 | 0 | 0 |
| 1970 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 566 | 566 | 566 | 566 | 566 | 0 |
| 1969 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 625 | 625 | 625 | 625 | 0 |
| 1968 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 619 | 619 | 619 | 619 | 619 |
| 1967 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 585 | 585 | 585 | 585 |
| **Total** | 935 | 1816 | 2692 | 3564 | 3975 | 3821 | 3660 | 3505 | 3569 | 3804 | 4191 | 4715 | 4501 | 3491 | 2395 | 1204 |

**Table S2.** Description of the sample by zygosity.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Monozygotic | | | | Dizygotic | | | | | |
|  | Male | | Female | | Male | | Female | | Opposite sex | |
|  | n | % | n | % | n | % | n | % | n | % |
| **Sex** |  |  |  |  |  |  |  |  |  |  |
| Male | 1845 | 100.0% | 0 | 0.0% | 1413 | 100.0% | 0 | 0.0% | 1426 | 42.6% |
| Female | 0 | 0.0% | 2795 | 100.0% | 0 | 0.0% | 2144 | 100.0% | 1922 | 57.4% |
| **MDD** |  |  |  |  |  |  |  |  |  |  |
| No | 1708 | 92.6% | 2288 | 81.9% | 1301 | 92.1% | 1778 | 82.9% | 2895 | 86.5% |
| Yes | 137 | 7.4% | 507 | 18.1% | 112 | 7.9% | 366 | 17.1% | 453 | 13.5% |
| **Education** |  |  |  |  |  |  |  |  |  |  |
| 1 | 165 | 9.0% | 199 | 7.1% | 114 | 8.1% | 158 | 7.4% | 285 | 8.5% |
| 2 | 714 | 38.8% | 811 | 29.0% | 531 | 37.7% | 674 | 31.5% | 1133 | 33.9% |
| 3 | 580 | 31.5% | 1291 | 46.2% | 488 | 34.6% | 978 | 45.6% | 1322 | 39.5% |
| 4 | 381 | 20.7% | 492 | 17.6% | 276 | 19.6% | 333 | 15.5% | 605 | 18.1% |
| **Marriage** |  |  |  |  |  |  |  |  |  |  |
| No | 1064 | 57.7% | 1616 | 57.8% | 818 | 57.9% | 1225 | 57.1% | 1945 | 58.1% |
| Yes | 781 | 42.3% | 1179 | 42.2% | 595 | 42.1% | 919 | 42.9% | 1403 | 41.9% |
| **Divorce** |  |  |  |  |  |  |  |  |  |  |
| No | 703 | 90.0% | 1036 | 87.9% | 531 | 89.2% | 816 | 88.8% | 1242 | 88.5% |
| Yes | 78 | 10.0% | 143 | 12.1% | 64 | 10.8% | 103 | 11.2% | 161 | 11.5% |

Note: MDD = Major depressive disorder. Educational attainment is coded according to the following categories: 1 = primary education only; 2 = completed high school; 3= bachelor’s degree or equivalent; 4 = master’s degree or equivalent.

**Table S3.** Phenotypic tetrachoric pairwise correlations by age.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 18-19 | 20-21 | 22-23 | 24-25 | 26-27 | 28-29 | 30-31 | 32-33 | 34-35 | 36-37 | 38-39 | 40-41 | 42-43 | 44-45 |
| 18-19 | 1.00 | 0.74 | 0.60 | 0.45 | 0.22 |  |  |  |  |  |  |  |  |  |
| 20-21 | 0.74 | 1.00 | 0.72 | 0.62 | 0.50 | 0.56 |  |  |  |  |  |  |  |  |
| 22-23 | 0.60 | 0.72 | 1.00 | 0.76 | 0.68 | 0.52 | 0.65 |  |  |  |  |  |  |  |
| 24-25 | 0.45 | 0.62 | 0.76 | 1.00 | 0.73 | 0.63 | 0.49 | 0.40 |  |  |  |  |  |  |
| 26-27 | 0.22 | 0.50 | 0.68 | 0.73 | 1.00 | 0.75 | 0.57 | 0.54 | 0.40 |  |  |  |  |  |
| 28-29 |  | 0.56 | 0.52 | 0.63 | 0.75 | 1.00 | 0.73 | 0.61 | 0.54 | 0.57 |  |  |  |  |
| 30-31 |  |  | 0.65 | 0.49 | 0.57 | 0.73 | 1.00 | 0.71 | 0.66 | 0.22 | 0.45 |  |  |  |
| 32-33 |  |  |  | 0.40 | 0.54 | 0.61 | 0.71 | 1.00 | 0.71 | 0.40 | 0.35 | 0.54 |  |  |
| 34-35 |  |  |  |  | 0.40 | 0.54 | 0.66 | 0.71 | 1.00 | 0.77 | 0.59 | 0.59 | 0.41 |  |
| 36-37 |  |  |  |  |  | 0.57 | 0.22 | 0.40 | 0.77 | 1.00 | 0.77 | 0.65 | 0.46 | 0.53 |
| 38-39 |  |  |  |  |  |  | 0.45 | 0.35 | 0.59 | 0.77 | 1.00 | 0.78 | 0.54 | 0.47 |
| 40-41 |  |  |  |  |  |  |  | 0.54 | 0.59 | 0.65 | 0.78 | 1.00 | 0.80 | 0.64 |
| 42-43 |  |  |  |  |  |  |  |  | 0.41 | 0.46 | 0.54 | 0.80 | 1.00 | 0.82 |
| 44-45 |  |  |  |  |  |  |  |  |  | 0.53 | 0.47 | 0.64 | 0.82 | 1.00 |

**Table S4.** Results from biometric structural equation model fitting.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| # | Model | ep | Δ-2LL | Δdf | sBIC |
|  |  |  |  |  |  |
|  | Step 0: |  |  |  |  |
| 1 | Full correlational Cholesky | 343 | - | - | 17495.75 |
|  |  |  |  |  |  |
|  | Step 1: |  |  |  |  |
| 2 | **Full longitudinal model\*** | **112** | **42.36** | **231** | **16181.20** |
|  |  |  |  |  |  |
|  | Step 2: |  |  |  |  |
| 3 | All beta A equal | 100 | 4.51 | 12 | 16116.78 |
| 4 | All beta C equal | 100 | 6.04 | 12 | 16118.31 |
| 5 | All beta E equal | 100 | 9.70 | 12 | 16121.97 |
| 6 | **All beta A, C, and E equal** | **76** | **21.56** | **36** | **15995.97** |
|  |  |  |  |  |  |
|  | Step 3: |  |  |  |  |
| 7 | No A innovation | 63 | 6.95 | 13 | 15928.24 |
| 8 | No C innovation | 63 | 3.24 | 13 | 15924.53 |
| 9 | **No A or C innovation** | **50** | **20.17** | **26** | **15866.79** |
|  |  |  |  |  |  |
|  | Step 4: |  |  |  |  |
| 10 | No A auto-regression | 48 | 0.17 | 2 | 15855.47 |
| 11 | No C auto-regression | 48 | 1.24 | 2 | 15856.55 |
| 12 | No E auto-regression | 49 | 225.37 | 1 | 16086.41 |
| 13 | **No A or C auto-regression\*** | **46** | **5.31** | **4** | **15849.13** |
|  |  |  |  |  |  |
|  | Step 5: |  |  |  |  |
| 14 | No time-invariant A | 45 | 19.42 | 1 | 15862.80 |
| 15 | No time-invariant C | 45 | 0.12 | 1 | 15843.50 |
| 16 | No time-invariant E | 45 | 0.01 | 1 | 15843.39 |
| 17 | **No time-invariant C or E\*\*** | **44** | **0.01** | **2** | **15837.64** |

Note: All models compared to best model in previous step. \* best fitting model in step. \*\* overall best fitting model. ep = estimates parameters