**Online supplements**

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Table S10. The mediating effect of recurrent depression in early adulthood (19-30 years) on CPI-adjusted earnings in mid-adulthood (age 31-40) in females with a history of persistent depressive disorder in adolescence – complete cases

Table S11. The mediating effect of recurrent depression in early adulthood (19-30 years) on CPI-adjusted earnings in mid-adulthood (age 31-40) in males with a history of persistent depressive disorder in adolescence – complete cases

Fig. S1. Mean earnings (95% CI) of females with or without a history of depressive disorders in adolescence, year 1996 to 2016

Fig. S2. Mean earnings (95% CI) of males with or without a history of depressive disorders in adolescence, year 1996 to 2016

Fig. S3. Ratio of mean earnings between females with a history of depressive disorders and non-depressed peers at 25th, 50th and 75th percentileof the distribution in each group, year 1996 to 2016

Fig. S4. Ratio of mean earnings between males with a history of depressive disorders and non-depressed peers at 25th, 50th and 75th percentileof the distribution in each group, year 1996 to 2016

**Table S1. Characteristics of missing data for earnings**

| **Total(n=539)** | **Total(n=539)** | **Persistent depressive disorder (PDD)(n=175)** | **Major depressive disorder (MDD)(n=82)** | **Subthreshold depression(n=64)** | **No depression(n=218)** |
| --- | --- | --- | --- | --- | --- |
|  | Complete datan=472 | Incomplete datan=67 | Complete datan=148 | Incomplete datan=27 | Complete datan=68 | Incomplete datan=14 | Complete datan=53 | Incomplete datan=11 | Complete datan=203 | Incomplete datan=15 |
| Sex, No. females (%)a | 371 (78.6) | 54 (80.6) | 120 (81.1) | 20 (74.1) | 56 (82.4) | 12 (85.7) | 37 (69.8) | 9 (81.8) | 158 (77.8) | 13 (86.2) |
| Age at screening, mean (SD), ya | 16.4 (0.6) | 16.4 (0.6) | 16.5 (0.6) | 16.4 (0.6) | 16.4 (0.7) | 16.4 (0.5) | 16.4 (0.7) | 16.5 (0.7) | 16.4 (0.6) | 16.5 (0.6) |
| Childhood or adolescent anxiety disorder, No. (%)a | 154 (32.6) | 23 (34.3) | 91 (61.5) | 14 (51.9) | 28 (41.2) | 6 (42.9) | 4 (7.5) | 2 (18.2) | 31 (15.3) | 1 (6.7) |
| Disruptive behavior disorder, No. (%)b | 88 (18.6) | 24 (35.8) | 46 (31.1) | 14 (51.9) | 18 (26.5) | 2 (14.3) | 10 (18.9) | 6 (54.5) | 14 (6.9) | 2 (13.3) |
| Low parental education, high school or less, No. (%)a | 242 (51.3) | 19 (28.4) | 71 (48.0) | 11 (40.7) | 43 (29.1) | 7 (50.0) | 29 (54.7) | 6 (54.6) | 99 (48.8) | 5 (33.4) |
| Parental income (USD), mean, (SD)a | 26565 (11164) | 24708 (11178) | 26242 (8874) | 23074 (8638) | 23915 (8651) | 29529 (14409) | 25179 (10106) | 23098 (10618) | 28051 (13306) | 24330 (12107) |

aNo significant differences between incomplete and complete data. b Significant differences between incomplete and complete data for the total sample, PDD and subthreshold subgroup.

**Table S2. Characteristics of missing data for depression in young adulthood**

| **Total(n=539)** | **Total(n=539)** | **Persistent depressive disorder (PDD)(n=175)** | **Major depressive disorder (MDD)(n=82)** | **Subthreshold depression(n=64)** | **No depression(n=218)** |
| --- | --- | --- | --- | --- | --- |
|  | Complete datan=351 | Incomplete datan=188 | Complete datan=115 | Incomplete datan=60 | Complete datan=59 | Incomplete datan=23 | Complete datan=30 | Incomplete datan=34 | Complete datan=147 | Incomplete datan=71 |
| Sex, No. females (%)a | 283 (80.6) | 142 (75.5) | 93 (80.9) | 47 (78.3) | 50 (84.7) | 18 (78.3) | 22 (73.3) | 24 (70.6) | 118 (80.3) | 53 (74.6) |
| Age at screening, mean (SD), ya | 16.4 (0.6) | 16.5 (0.6) | 16.4 (0.6) | 16.6 (0.6) | 16.4 (0.6) | 16.5 (0.6) | 16.5 (0.6) | 16.3 (0.7) | 16.4 (0.6) | 16.4 (0.6) |
| Childhood anxiety disorder, No. (%)a | 123 (35.0) | 54 (28.7) | 73 (63.5) | 32 (53.3) | 27 (45.8) | 7 (30.4) | 2 (6.7) | 4 (11.8) | 21 (14.3) | 11 (15.5) |
| Disruptive behavior disorder, No. (%)a | 67 (19.1) | 45 (23.9) | 36 (31.3) | 24 (40.0) | 15 (25.4) | 5 (21.7) | 7 (23.3) | 9 (26.5) | 9 (6.1) | 7 (9.9) |
| Low parental education, high school or less, No. (%)b | 163 (46.5) | 108 (57.4) | 46 (40.0) | 36 (60.0) | 36 (61.0) | 14 (60.8) | 14 (46.7) | 21 (61.8) | 67 (45.6) | 37 (52.1) |
| Parental income (USD), mean, (SD)c | 27280 (11280) | 24570 (10778) | 26940 (7804) | 23478 (10358) | 24455 (8871) | 25946 (12575) | 24630 (9180) | 24990 (11053) | 29220 (14175) | 24846 (10527) |

a No significant differences between incomplete and complete data. b Significant differences between incomplete and complete data for the total sample and PDD subgroup. c Significant differences between incomplete and complete data for the total sample, PDD subgroup and the non-depressed group.

**Table S3. Ratio of mean earnings between depressed and non-depressed females and males, year 1996 to 2016**

| **Variable** | **Ratio of mean earnings (95% CI)p-value** |
| --- | --- |
| **All** | **Females** | **Males** |
| **Unadjusted** | **Adjusteda** | **Unadjusted** | **Adjustedb** | **Unadjusted** | **Adjustedb** |
|  | **Depression during adolescence** | 0.85 (0.78 - 0.92)<.001 | 0.89 (0.82 - 0.97).009 | 0.87 (0.80 - 0.96).003 | 0.90 (0.82 - 0.99).04 | 0.77 (0.65 - 0.92).003 | 0.84 (0.70 - 1.02).08 |
| **Confounding factors** | **Female sex** | N/A | 0.78 (0.71 - 0.86)<.001 | N/A | N/A | N/A | N/A |
| **Disruptive behavior disorder** | N/A | 0.83 (0.75 - 0.91) <.001 | N/A | 0.82 (0.73 - 0.91) <.001 | N/A | 0.88 (0.71 - 1.08).22 |
| **Childhood anxiety disorder** | N/A | 1.02 (0.94 - 1.11).63 | N/A | 1.04 (0.95 - 1.14).37 | N/A | 0.94 (0.78 - 1.13).50 |
| **Parental education,****College or university vs High school or lower** | N/A | 1.02 (0.94 - 1.10).70 | N/A | 1.07 (0.98 - 1.17).12 | N/A | 0.86 (0.72 - 1.02).08 |
| **Parental income,****By 10,000 USD increase** | N/A | 1.05 (1.01 - 1.09).020 | N/A | 1.04 (1.00 - 1.08).04 | N/A | 1.08 (0.96 - 1.21).21 |

Note: N/A = not available

a Adjusted for sex, disruptive behavior disorders, childhood anxiety disorders, parental education level, and income.

b Adjusted for disruptive behavior disorders, childhood anxiety disorders, parental education level, and income.

**Table S4. The mediating effect of recurrent depression in early adulthood (19-30 years) on CPI-adjusted earnings in mid-adulthood (age 31-40) in females and males with a history of persistent depressive disorder in adolescence**

| **Depression status during adolescence** | **Depression during early adulthood** | **Ratio of mean earnings (95% CI) / p-value****compared to non-depressed peers** | **Proportion mediated** |
| --- | --- | --- | --- |
| **Proportion (95% CI)a** | **Relative risk (95% CI)compared to non-depressed peers** | **Total effect** | **Direct effect** | **Indirect effect** |
| **Unadjusted** |
| **No depression (n=218)** | 0.23 (0.17; 0.32) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=175)** | 0.62 (0.51; 0.76) | 2.71 (1.86; 3.93)<.001 | 0.79 (0.71 - 0.88)<.001 | 0.87 (0.77 - 0.97).02 | 0.91 (0.86 - 0.96).002 | 0.42 |
| **Adjustedb** |
| **No depression (n=218)** | 0.26 (0.17; 0.39) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=175)** | 0.60 (0.46; 0.78) | 2.31 (1.49; 3.60)<.001 | 0.83 (0.74 - 0.93).002 | 0.90 (0.80 - 1.03).12 | 0.92 (0.86 - 0.98).006 | 0.48 |

Note: N/A = not available

a In adjusted analysis, all other variables are fixed at their mean levels

b Adjusted for sex, disruptive behavior disorders, childhood anxiety disorders, parental education, and parental income

**Table S5. The mediating effect of recurrent depression in early adulthood (19-30 years) on CPI-adjusted earnings in mid-adulthood (age 31-40) in females with a history of persistent depressive disorder in adolescence**

| **Depression status during adolescence** | **Depression during early adulthood** | **Ratio of mean earnings (95% CI) / p-value****compared to non-depressed peers** | **Proportion mediated** |
| --- | --- | --- | --- |
| **Proportion****(95% CI)a** | **Relative risk (95% CI)compared to non-depressed peers** | **Total effect** | **Direct effect** | **Indirect effect** |
| **Unadjusted** |
| **No depression (n=171)** | 0.24 (0.17 - 0.35) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=140)** | 0.63 (0.51 - 0.79) | 2.58 (1.71; 3.91)<.001 | 0.83 (0.74 - 0.94).003 | 0.91 (0.80 - 1.03).13 | 0.92 (0.87 - 0.98).008 | 0.47 |
| **Adjustedb** |
| **No depression (n=171)** | 0.27 (0.17 - 0.42) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=140)** | 0.63 (0.49 - 0.80) | 2.31 (1.41; 3.78)<.001 | 0.87 (0.77 - 0.98).03 | 0.94 (0.82 - 1.08).41 | 0.92 (0.86 - 0.98).01 | 0.61 |
| Note: N/A = not availablea In adjusted analysis, all other variables are fixed at their mean levels.b Adjusted for disruptive behavior disorders, childhood anxiety disorders, parental education, and parental income |

**Table S6. The mediating effect of recurrent depression in early adulthood (19-30 years) on CPI-adjusted earnings in mid-adulthood (age 31-40) in males with a history of persistent depressive disorder in adolescence**

| **Depression status during adolescence** | **Depression during early adulthood** | **Ratio of mean earnings (95% CI) / p-value****compared to non-depressed peers** | **Proportion mediated** |
| --- | --- | --- | --- |
| **Proportion****(95% CI)a** | **Relative risk (95% CI)compared to non-depressed peers** | **Total effect** | **Direct effect** | **Indirect effect** |
| **Unadjusted** |
| **No depression (n=47)** | 0.17 (0.07; 0.39) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=35)** | 0.57 (0.35; 0.92) | 3.40 (1.33; 8.65).010 | 0.67 (0.53 - 0.84)<.001 | 0.75 (0.59 - 0.95).02 | 0.89 (0.78 - 1.02).10 | 0.32 |
| **Adjustedb** |
| **No depression (n=47)** | 0.22 (0.09; 0.55) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=35)** | 0.53 (0.30; 0.92) | 2.40 (0.83; 6.94).11 | 0.71 (0.53 - 0.94).02 | 0.77 (0.58 - 1.03).08 | 0.92 (0.79 - 1.06).23 | 0.29 |
| Note: N/A = not availablea In adjusted analysis, all other variables are fixed at their mean levels.b Adjusted for disruptive behavior disorders, childhood anxiety disorders, parental education, and parental income |

**Table S7. Ratio of mean earnings between depressed and non-depressed females and males, year 1996 to 2016 – complete cases**

| **Variable** | **Ratio of mean earnings (95% CI)p-value** |
| --- | --- |
| **All** | **Females** | **Males** |
| **Unadjusted** | **Adjusteda** | **Unadjusted** | **Adjustedb** | **Unadjusted** | **Adjustedb** |
|  | **Depression during adolescence** | 0.85 (0.78 - 0.92)<.001 | 0.89 (0.82 - 0.97).01 | 0.88 (0.80 - 0.96).004 | 0.91 (0.82 - 1.00).04 | 0.77 (0.65 - 0.92).004 | 0.84 (0.69 - 1.02).07 |
| **Confounding factors** | **Female sex** | N/A | 0.78 (0.71 - 0.86)<.001 | N/A | N/A | N/A | N/A |
| **Disruptive behavior disorder** | N/A | 0.83 (0.75 - 0.91)<.001 | N/A | 0.82 (0.74 - 0.91)<.001 | N/A | 0.87 (0.70 - 1.08).20 |
| **Childhood anxiety disorder** | N/A | 1.02 (0.94 - 1.11).63 | N/A | 1.04 (0.95 - 1.14).35 | N/A | 0.94 (0.78 - 1.13).50 |
| **Parental education,****College or university vs High school or lower** | N/A | 1.02 (0.94 - 1.11).66 | N/A | 1.08 (0.99 - 1.18).10 | N/A | 0.86 (0.72 - 1.02).09 |
| **Parental income,****By 10,000 USD increase** | N/A | 1.05 (1.01 - 1.09).02 | N/A | 1.04 (1.00 - 1.09).04 | N/A | 1.07 (0.96 - 1.21).23 |

Note: N/A = not available

a Adjusted for sex, disruptive behavior disorder, childhood anxiety, parental education level and income.

b Adjusted for disruptive behavior disorder, childhood anxiety, parental education level and income.

**Table S8. Ratio of mean earnings between analysis groups, year 1996 to 2016 – complete cases**

| **Variable** | **Ratio of mean earnings (95% CI)p-value** |
| --- | --- |
| **All** | **Females** | **Males** |
| **Unadjusted** | **Adjusteda** | **Unadjusted** | **Adjustedb** | **Unadjusted** | **Adjustedb** |
| **Depression in Adolescence** | **Persistent depressive disorder vs No depression** | 0.79 (0.72 - 0.87)<.001 | 0.83 (0.75 - 0.91) <.001 | 0.84 (0.76 - 0.93) <.001 | 0.85 (0.77 - 0.95).004 | 0.65 (0.52 - 0.82) <.001 | 0.74 (0.58 - 0.95).02 |
| **Major depressive disorder vs No depression**  | 0.98 (0.86 - 1.11).71 | 1.03 (0.90 - 1.17).69 | 0.96 (0.83 - 1.11).61 | 1.00 (0.86 - 1.16).98 | 1.07 (0.86 - 1.35).53 | 1.21 (0.93 - 1.56).15 |
| **Subthreshold depression vs No depression** | 0.85 (0.75 - 0.96).009 | 0.87 (0.78 - 0.98).02 | 0.86 (0.77 - 0.98)=0.02 | 0.90 (0.80 - 1.01).08 | 0.76 (0.57 - 1.00).05 | 0.79 (0.61 - 1.03).08 |
| **Confounding factors** | **Female sex** | N/A | 0.78 (0.71 - 0.86) <.001 | N/A | N/A | N/A | N/A |
| **Disruptive behavior disorder** | N/A | 0.83 (0.76 - 0.92) <.001 | N/A | 0.83 (0.75 - 0.92) <.001 | N/A | 0.86 (0.70 - 1.06).17 |
| **Childhood anxiety disorder** | N/A | 1.04 (0.95 - 1.13).43 | N/A | 1.06 (0.97 - 1.17).19 | N/A | 0.87 (0.71 - 1.07).19 |
| **Parental education,****College or university vs High school or lower** | N/A | 1.03 (0.95 - 1.12).49 | N/A | 1.08 (0.99 - 1.19).09 | N/A | 0.90 (0.76 - 1.07).24 |
| **Parental income,****By 10,000 USD increase** | N/A | 1.05 (1.01 - 1.09).021 | N/A | 1.04 (1.00 - 1.09).04 | N/A | 1.05 (0.93 - 1.17).44 |

Note: N/A = not available

a Adjusted for sex, disruptive behavior disorder, childhood anxiety, parental education level and income.

b Adjusted for disruptive behavior disorder, childhood anxiety, parental education level and income.

**Table S9. The mediating effect of recurrent depression in early adulthood (19-30 years) on CPI-adjusted earnings in mid-adulthood (age 31-40) in females and males with a history of persistent depressive disorder in adolescence – complete cases**

| **Depression status during adolescence** | **Depression during early adulthood** | **Ratio of mean earnings (95% CI) / p-value****compared to non-depressed peers** | **Proportion mediated** |
| --- | --- | --- | --- |
| **Proportion (95% CI)a** | **Relative risk (95% CI)compared to non-depressed peers** | **Total effect** | **Direct effect** | **Indirect effect** |
| **Unadjusted** |
| **No depression (n=147)** | 0.21 (0.15; 0.30) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=115)** | 0.62 (0.49; 0.78) | 2.93 (1.92; 4.46)<.001 | 0.79 (0.70 - 0.88)<.001 | 0.86 (0.76 - 0.97).02 | 0.92 (0.87 - 0.97).004 | 0.38 |
| **Adjustedb** |
| **No depression (n=147)** | 0.23 (0.15; 0.36) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=115)** | 0.61 (0.45; 0.82) | 2.60 (1.58; 4.28)<.001 | 0.82 (0.72 - 0.93).002 | 0.89 (0.77 - 1.02).10 | 0.92 (0.86 - 0.98).008 | 0.44 |

Note: N/A = not available

a In adjusted analysis, all other variables are fixed at their mean levels.

b Adjusted for disruptive behavior disorders, childhood anxiety disorders, parental education, and parental income

**Table S10. The mediating effect of recurrent depression in early adulthood (19-30 years) on CPI-adjusted earnings in mid-adulthood (age 31-40) in females with a history of persistent depressive disorder in adolescence – complete cases**

| **Depression status during adolescence** | **Depression during early adulthood** | **Ratio of mean earnings (95% CI) / p-value****compared to non-depressed peers** | **Proportion mediated** |
| --- | --- | --- | --- |
| **Proportion (95% CI)a** | **Relative risk (95% CI)compared to non-depressed peers** | **Total effect** | **Direct effect** | **Indirect effect** |
| **Unadjusted** |
| **No depression (n=118)** | 0.23 (0.16; 0.33) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=93)** | 0.62 (0.48; 0.81) | 2.73 (4.30; 1.73)<.001 | 0.83 (0.72 - 0.95).006 | 0.89 (0.77 - 1.03).13 | 0.93 (0.87 - 0.99).02 | 0.41 |
| **Adjustedb** |
| **No depression (n=118)** | 0.24 (0.15; 0.38) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=93)** | 0.62 (0.46; 0.83) | 2.60 (4.46; 1.52)<.001 | 0.85 (0.73 - 0.99).04 | 0.93 (0.78 - 1.10).37 | 0.92 (0.86 - 0.99).02 | 0.54 |

Note: N/A = not available

a In adjusted analysis, all other variables are fixed at their mean levels.

b Adjusted for disruptive behavior disorders, childhood anxiety disorders, parental education, and parental income

**Table S11. The mediating effect of recurrent depression in early adulthood (19-30 years) on CPI-adjusted earnings in mid-adulthood (age 31-40) in males with a history of persistent depressive disorder in adolescence – complete cases**

| **Depression status during adolescence** | **Depression during early adulthood** | **Ratio of mean earnings (95% CI) / p-value****compared to non-depressed peers** | **Proportion mediated** |
| --- | --- | --- | --- |
| **Proportion (95% CI)a** | **Relative risk (95% CI)compared to non-depressed peers** | **Total effect** | **Direct effect** | **Indirect effect** |
| **Unadjusted** |
| **No depression (n=29)** | 0.14 (0.05; 0.37) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=22)** | 0.59 (0.34; 1.02) | 4.28 (13.14; 1.40).01 | 0.65 (0.47 - 0.89).007 | 0.71 (0.55 - 0.92).008 | 0.91 (0.72 - 1.16).44 | 0.25 |
| **Adjustedb** |
| **No depression (n=29)** | 0.19 (0.06; 0.55) | N/A | N/A | N/A | N/A | N/A |
| **Persistent depressive disorder (n=22)** | 0.53 (0.29; 0.97) | 2.83 (10.54; 0.76).12 | 0.71 (0.50 - 1.01).06 | 0.74 (0.54 - 1.03).07 | 0.95 (0.75 - 1.21).70 | 0.16 |

Note: N/A = not available

a In adjusted analysis, all other variables are fixed at their mean levels.

b Adjusted for disruptive behavior disorders, childhood anxiety disorders, parental education, and parental income



**Fig. S1. Mean earnings (95% CI) of females with or without a history of depressive disorders in adolescence, year 1996 to 2016**



**Fig. S2. Mean earnings (95% CI) of males with or without a history of depressive disorders in adolescence, year 1996 to 2016**

|  |
| --- |
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**Fig. S3. Ratio of mean earnings between females with a history of depressive disorders and non-depressed peers at 25th, 50th and 75th percentile of the distribution in each group, year 1996 to 2016**

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| --- |
|  |

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**Fig. S4. Ratio of mean earnings between males with a history of depressive disorders and non-depressed peers at 25th, 50th and 75th percentile of the distribution in each group, year 1996 to 2016**