Supplemental Material

First Trimester Urinary Bisphenol A Concentration in Relation to Anogenital Distance, an Androgen-Sensitive Measure of Reproductive Development, in Infant Girls

Emily S. Barrett, Sheela Sathyanarayana, Omar Mbowe, Sally W. Thurston, J. Bruce Redmon, Ruby H.N. Nguyen, and Shanna H. Swan

Table of Contents

Table S1. TIDES participant demographics by study center.

Continuous variables (Mean ± SD)	Overall (n=381)	UMN (n=94)	UCSF (n=98)	URMC (n=109)	UW (n=80)
Maternal age (years)	31.1 ± 5.6	30.8 ± 4.5	34.7 ± 4.1	27.0 ± 5.7	32.7 ± 4.6
Gestational age at birth (weeks)	39.4 ± 1.6	39.5 ± 1.6	39.7 ± 1.6	39.0 ± 1.7	39.6 ± 1.5
Age at exam (days)	4.4 ± 10.4	4.1 ± 10.8	4.9 ± 10.8	4.5 ± 9.0	4.2 ± 11.4
Z-score weight-for-age	-0.4 ± 1.3	-0.4 ± 1.1	-0.6 ± 1.3	-0.3 ± 1.5	-0.17 ± 1.2
Post-conception age at exam (weeks)	40.1 ± 2.0	40.0 ± 2.1	40.4 ± 2.0	39.7 ± 1.7	40.2 ± 2.3
AGD-AC (mm)	36.6 ± 3.8	36.7 ± 3.9	37.1 ± 4.3	36.1 ± 3.6	36.7 ± 3.4
AGD-AF (mm)	16.0 ± 3.2	16.3 ± 2.7	14.4 ± 3.2	15.5 ± 2.6	18.3 ± 3.2
Time of urine collection (hours after midnight)	12.6 ± 2.5	12.8 ± 2.6	12.2 ± 2.6	12.4 ± 2.4	13.2 ± 2.3
SpG-adjusted BPA (µg/L)	1.8 ± 2.5	2.0 ± 3.6	1.4±1.7	2.1 ± 2.7	1.6 ± 1.7
Gestational age at urine collection (weeks)	10.8 ± 2.0	10.2 ± 2.0	12.1 ± 1.4	10.4 ± 1.9	10.5 ± 1.8
Categorical variables N(%)[a]					
Race/ethnicity					
White/non-Hispanic	225 (60.7)	75 (81.9)	54 (56.3)	41 (38.7)	55 (70.5)
Other	147 (39.3)	17 (18.1)	42 (43.8)	65 (62.3)	23 (29.5)
Education					
High school or less	55 (14.7)	2 (2.2)	2 (2.0)	50 (45.9)	1 (1.3)
Some college or more	320 (85.3)	89 (97.8)	96 (98.0)	59 (54.1)	76 (98.7)

a Percentages may not add up to 100% due to rounding.

Table S2. Linear regression models examining the relationship between log(SpG adj. (BPA)) and covariates[a] and log-transformed anogenital distance measures in newborn daughters (n=381).

variables	Log(AGD-AC)		Log(AGD-AF)	
	Unadjusted Estimate (95% CI)	**Adjusted** Estimate (95% CI)	**Unadjusted** Estimate (95% CI)	**Adjusted** Estimate (95% CI)
Log(SpG adj (BPA))	-0.01 (-0.02, 0.001)	-0.02(-0.03, -0.005)	0.01(-0.01, 0.03)	0.003(-0.02, 0.02)
Maternal age		-0.001(-0.003, 0.001)		-0.004(-0.01, 0.000)
Infant's post-conception age		0.01(0.01, 0.02)		0.01(0.001, 0.02)
Weight-for-length z-score		0.02(0.01, 0.03)		0.01(-0.002, 0.03)
Race		0.01(-0.01, 0.03)		-0.001(-0.04, 0.04)
Urine collection time		0.001(-0.003, 0.01)		0.002(-0.01, 0.01)
UCSF center		0.01(-0.02, 0.05)		-0.114(-0.174, -0.05)
URMC center		-0.01(-0.05, 0.02)		-0.07(-0.128, -0.007)
UW center		0.003(-0.03, 0.04)		0.113(0.05, 0.173)

a For race, the referent is non-Hispanic, white. For center, the referent is UMN. All other variables are continuous.
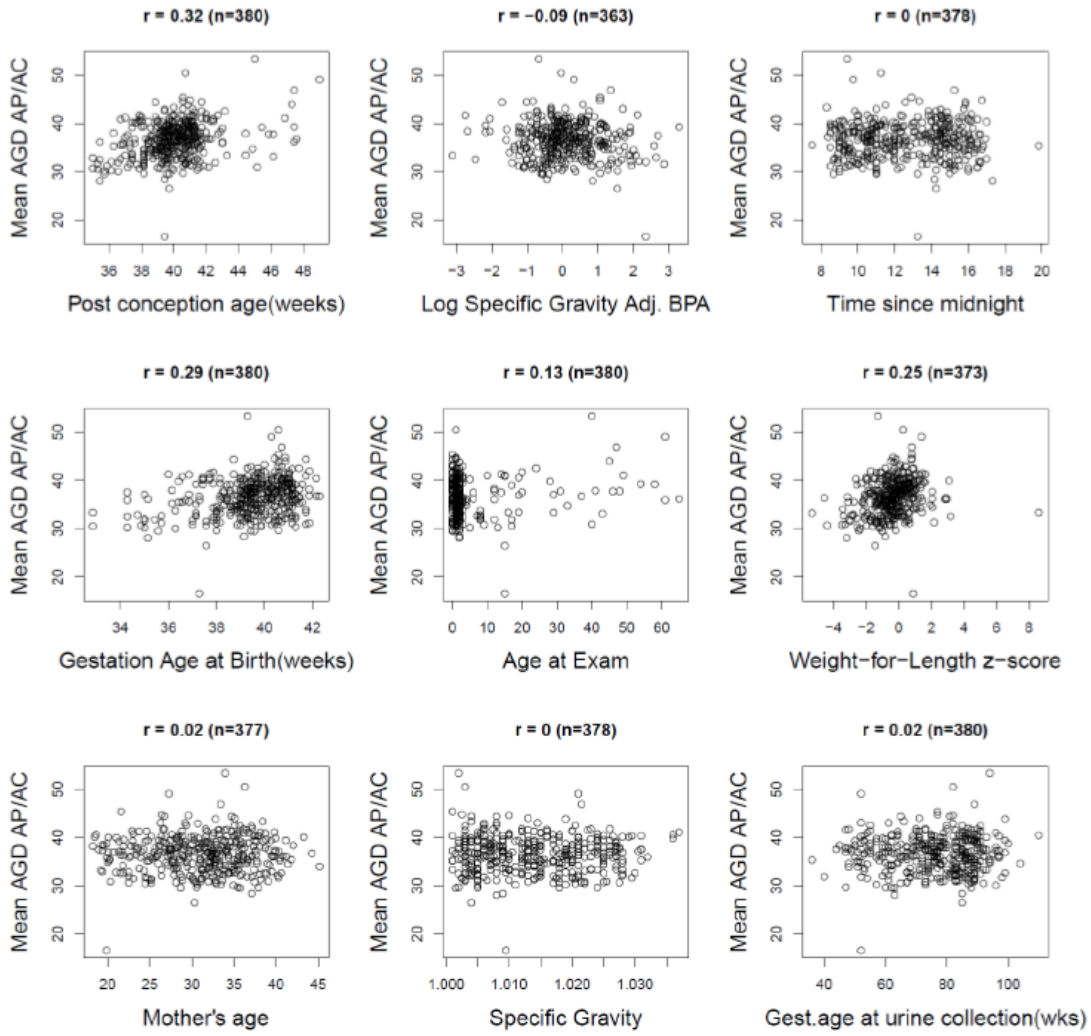
Figure S1. Scatterplots examining the relationship between AGD-AC and continuous covariates.
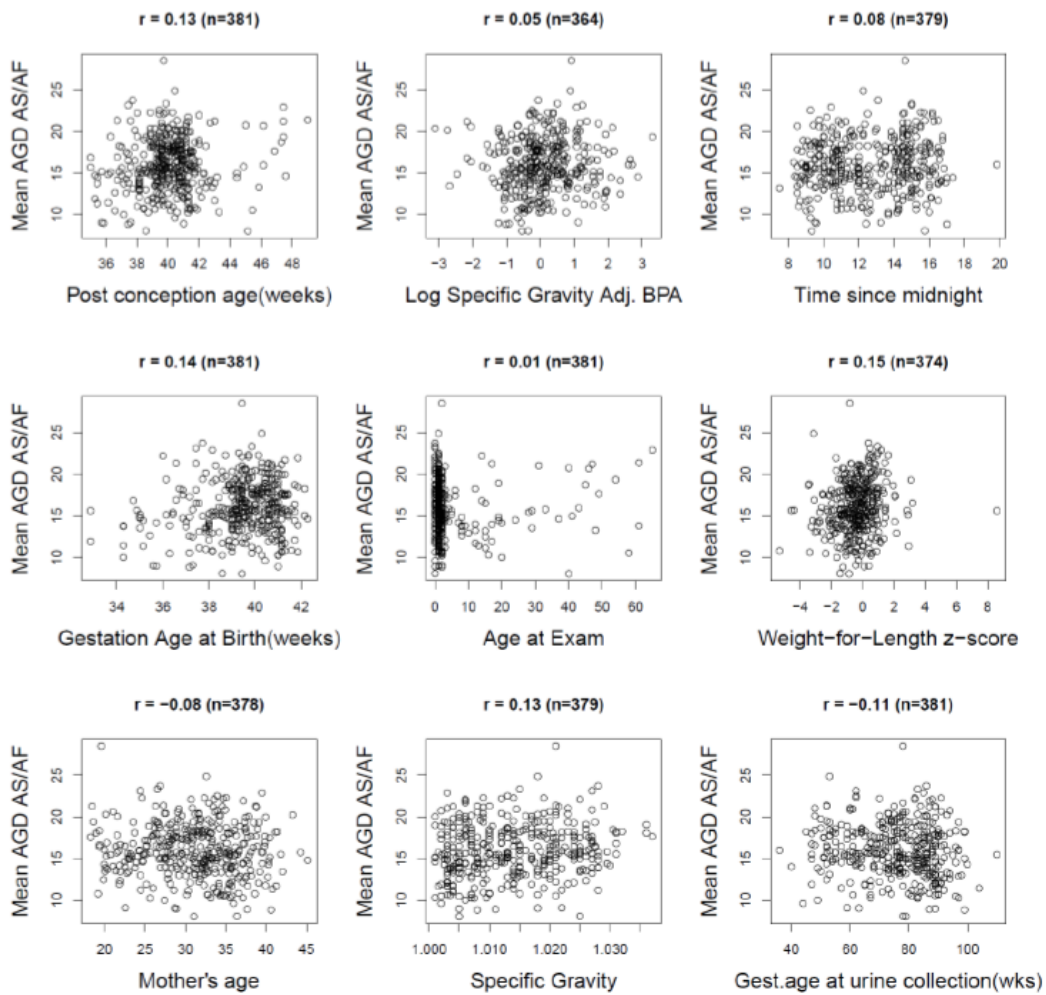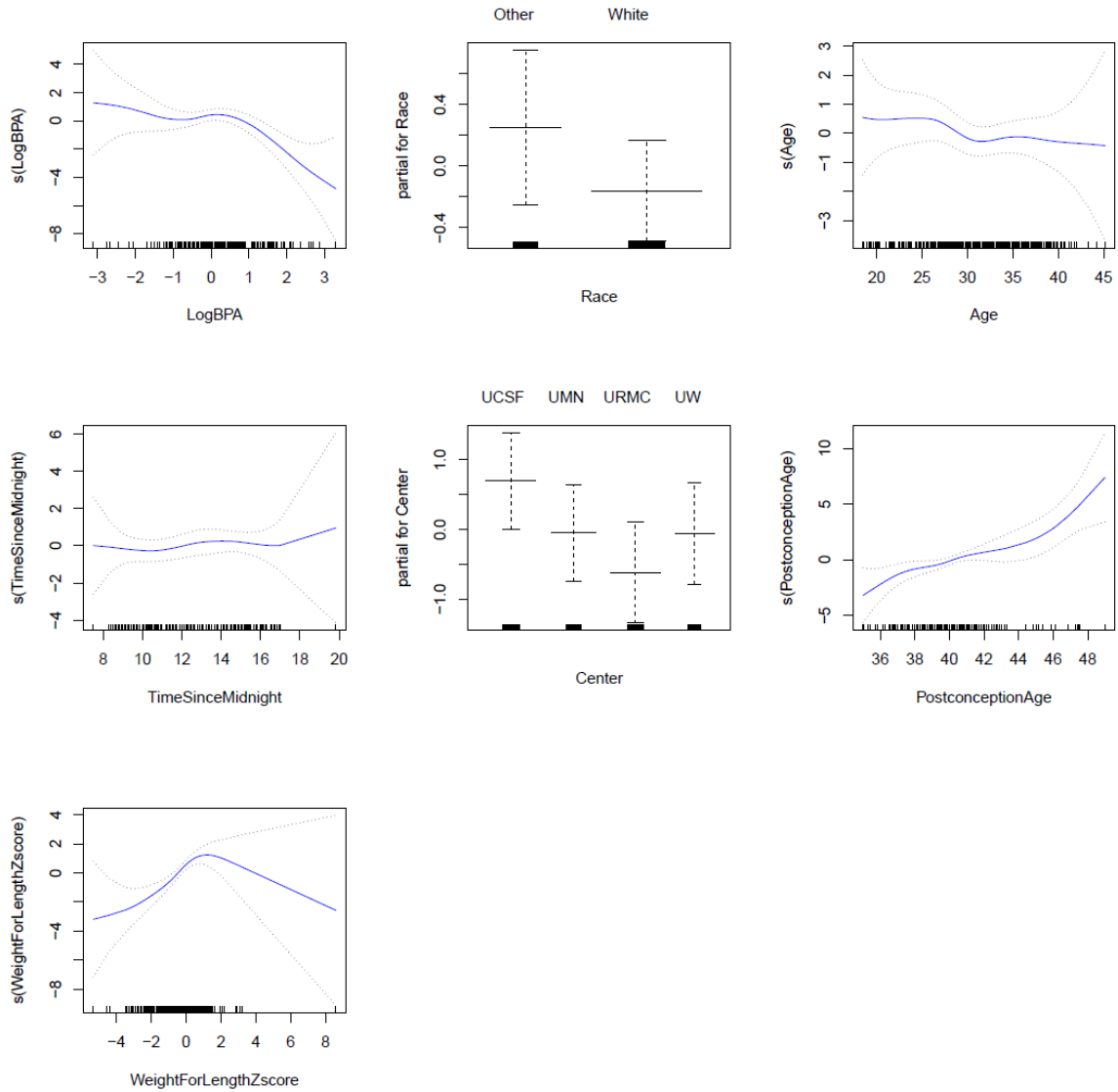
Figure S2. Scatterplots examining the relationship between AGD-AF and continuous covariates.

Figure S3: Adjusted generalized additive model plots with the response variable AGD-AC

Abbreviations: LogBPA: Log-transformed specific gravity-adjusted BPA; Race: Child's race; Age: Mother's age in years; TimeSinceMidnight: Time, since midnight, of urine collection; Center: Study Site; PostconceptionAge: Child's Post conception age; WeightForLengthZscore: Weight-for-Length Z-Score

The middle line in each panel shows the estimated effect of the covariate on the outcome (y-axis) plotted against the raw value of the covariate (x-axis), after adjusting for all other model covariates. Upper and lower lines (continuous variables) or bars (categorical variables) show +/- the pointwise standard error.
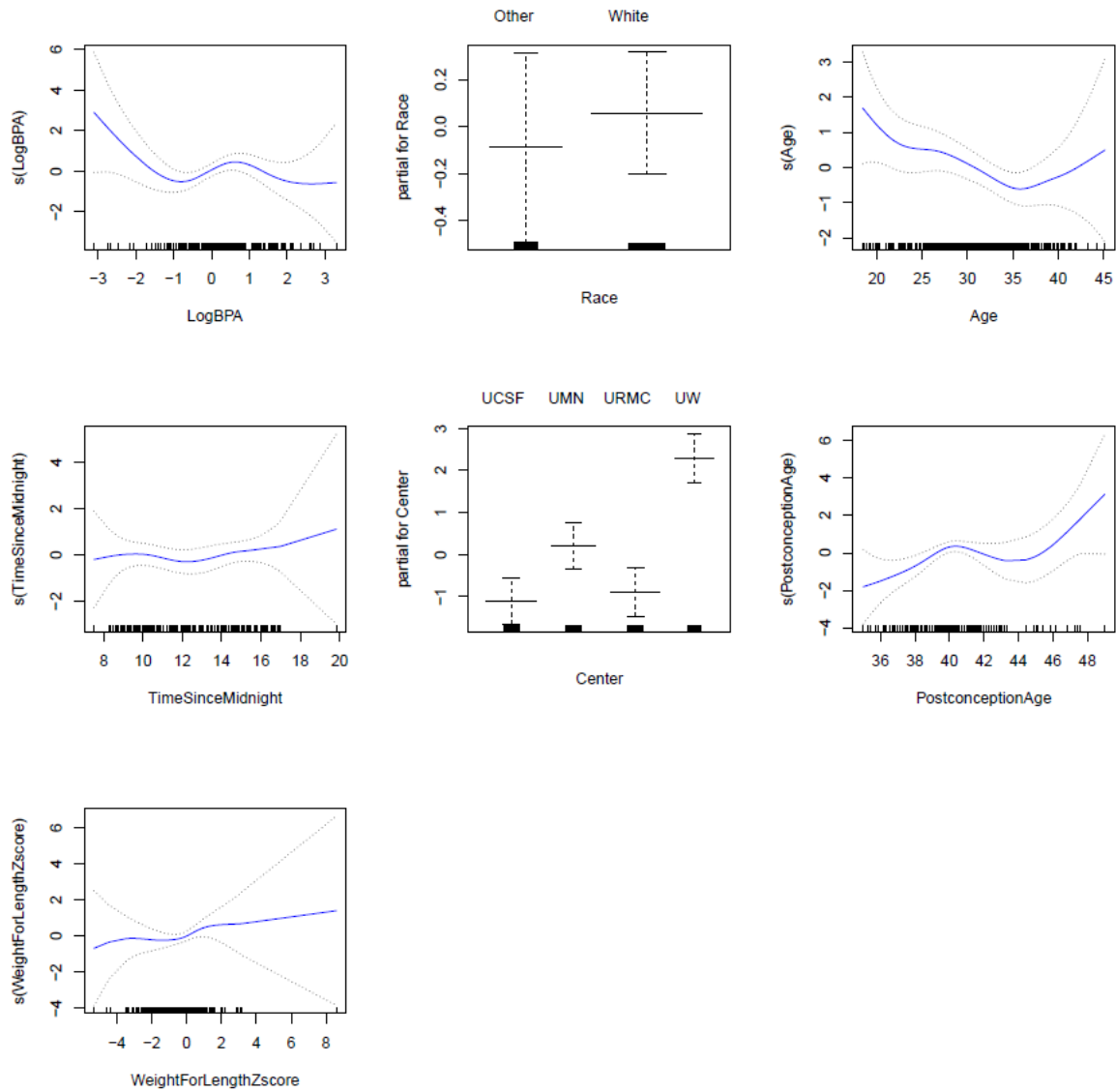
Figure S4: Adjusted generalized additive model plots with the response variable AGD-AF

Abbreviations: LogBPA: Log-transformed specific gravity-adjusted BPA; Race: Child's race; Age: Mother's age in years; TimeSinceMidnight: Time, since midnight, of urine collection; Center: Study Site; PostconceptionAge: Child's Post conception age; WeightForLengthZscore: Weight-for-Length Z-Score

The middle line in each panel shows the estimated effect of the covariate on the outcome (y-axis) plotted against the raw value of the covariate (x-axis), after adjusting for all other model covariates. Upper and lower lines (continuous variables) or bars (categorical variables) show +/- the pointwise standard error.