Neighborhood structural Disadvantage and biological aging in a sample of black middle age and young adults

ONLINE SUPPLEMENT

**Table S1.**

Equivalence of those excluded for missing data and those retained for analyses (young adulthood)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Retained (n = 448) |  | Without methylationassessment or missing geo-coordinates (n = 108) |  |  |  |
|  | Mean |  | Mean |  | *t* | *p*-value |
| Neighborhood disadvantage | 67.968 |  | 62.000 |  | -1.657 | .099 |
| Males | .382 |  | .398 |  | .307 | .759 |
| Log income | 7.842 |  | 8.283 |  | .984 | .326 |
| Binge drinking | .784 |  | 1.037 |  | 1.819 | .070 |
| Cigarette use | .478 |  | .454 |  | -.222 | .824 |
| Healthy diet | 2.327 |  | 2.315 |  | -.089 | .930 |
| Relocation | .136 |  | .157 |  | .472 | .637 |

*Note*: Robust clustered standard errors (Stata code: clttest) was used.

**Table S2.**

Equivalence of those excluded for missing data and those retained for analyses (middle age)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Retained (n = 493) |  | Without methylationassessment or missing geo-coordinates (n = 147) |  |  |  |
|  | Mean |  | Mean |  | *t* | *p*-value |
| Neighborhood disadvantage | 70.398 |  | 70.996 |  | .123 | .903 |
| Males | .256 |  | .306 |  | 1.217 | .225 |
| Log income | 9.274 |  | 9.777 |  | 1.305 | .193 |
| Binge drinking | .381 |  | .273 |  | -1.674 | .095 |
| Cigarette use | .880 |  | .672 |  | -1.586 | .114 |
| Healthy diet | 1.702 |  | 1.672 |  | -.289 | .773 |
| Relocation | .353 |  | .258 |  | -1.172 | .243 |

*Note*: Robust clustered standard errors (Stata code: clttest) was used.

**Table S3.**

Regression models examining the effects of sociodemographic and health-related covariates on neighborhood disadvantage (young adulthood)

|  |  |  |  |
| --- | --- | --- | --- |
| DV: Neighborhood disadvantage | *b* | (95% CI) | *p-*value |
| Males | 2.498 | [-1.054,6.050] | .168 |
| Log income | -.584 | [-.935,-.232] | .001 |
| Binge drinking | -.774 | [-2.320,.773] | .327 |
| Cigarette use | .387 | [-1.335,2.108] | .660 |
| Healthy diet | 1.243 | [-.156,2.642] | .082 |
| Relocation | -3.385 | [-8.334,1.564] | .180 |
| Constant | 69.582 | [63.230,75.934] | <.001 |

*Note*: Unstandardized regression coefficients (*b*) and 95% confidence intervals (95% CI) are presented in the table; income is log-transformed; the vce(cluster blocks) option in Stata is used to obtain a robust clustered standard error that adjusts for within-cluster correlation. *N* = 448.

**Table S4.**

Regression models examining the effects of sociodemographic and health-related covariates on neighborhood disadvantage (middle age)

|  |  |  |  |
| --- | --- | --- | --- |
| DV: Neighborhood disadvantage | *b* | (95% CI) | *p-*value |
| Males | -1.199 | [-4.071,1.673] | .413 |
| Log income | -.012 | [-.521,.497] | .962 |
| Binge drinking | 1.231 | [-1.255,3.717] | .332 |
| Cigarette use | 1.104 | [.129,2.078] | .026 |
| Healthy diet | -.978 | [-2.381,.425] | .172 |
| Relocation | -.043 | [-3.972,3.886] | .983 |
| Constant | 71.058 | [62.032,8.084] | <.001 |

*Note*: Unstandardized regression coefficients (*b*) and 95% confidence intervals (95% CI) are presented in the table; income is log-transformed; the vce(cluster blocks) option in Stata is used to obtain a robust clustered standard error that adjusts for within-cluster correlation. *N* = 493.

**Table S5.** Robust regression models examining the effects of neighborhood disadvantage on epigenetic aging

|  |  |  |  |
| --- | --- | --- | --- |
|  | Young adulthood (*N* = 448) |  | Middle age (*N* = 493) |
|  | PhenoAgeAccel | GrimAgeAccel | DunedinPoAm |  | PhenoAgeAccel | GrimAgeAccel | DunedinPoAm |
|  | *b*/(*SE*) | *b*/(*SE*) | *b*/(*SE*) |  | *b*/(*SE*) | *b*/(*SE*) | *b*/(*SE*) |
| Neighborhood disadvantage | .448\* | .560\*\* | .007\* |  | .674\*\* | .347\* | .007\* |
|  | (.215) | (.158) | (.003) |  | (.240) | (.172) | (.003) |
| Males | -1.933\*\* | 2.543\*\* | .015\* |  | -.825 | 2.434\*\* | .017\* |
|  | (.484) | (.413) | (.007) |  | (.654) | (.375) | (.007) |
| Log income | -.110\* | -.098† | -.002\*\* |  | .063 | -.027 | -.001 |
|  | (.054) | (.053) | (.001) |  | (.059) | (.049) | (.001) |
| Binge drinking | .266 | .109 | .005† |  | .180 | .117 | -.007 |
|  | (.202) | (.186) | (.003) |  | (.367) | (.258) | (.004) |
| Cigarette use | .321 | .958\*\* | .021\*\* |  | .369\* | 1.879\*\* | .028\*\* |
|  | (.232) | (.170) | (.003) |  | (.181) | (.109) | (.002) |
| Healthy diet | -.120 | .043 | -.001 |  | .074 | .012 | .004 |
|  | (.178) | (.151) | (.003) |  | (.190) | (.135) | (.003) |
| Relocation | -.064 | -.026 | -.000 |  | -.093 | .452 | .003 |
|  | (.665) | (.525) | (.009) |  | (.533) | (.340) | (.005) |
| CD8+ T cells | -18.770\*\* | -14.117\*\* | -.591\*\* |  | -22.302\*\* | -12.217\*\* | -.425\*\* |
|  | (4.591) | (3.280) | (.063) |  | (5.157) | (3.535) | (.048) |
| CD4+ T cells | -31.580\*\* | -7.370† | -.319\*\* |  | -31.213\*\* | -18.969\*\* | -.402\*\* |
|  | (5.544) | (3.836) | (.058) |  | (3.822) | (2.709) | (.052) |
| Natural killer cells | 6.554 | -2.335\*\* | -.373\* |  | 6.693 | -16.142\*\* | -.485\*\* |
|  | (8.304) | (7.272) | (.154) |  | (8.279) | (4.764) | (.060) |
| B cells | -5.816 | -9.876† | -.385\*\* |  | .971 | -5.831† | -.228\*\* |
|  | (8.419) | (5.107) | (.100) |  | (8.636) | (3.417) | (.042) |
| Monocytes | 24.638\* | 6.145 | -.066 |  | 9.539 | 6.927 | -.125 |
|  | (11.291) | (8.138) | (.140) |  | (11.720) | (7.574) | (.129) |
| Constant | 6.876\*\* | 1.897 | 1.151\*\* |  | 6.216\*\* | 2.692\* | 1.159\*\* |
|  | (1.382) | (1.184) | (.020) |  | (1.633) | (1.311) | (.020) |
| *R*-squared | .248 | .231 | .389 |  | .239 | .489 | .489 |

*Note*: Unstandardized (*b*) coefficients shown with robust clustered standard errors in parentheses; income is log-transformed, and neighborhood disadvantage is standardized by z-transformation (mean = 0 and *SD* =1). \* *p* ≤ .05; \*\* *p* ≤ .01 (two-tailed tests).

**Table S6.** Robust regression models examining the effects of neighborhood disadvantage on epigenetic aging, controlling for sociodemographic covariates, health-related covariates, and cell-types

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Young adulthood (*N* = 448)** |  | **Middle age (*N* = 493)** |
|  | PhenoAgeAccel | GrimAgeAccel | DunedinPoAm |  | PhenoAgeAccel | GrimAgeAccel | DunedinPoAm |
|  | *b*/(*SE*) | *b*/(*SE*) | *b*/(*SE*) |  | *b*/(*SE*) | *b*/(*SE*) | *b*/(*SE*) |
| Neighborhood disadvantage | .498 | .493\*\* | .006† |  | .585\* | .304 | .006\* |
|  | (.311) | (.184) | (.004) |  | (.237) | (.187) | (.003) |
| Males | -1.932\*\* | 2.541\*\* | .015\* |  | -.816 | 2.438\*\* | .017\* |
|  | (.484) | (.408) | (.007) |  | (.664) | (.378) | (.007) |
| Neighborhood disadvantage × | -.129 | .171 | .002 |  | .370 | .177 | .004 |
| Males | (.424) | (.352) | (.007) |  | (.542) | (.339) | (.006) |
| Constant | 6.886\*\* | 1.884 | 1.151\*\* |  | 6.244\*\* | 2.705\* | 1.159\*\* |
|  | (1.378) | (1.189) | (.020) |  | (1.634) | (1.301) | (.019) |
| *R*-squared | .248 | .231 | .389 |  | .240 | .489 | .489 |

*Note*: Unstandardized (*b*) coefficients shown with robust clustered standard errors in parentheses; neighborhood disadvantage is standardized by z-transformation (mean = 0 and *SD* =1). † *p* ≤ .10; \* *p* ≤ .05; \*\* *p* ≤ .01 (two-tailed tests).

**Table S7.**

Robust regression models with inverse- probability-of-treatment weighting examining the effects of neighborhood disadvantage on epigenetic aging in young adulthood without controlling for cell-type composition

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | PhenoAgeAccel | GrimAgeAccel | DunedinPoAm |  | PhenoAgeAccel | GrimAgeAccel | DunedinPoAm |
|  | *b*/(*SE*) | *b*/(*SE*) | *b*/(*SE*) |  | *b*/(*SE*) | *b*/(*SE*) | *b*/(*SE*) |
| Neighborhood disadvantage (ND) | .465\* | .584\*\* | .007\* |  | .639† | .554\*\* | .009\* |
|  | (.237) | (.160) | (.003) |  | (.339) | (.193) | (.004) |
| Males | -1.415\*\* | 2.146\*\* | .003 |  | -1.420\*\* | 2.147\*\* | .003 |
|  | (.511) | (.415) | (.008) |  | (.508) | (.412) | (.008) |
| ND × Males |  |  |  |  | -.462 | .078 | -.005 |
|  |  |  |  |  | (.510) | (.346) | (.008) |
| Log income | -.184\*\* | -.111\* | -.003\*\* |  | -.182\*\* | -.112\* | -.003\*\* |
|  | (.063) | (.055) | (.001) |  | (.062) | (.055) | (.001) |
| Binge drinking | .101 | .133 | .004 |  | .107 | .132 | .005 |
|  | (.214) | (.179) | (.003) |  | (.214) | (.179) | (.003) |
| Cigarette use | .055 | .885\*\* | .017\*\* |  | .045 | .887\*\* | .017\*\* |
|  | (.280) | (.190) | (.004) |  | (.282) | (.190) | (.004) |
| Healthy diet | -.060 | .089 | .001 |  | -.070 | .090 | .001 |
|  | (.221) | (.167) | (.003) |  | (.219) | (.167) | (.003) |
| Relocation | .401 | .202 | .005 |  | .447 | .194 | .006 |
|  | (.690) | (.570) | (.011) |  | (.699) | (.572) | (.011) |
| Constant | 1.924\*\* | -.748 | 1.030\*\* |  | 1.934\*\* | -.750 | 1.031\*\* |
|  | (.730) | (.586) | (.011) |  | (.728) | (.586) | (.011) |
| *R*-squared | .045 | .144 | .087 |  | .047 | .144 | .088 |

*Note*: Unstandardized (*b*) coefficients shown with robust clustered standard errors in parentheses; income is log-transformed, and neighborhood disadvantage is standardized by z-transformation (mean = 0 and *SD* =1). \* *p* ≤ .05; \*\* *p* ≤ .01 (two-tailed tests).

**Table S8.**

Robust regression models with inverse- probability-of-treatment weighting examining the effects of neighborhood disadvantage on epigenetic aging in middle age without controlling for cell-type composition

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | PhenoAgeAccel | GrimAgeAccel | DunedinPoAm |  | PhenoAgeAccel | GrimAgeAccel | DunedinPoAm |
|  | *b*/(*SE*) | *b*/(*SE*) | *b*/(*SE*) |  | *b*/(*SE*) | *b*/(*SE*) | *b*/(*SE*) |
| Neighborhood disadvantage (ND) | .782\*\* | .423\* | .009\* |  | .746\*\* | .390† | .008\* |
|  | (.244) | (.209) | (.004) |  | (.235) | (.210) | (.003) |
| Males | -.189 | 2.502\*\* | .013 |  | -.189 | 2.503\*\* | .013 |
|  | (.666) | (.408) | (.008) |  | (.669) | (.408) | (.008) |
| ND × Males |  |  |  |  | .154 | .139 | .003 |
|  |  |  |  |  | (.567) | (.375) | (.007) |
| Log income | .065 | -.019 | -.001 |  | .066 | -.018 | -.001 |
|  | (.072) | (.057) | (.001) |  | (.071) | (.057) | (.001) |
| Binge drinking | -.124 | .007 | -.009 |  | -.134 | -.003 | -.009† |
|  | (.456) | (.292) | (.005) |  | (.456) | (.292) | (.005) |
| Cigarette use | .179 | 1.786\*\* | .026\*\* |  | .182 | 1.789\*\* | .026\*\* |
|  | (.195) | (.131) | (.002) |  | (.193) | (.130) | (.002) |
| Healthy diet | -.099 | -.037 | .002 |  | -.099 | -.057 | .002 |
|  | (.217) | (.147) | (.003) |  | (.217) | (.147) | (.003) |
| Relocation | .321 | .707 | .006 |  | .311 | .697 | .006 |
|  | (.578) | (.433) | (.007) |  | (.577) | (.433) | (.007) |
| Constant | -.593 | -2.166\*\* | 1.014\*\* |  | -.595 | -2.168\* | 1.014\*\* |
|  | .855 | (.735) | (.014) |  | (.854) | (.733) | (.013) |
| *R*-squared | .023 | .354 | .218 |  | .023 | .355 | .218 |

*Note*: Unstandardized (*b*) coefficients shown with robust clustered standard errors in parentheses; income is log-transformed, and neighborhood disadvantage is standardized by z-transformation (mean = 0 and *SD* =1). \* *p* ≤ .05; \*\* *p* ≤ .01 (two-tailed tests).