**Supplementary Materials**

**Table S.1**. *Regression analyses explicating the type of variability reflected in each of the cell-type measures.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Factor 1 | | Factor 2 | | Factor 3 | | Factor 4 | |
|  | b  (SE) |  | b  (SE) |  | b  (SE) |  | b  (SE) |  |
| CD4+ T cells | 1.080  (.356) | \*\* | -.463  (.405) |  | -.468  (.351) |  | .155  (.247) |  |
| CD8+ T cells | .625  (.266) |  | .329  (.570) |  | .047  (.495) |  | .518  (.347) |  |
| CD14+ monocytes | -.599  (.394) |  | -1.028  (.448) | \* | 1.846  (.389) | \*\* | -.743  (.273) | \*\* |
| CD19+ B cells | 1.102  (.390) | \*\* | .887  (.443) | \* | -1.357  (.385) | \*\* | .820  (.270) | \*\* |
| CD56+ Natural Killer cells | -2.472  (.422) | \*\* | -.411  (.480) |  | -.097  (.417) |  | -.098  (.293) |  |
| Constant | .084  (.054) |  | .480  (.062) | \*\* | .134  (.054) | \* | -.226  (.038) | \*\* |
| R2 | .876 |  | .380 |  | .247 |  | .555 |  |

*Note*: OLS regression model with standard errors. *N* = 399.

\**p* ≤ .05, two-tailed. \*\**p* ≤ .01, two-tailed.

**Table S.2**. *Descriptive statistics for level of methylation at the eight CpG sites indexed by the Illumina array in the region of the first exon of TNF as well as the resulting index comprised of all eight.*

|  |  |  |  |
| --- | --- | --- | --- |
| CpGs: Illumina ID | Mean | *SD* | Range  (Min., Max.) |
| cg04425624 | .325 | .047 | .17, .46 |
| cg08553327 | .356 | .052 | .18, .49 |
| cg10650821 | .219 | .045 | .12, .41 |
| cg10717214 | .238 | .042 | .13, .40 |
| cg12681001 | .215 | .041 | .12, .40 |
| cg21222743 | .215 | .044 | .09, .40 |
| cg21467614 | .258 | .048 | .13, 41 |
| cg26729380 | .292 | .063 | .14, .47 |
| *TNF* methylation index | .265 | .045 | .14, .43 |

**Table S.3**. *Model selection for count data using the ‘counfit” procedure in STATA*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Models | BIC | Difference | Prefer | Evidence |
| *Negative binomial* | 685.983 |  |  |  |
| *vs Poisson* | 772.799 | 86.816 | Negative binomial | Very strong |
| *vs a zero-inflated negative binomial* | 707.772 | 21.789 | Negative binomial | Very strong |
| *vs a zero-inflated Poisson* | 701.826 | 15.843 | Negative binomial | Very strong |

The cigarette consumption variable was count, positively skewed, and over-dispersed. We used the “countfit” procedure in Stata (Long & Freese, 2006) to compare the relative fit of Poisson, zero-inflated Poisson (ZIP), negative binomial, and zero-inflated negative binomial regression models. Among the four model types, the residuals for the negative binomial regressions were the smallest and therefore were preferred over the other three models. Long, J. S., & Freese, J. (2006). *Regression models for categorical dependent variables using Stata*. Stata press.

**Table S.4.** *Negative binomial regression models depicting the effects of perceived stress (ages 17-19) and TNFm on cigarette consumption (N = 382).*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Cigarette consumption (age 20) | | | | | | |
|  | Model 1 | | |  | Model 2 | | |
|  | *b* |  | IRR |  | *b* |  | IRR |
| Perceived stress (ages 17-19) | .411  (.107) | \*\* | 1.508 |  | .371  (.107) | \*\* | 1.450 |
| *TNF*m |  |  |  |  | -.222  (.216) |  | .801 |
| Perceived stress (ages 17-19) × *TNF*m |  |  |  |  | -.288  (.099) | \*\* | .749 |
| Supportive parenting (ages 11-13) | -.078  (.107) |  | .925 |  | -.088  (.104) |  | .916 |
| Sex (1 = males) | 1.682  (.278) | \*\* | 5.378 |  | 1.605  (.276) | \*\* | 4.980 |
| SES-risk (ages 11-13) | .146  (.118) |  | 1.157 |  | .146  (.110) |  | 1.157 |
| Cigarette consumption (ages 11-14) | .107  (.171) |  | 1.112 |  | .136  (.191) |  | 1.146 |
| Factor 1 cell-type | .164  (.108) |  | 1.178 |  | .337  (.156) | \* | 1.401 |
| Factor 2 cell-type | -.019  (.107) |  | .981 |  | .160  (.159) |  | 1.174 |
| Factor 3 cell-type | .063  (.094) |  | 1.065 |  | .004  (.094) |  | 1.004 |
| Factor 4 cell-type | .046  (.095) |  | 1.048 |  | -.011  (.109) |  | .989 |
| Log of CRP | .173  (.106) |  | 1.189 |  | .121  (.107) |  | 1.128 |
| Constant | -1.907  (.239) | \*\* |  |  | -1.939  (.237) | \*\* |  |
| -2LL | 611.235 | | |  | 605.022 | | |
| ∆ Chi-square (*df* = 1) |  |  |  |  | 6.213\* | | |

*Notes*: Unstandardized (*b*) shown with robust standard errors in parentheses; IRR = incident rate ratio; supportive parenting (ages 11-13), SES-risk (ages 11-13), cigarette consumption (ages 11-14), factors cell-type, and CRP are standardized by z-transformation (mean = 0 and SD = 1). Using KHB methods (Breen, Karlson, & Holm, 2013), the test of the indirect effect of supportive parenting (ages 11-13) on cigarette consumption (age 20) through perceived stress (age 19) is significant [indirect effect = -.078, 95%(-.138, -.018)].

†*p* ≤ .10, \**p* ≤ .05, \*\**p* ≤ .01 (two-tailed tests).

Table S.5. *Controlling for alcohol and marijuana use does not change the observed pattern of main or interactive effects in the negative binomial regression models depicting the effects of perceived stress (ages 17-19) and TNFm on cigarette consumption (N = 382).*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Cigarette consumption (age 20) | | | | | | |
|  | Model 1 | | |  | Model 2 | | |
|  | *b* |  | IRR |  | *b* |  | IRR |
| Perceived stress (ages 17-19) | .299  (.121) | \* | 1.348 |  | .202  (.114) | † | 1.224 |
| *TNF*m |  |  |  |  | -.371  (.233) |  | .690 |
| Perceived stress (ages 17-19) × *TNF*m |  |  |  |  | -.409  (.096) | \*\* | .665 |
| Supportive parenting (ages 11-13) | -.085  (.108) |  | .919 |  | -.091  (.101) |  | .913 |
| Sex (1 = males) | 1.523  (.263) | \*\* | 4.585 |  | 1.400  (.256) | \*\* | 4.056 |
| SES-risk (ages 11-13) | .216  (.126) |  | 1.241 |  | .245  (.110) | \* | 1.278 |
| Cigarette consumption (ages 11-14) | .024  (.109) |  | 1.024 |  | .053  (.121) |  | 1.054 |
| Alcohol consumption (age 20) | .246  (.131) | † | 1.280 |  | .318  (.133) | \* | 1.374 |
| Marijuana use (age 20) | .292  (.064) | \*\* | 1.339 |  | .317  (.062) | \*\* | 1.373 |
| Factor 1 cell-type | .163  (.101) |  | 1.176 |  | .442  (.157) | \*\* | 1.556 |
| Factor 2 cell-type | -.004  (.103) |  | .996 |  | .259  (.157) | † | 1.296 |
| Factor 3 cell-type | .053  (.095) |  | 1.055 |  | -.043  (.092) |  | .958 |
| Factor 4 cell-type | .053  (.097) |  | 1.054 |  | -.020  (.110) |  | .981 |
| Log of CRP | .207  (.112) | † | 1.230 |  | .133  (.113) |  | 1.142 |
| Constant | -2.705  (.297) | \*\* |  |  | -2.900  (.307) | \*\* |  |
| -2LL | 587.985 | | |  | 573.685 | | |
| ∆ Chi-square (*df* = 1) |  |  |  |  | 14.3\*\* | | |

*Notes*: Unstandardized (*b*) shown with robust standard errors in parentheses; IRR = incident rate ratio; perceived stress (ages 17-19), supportive parenting (ages 11-13), SES-risk (ages 11-13), cigarette consumption (ages 11-14), factors cell-type, and CRP are standardized by z-transformation (mean = 0 and SD = 1).

†*p* ≤ .10, \**p* ≤ .05, \*\**p* ≤ .01 (two-tailed tests).

**Table S.6.** *The Top 10 most differentially regulated gene ontology pathways for loci annotated as being on the first exon and associated significantly (p < 10e-7) related to TNFm.*

Pathway name

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Genes | | | |
| GO Category | Category Name | Total | Changed | *P* | FDR |
| GO:0006955 | Immune response | 936 | 25 | -10.8323 | .000 |
| GO:0002376 | Immune system process | 1426 | 29 | -9.75779 | .000 |
| GO:0006952 | Defense response | 816 | 20 | -8.00567 | .000 |
| GO:0006968 | Cellular defense response | 62 | 6 | -6.00786 | .000 |
| GO:0050776 | Regulation of immune response | 391 | 12 | -5.92068 | .000 |
| GO:0045321 | Leukocyte activation | 414 | 11 | -4.87063 | .003 |
| GO:0046649 | Lymphocyte activation | 354 | 10 | -4.69478 | .003 |
| GO:0002682 | Regulation of immune system process | 623 | 13 | -4.55656 | .005 |
| GO:0001775 | Cell activation | 633 | 13 | -4.48486 | .006 |
| GO:0050896 | Response to stimulus | 4550 | 42 | -4.14647 | .010 |

Figure S.1. *Stress is associated with increased smoking for African American young adults. Early supportive parenting has little effect among those with low levels of young adult stress, but more among those with higher stress, and particularly for those with low TNFm*