## Table 1: Descriptive statistics of sample population

|  |  |  | N | n (%) or median (IQR) |
| --- | --- | --- | --- | --- |
| Child |  | Female | 1,610 | 792 (49%) |
|  | Urinary F2-isoprostanes (Year 1) | iPF(2a)-III | 688 | -0.42 (-0.73, -0.1) |
|  |  | 2,3-dinor-iPF(2a)-III | 688 | 1.76 (1.55, 1.97) |
|  |  | iPF(2a-VI | 688 | 2.57 (2.31, 2.87) |
|  |  | 8,12-iso-iPF(2a)-VI | 688 | 2.57 (2.16, 2.91) |
|  | Salivary cortisol reactivity (Year 2) | Change in slope between pre- and post-stressor cortisol | 691 | 0 (0, 0.01) |
|  |  | Cortisol residualized gain score | 691 | -0.09 (-0.21, 0.14) |
|  | sAA reactivity (Year 2) | Change in slope between pre- and post-stressor sAA change | 702 | 1.39 (-0.06, 4.37) |
|  |  | sAA residualized gain score | 703 | -26.37 (-51.35, 27.2) |
|  | SAM biomarkers (Year 2) | Mean arterial pressure | 1,517 | 64.44 (60.78, 68.67) |
|  |  | Resting heart rate | 1,520 | 109 (99.33, 118.67) |
|  | Glucocorticoid receptor | NR3C1 exon 1F promoter methylation | 742 | -5.67 (-6.08, -5.31) |
|  |  | NGFI-A transcription factor binding site methylation | 722 | -4.72 (-9.21, -4.4) |
|  | Anthropometry (14 months, Year 1) | Length-for-age Z score | 1,421 | -1.41 (-2.07, -0.74) |
|  |  | Weight-for-age Z score | 1,423 | -1.3 (-2.01, -0.63) |
|  |  | Weight-for-length Z score | 1,423 | -0.89 (-1.55, -0.22) |
|  |  | Head circumference-for-age Z score | 1,415 | -1.78 (-2.35, -1.12) |
|  | Anthropometry (28 months, Year 2) | Length-for-age Z score | 1,522 | -1.56 (-2.27, -0.94) |
|  |  | Weight-for-age Z score | 1,526 | -1.58 (-2.2, -0.94) |
|  |  | Weight-for-length Z score | 1,522 | -1.03 (-1.62, -0.38) |
|  |  | Head circumference-for-age Z score | 1,520 | -1.81 (-2.38, -1.2) |
|  | Diarrhea (14 months, Year 1) | Caregiver-reported 7-day recall | 1,610 | 202 (13%) |
|  | Diarrhea (28 months, Year 2) | Caregiver-reported 7-day recall | 1,610 | 114 (7%) |
| Mother |  | Age (years) | 1,596 | 23 (20, 27) |
|  | Anthropometry at enrollment | Height (cm) | 1,592 | 150.2 (146.84, 154.06) |
|  | Education | Schooling completed (years) | 1,610 | 7 (4, 9) |
|  | Depression at Year 1 | CES-D score | 1,576 | 10 (6, 16) |
|  | Depression at Year 2 | CES-D score | 1,465 | 10 (5, 17) |
|  | Perceived stress at Year 2 | Perceived Stress Scale score | 1,466 | 14 (10, 17) |
|  | Intimate partner violence | Any lifetime exposure | 1,461 | 836 (57%) |

## Table 2: Study exposures, outcomes, and hypothesized relationships

| Hypothesis | Exposure Biological Domain and Biomarkers | Outcomes | Finding |
| --- | --- | --- | --- |
| 1) Oxidative status is negatively associated with concurrent and future child growth measures, as well as growth velocity between year 1 and year 2. | Oxidative status: Individual urinary F2 isoprostane isomers and combined score at Year 1 | LAZ, WAZ\*, HCAZ\* score, and WLZ\*\* at year 1, year 2, and the growth velocity between year 1 and 2. |  |
| 2) Salivary cortisol measures are positively associated with concurrent child growth measures, and sAA measures are negatively associated with concurrent child growth measures. | HPA axis: Cortisol and via concentrations pre-stressor, post-stressor, and reactivity at Year 2 SAM axis: sAA and via concentrations pre-stressor, post-stressor, and reactivity at Year 2 | LAZ, WAZ\*, HCAZ\* score, and WLZ\*\* at year 2. |  |
| 3) SAM biomarker measures are negatively associated with concurrent child growth | SAM axis: mean arterial pressure and resting heart rate at Year 2 | LAZ, WAZ\*, HCAZ\* score, and WLZ\*\* at year 2. |  |
| 4) Glucocorticoid receptor methylation is negatively associated with concurrent child growth measures | HPA axis: Glucocorticoid receptor methylation via percentage methylation at NGFI-A transcription factor binding site and mean overall glucocorticoid receptor methylation at Year 2 | LAZ, WAZ\*, HCAZ\* score, and WLZ\*\* at year 2. |  |

## Table 3: Associations between child stress measures and linear growth outcomes

|  | Outcome | N | 25th Percentile | 75th Percentile | Outcome, 75th Percentile v. 25th Percentile | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | Predicted Outcome at 25th Percentile | Predicted Outcome at 75th Percentile | Coefficient (95% CI) | P-value |
| IPF(2a)-III | LAZ Year 1 | 676 | -0.72 | -0.09 | -1.27 | -1.4 | -0.13 (-0.21, -0.06) | 0\*\* |
|  | LAZ Year 2 | 578 | -0.73 | -0.09 | -1.6 | -1.59 | 0.01 (-0.03, 0.05) | 0.58 |
|  | Length velocity (cm/month) Year 1 to Year 2 | 577 | -0.73 | -0.09 | 0.78 | 0.78 | 0 (-0.01, 0.01) | 0.78 |
|  | Change in LAZ from Year 1 to Year 2 | 581 | -0.73 | -0.09 | -0.25 | -0.23 | 0.02 (-0.03, 0.06) | 0.45 |
|  |  |  |  |  |  |  |  |  |
| 2,3-dinor-iPF(2a)-III | LAZ Year 1 | 676 | 1.55 | 1.97 | -1.23 | -1.42 | -0.19 (-0.3, -0.07) | 0\* |
|  | LAZ Year 2 | 578 | 1.54 | 1.97 | -1.61 | -1.57 | 0.04 (-0.01, 0.09) | 0.13 |
|  | Length velocity (cm/month) Year 1 to Year 2 | 577 | 1.54 | 1.97 | 0.79 | 0.79 | 0.01 (0, 0.02) | 0.12 |
|  | Change in LAZ from Year 1 to Year 2 | 581 | 1.54 | 1.97 | -0.23 | -0.15 | 0.09 (0.03, 0.14) | 0\* |
|  |  |  |  |  |  |  |  |  |
| iPF(2a)-VI | LAZ Year 1 | 676 | 2.31 | 2.87 | -1.23 | -1.45 | -0.22 (-0.35, -0.1) | 0\*\* |
|  | LAZ Year 2 | 578 | 2.3 | 2.87 | -1.61 | -1.57 | 0.05 (-0.02, 0.11) | 0.18 |
|  | Length velocity (cm/month) Year 1 to Year 2 | 577 | 2.3 | 2.87 | 0.78 | 0.79 | 0.01 (-0.01, 0.02) | 0.3 |
|  | Change in LAZ from Year 1 to Year 2 | 581 | 2.3 | 2.87 | -0.29 | -0.17 | 0.12 (0.03, 0.21) | 0.01\* |
|  |  |  |  |  |  |  |  |  |
| 8,12-iso-iPF(2a)-VI | LAZ Year 1 | 676 | 2.17 | 2.92 | -1.22 | -1.33 | -0.11 (-0.23, 0.02) | 0.09 |
|  | LAZ Year 2 | 578 | 2.19 | 2.91 | -1.66 | -1.57 | 0.09 (-0.02, 0.2) | 0.1 |
|  | Length velocity (cm/month) Year 1 to Year 2 | 577 | 2.19 | 2.91 | 0.78 | 0.79 | 0.02 (-0.01, 0.04) | 0.2 |
|  | Change in LAZ from Year 1 to Year 2 | 581 | 2.19 | 2.91 | -0.24 | -0.15 | 0.09 (-0.02, 0.2) | 0.1 |
|  |  |  |  |  |  |  |  |  |
| Combined urinary oxidative stress biomarkers | LAZ Year 1 | 676 | 2.49 | 3.54 | -1.16 | -1.47 | -0.31 (-0.51, -0.11) | 0\* |
|  | LAZ Year 2 | 578 | 2.49 | 3.53 | -1.6 | -1.57 | 0.03 (-0.06, 0.13) | 0.51 |
|  | Length velocity (cm/month) Year 1 to Year 2 | 577 | 2.49 | 3.53 | 0.79 | 0.79 | 0 (-0.02, 0.03) | 0.79 |
|  | Change in LAZ from Year 1 to Year 2 | 581 | 2.49 | 3.53 | -0.25 | -0.19 | 0.06 (-0.04, 0.16) | 0.25 |
|  |  |  |  |  |  |  |  |  |
| Pre-stressor cortisol | LAZ Year 2 | 700 | -2.51 | -1.66 | -1.6 | -1.52 | 0.08 (-0.03, 0.2) | 0.17 |
|  |  |  |  |  |  |  |  |  |
| Post-stressor cortisol | LAZ Year 2 | 651 | -2.06 | -0.61 | -1.6 | -1.57 | 0.03 (-0.05, 0.1) | 0.46 |
|  |  |  |  |  |  |  |  |  |
| Pre to post-stress change in cortisol | LAZ Year 2 | 645 | 0 | 0.01 | -1.65 | -1.62 | 0.03 (-0.02, 0.08) | 0.25 |
|  |  |  |  |  |  |  |  |  |
| Cortisol residualized gain score | LAZ Year 2 | 645 | -0.21 | 0.14 | -1.65 | -1.62 | 0.03 (-0.02, 0.08) | 0.24 |
|  |  |  |  |  |  |  |  |  |
| Pre-stressor sAA | LAZ Year 2 | 695 | 3.48 | 4.64 | -1.56 | -1.53 | 0.03 (-0.11, 0.17) | 0.7 |
|  |  |  |  |  |  |  |  |  |
| Post-stressor sAA | LAZ Year 2 | 668 | 3.89 | 5.15 | -1.55 | -1.53 | 0.02 (-0.04, 0.08) | 0.6 |
|  |  |  |  |  |  |  |  |  |
| Pre to post-stress change in sAA | LAZ Year 2 | 656 | -0.08 | 4.44 | -1.63 | -1.53 | 0.1 (-0.04, 0.23) | 0.16 |
|  |  |  |  |  |  |  |  |  |
| sAA residualized gain score | LAZ Year 2 | 657 | -51.4 | 30.95 | -1.6 | -1.53 | 0.08 (-0.05, 0.2) | 0.23 |
|  |  |  |  |  |  |  |  |  |
| Mean arterial pressure | LAZ Year 2 | 1406 | 60.89 | 68.86 | -1.53 | -1.49 | 0.04 (-0.03, 0.11) | 0.23 |
|  |  |  |  |  |  |  |  |  |
| Mean resting heart rate | LAZ Year 2 | 1409 | 99.33 | 118.67 | -1.53 | -1.52 | 0.01 (-0.03, 0.05) | 0.56 |
|  |  |  |  |  |  |  |  |  |
| Entire promoter region (39 assayed CpG sites) | LAZ Year 2 | 660 | -6.05 | -5.31 | -1.5 | -1.54 | -0.04 (-0.15, 0.08) | 0.56 |
|  |  |  |  |  |  |  |  |  |
| NGFI-A transcription factor binding site (CpG site #12) | LAZ Year 2 | 395 | -4.65 | -4.15 | -1.35 | -1.35 | 0 (-0.06, 0.07) | 0.93 |
| N, 25th Percentile, and 75th Percentile are from the adjusted analyses | | | | | | | | |
| \* P-value < 0.05 after FDR correction (\*\* P-value < 0.01, \*\*\* P-value < 0.001) | | | | | | | | |