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Supplemental Material

Prenatal Phthalate Exposures and Childhood Fat Mass in a New York City Cohort

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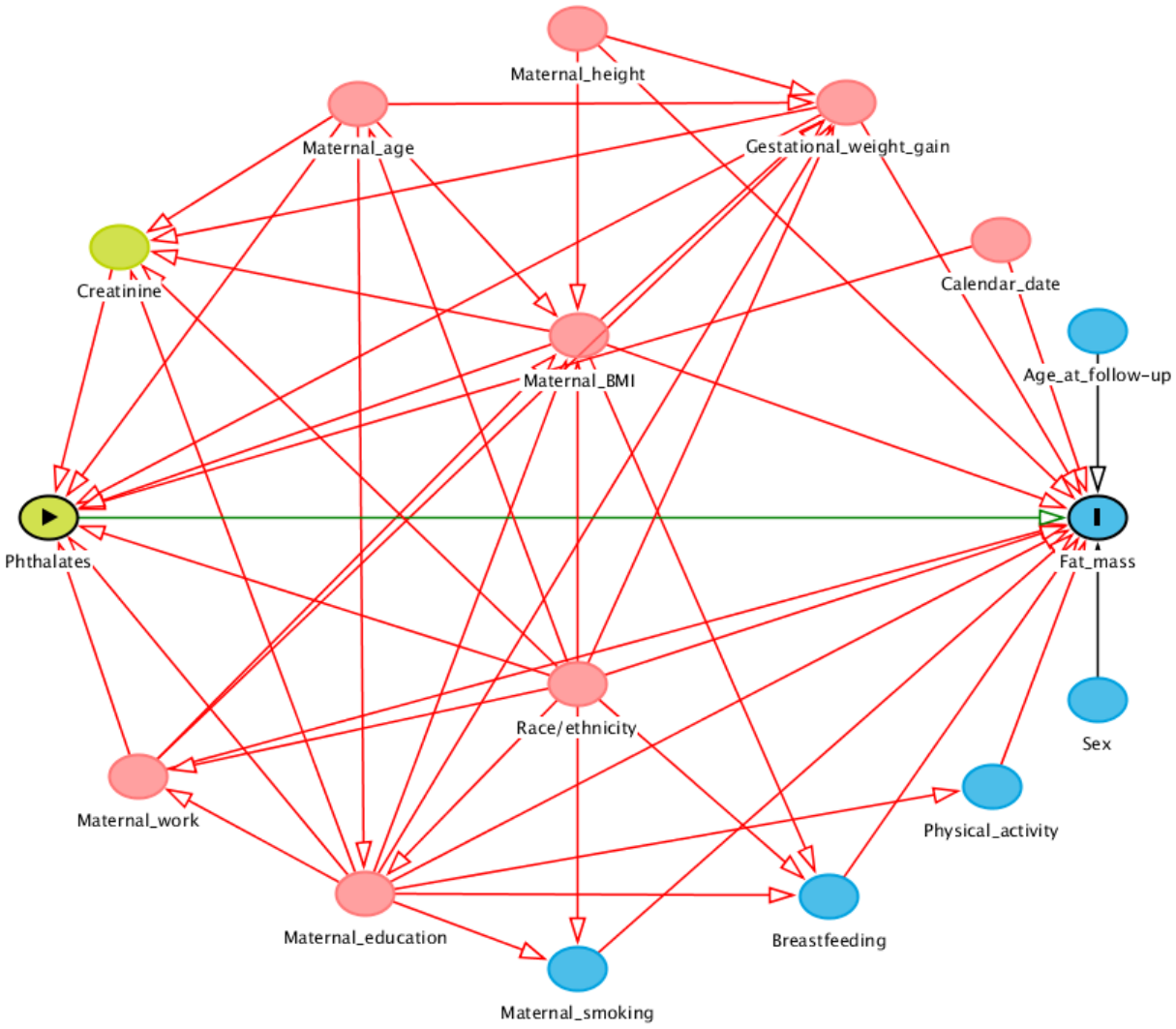
Table of Contents

Figure S1. Directed acyclic graph of associations between prenatal phthalate exposures, covariates, and child fat mass in the Mount Sinai Children's Environmental Health Study



Legend

- exposure
- outcome
- ancestor of exposure
- ancestor of outcome
- ancestor of exposure *and* outcome

Table S1. Age- and sex- standardized body mass index z-score distributions in the Mount Sinai Children's Environmental Health Study

Visit	Mean age (years) ± SD	Overall		Girls		Boys	
		n	Mean ± SD	n	Mean ± SD	n	Mean ± SD
All visits	6.5 ± 1.3	364	0.56 ± 1.15	174	0.50 ± 1.10	190	0.62 ± 1.20
Visit 1	4.9 ± 0.4	99	0.51 ± 1.18	49	0.51 ± 1.07	50	0.52 ± 1.29
Visit 2	6.1 ± 0.2	117	0.50 ± 1.04	57	0.41 ± 1.04	60	0.59 ± 1.05
Visit 3	7.8 ± 0.8	148	0.63 ± 1.21	68	0.57 ± 1.17	80	0.69 ± 1.25

Standard deviation (SD)

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Table S2. Adjusted associations between third trimester maternal urinary phthalate metabolite concentrations and percent fat mass among children aged 4 to 9 years in the Mount Sinai Children's Environmental Health Study

Metabolite	Exposure metric	Exposure unit[a]	Overall		Girls		Boys[d]	
			n[b]	β (95% CI)[c]	*n*[b]	β (95% CI)[c]	*n*[b]	β (95% CI)[c]
MEP	Lowest tertile	<186	126	ref	47	ref	75	ref
	Middle tertile	186–546	116	-0.75 (-3.45, 1.95)	56	-1.66 (-4.95, 1.69)	64	-0.20 (-3.81, 3.43)
	Highest tertile	>546	121	0.69 (-2.15, 3.53)	70	-0.38 (-3.77, 3.04)	51	2.46 (-1.49, 6.36)
	Continuous	SD	363	0.12 (-1.34, 1.58)	173	-0.35 (-2.43, 1.75)	190	0.75 (-1.31, 2.80)
MnBP	Lowest tertile	<32.0	132	ref	49	ref	77	ref
	Middle tertile	32.0–64.6	106	-0.69 (-3.66, 2.27)	55	1.00 (-2.64, 4.60)	61	-1.80 (-5.68, 2.10)
	Highest tertile	>64.6	125	-1.27 (-4.69, 2.16)	69	-0.43 (-4.37, 3.49)	52	-1.71 (-6.19, 2.82)
	Continuous	SD	363	-0.86 (-3.07, 1.36)	173	-0.34 (-3.71, 3.05)	190	-0.86 (-3.46, 1.74)
MiBP	Lowest tertile	<6.0	122	ref	39	ref	93	ref
	Middle tertile	6.0–12.2	120	0.46 (-2.30, 3.20)	61	0.55 (-2.94, 4.02)	45	0.71 (-2.93, 4.32)
	Highest tertile	>12.2	121	0.57 (-2.63, 3.79)	73	1.01 (-2.67, 4.69)	52	-0.07 (-4.44, 4.32)
	Continuous	SD	363	0.34 (-1.54, 2.20)	173	1.04 (-1.36, 3.44)	190	-0.88 (-3.44, 1.68)
MCPP	Lowest tertile	<2.8	131	ref	49	ref	79	ref
	Middle tertile	2.8-6.2	111	-0.61 (-3.48, 2.24)	74	-0.50 (-3.87, 2.90)	52	-0.72 (-4.60, 3.18)
	Highest tertile	>6.2	121	1.79 (-1.61, 5.17)	50	2.06 (-1.78, 5.88)	59	1.64 (-2.98, 6.32)
	Continuous	SD	363	0.63 (-1.55, 2.82)	173	1.21 (-1.44, 3.87)	190	-0.08 (-3.22, 3.03)
MBzP	Lowest tertile	<12.7	128	ref	52	ref	79	ref
	Middle tertile	12.7–30.5	126	-0.93 (-3.65, 1.77)	57	-2.19 (-5.70, 1.34)	54	-0.72 (-4.35, 2.92)
	Highest tertile	>30.5	109	0.84 (-2.29, 4.01)	64	1.63 (-1.89, 5.20)	57	-0.79 (-5.28, 3.74)
	Continuous	SD	363	0.67 (-1.31, 2.65)	173	0.62 (-1.77, 3.02)	190	0.98 (-2.17, 4.14)
∑DEHP	Lowest tertile	<0.23	120	ref	44	ref	76	ref
	Middle tertile	0.23–0.60	120	-1.77 (-4.48, 0.97)	61	-1.53 (-4.96, 1.88)	59	-1.79 (-5.34, 1.75)
	Highest tertile	>0.60	123	-3.06 (-5.99, -0.09)	68	-3.07 (-6.54, 0.41)	55	-2.99 (-7.10, 1.15)
	Continuous	SD	363	-0.89 (-2.24, 0.47)	173	-0.80 (-2.81, 1.23)	190	-0.64 (-2.46, 1.16)

Referent category (ref), standard deviation (SD)

[a] Tertile cut points are expressed as micrograms per gram creatinine (or micromoles per gram creatinine for ∑DEHP).

[b] Number of follow-up visits.

[c] Beta coefficients (95% credible intervals) were estimated in multiple metabolite linear mixed effects regression models adjusted for urine collection date; maternal race/ethnicity, age, education, work status, and smoking during pregnancy; maternal height and pre-pregnancy body mass index; adequacy of gestational weight gain; breastfeeding; months of age and physical activity at follow-up; and, for overall models, child's sex. Models of continuous metabolite concentrations were adjusted for natural log creatinine. Sex-specific estimates were estimated in models including a product term between child's sex and each metabolite or ∑DEHP.

[d] Sex-specific estimates did not meet criteria for heterogeneity (i.e., 80% credible intervals for all phthalate*sex product terms included the null value).

Table S3. Adjusted associations between third trimester maternal urinary phthalate metabolite concentrations and age- and sex-standardized body mass index z-scores among children aged 4 to 9 years in the Mount Sinai Children's Environmental Health Study

Metabolite	Exposure metric	Exposure unit[a]	Overall		Girls		Boys	
			n[b]	β (95% CI)[c]	*n*[b]	β (95% CI)[c]	*n*[b]	β (95% CI)[c]
MEP	Lowest tertile	<186	126	ref	47	ref	75	ref
	Middle tertile	186–546	116	0.16 (-0.23, 0.55)	57	-0.02 (-0.48, 0.44)	64	0.34 (-0.18, 0.87)
	Highest tertile	>546	122	0.17 (-0.24, 0.58)	70	0.13 (-0.35, 0.61)	51	0.23 (-0.33, 0.79)
	Continuous	SD	364	0.05 (-0.16, 0.27)	174	0.02 (-0.28, 0.33)	190	0.15 (-0.15, 0.45)
MnBP	Lowest tertile	<32.0	131	ref	49	ref	77	ref
	Middle tertile	32.0–64.6	108	-0.17 (-0.59, 0.25)	55	0.07 (-0.43, 0.57)[d]	61	-0.41 (-0.96, 0.15)[d]
	Highest tertile	>64.6	125	-0.19 (-0.67, 0.30)	70	-0.16 (-0.69, 0.38)	52	-0.25 (-0.90, 0.39)
	Continuous	SD	364	-0.13 (-0.45, 0.19)	174	-0.10 (-0.57, 0.37)	190	-0.15 (-0.53, 0.23)
MiBP	Lowest tertile	<6.0	122	ref	38	ref	93	ref
	Middle tertile	6.0–12.2	121	0.10 (-0.30, 0.50)	63	0.16 (-0.33, 0.65)	45	0.05 (-0.47, 0.57)
	Highest tertile	>12.2	121	0.03 (-0.42, 0.49)	73	0.06 (-0.44, 0.57)	52	-0.05 (-0.68, 0.58)
	Continuous	SD	364	-0.02 (-0.29, 0.25)	174	0.04 (-0.30, 0.38)	190	-0.13 (-0.51, 0.24)
MCPP	Lowest tertile	<2.8	131	ref	49	ref	79	ref
	Middle tertile	2.8-6.2	112	0.11 (-0.31, 0.52)	74	0.11 (-0.37, 0.59)	52	0.19 (-0.37, 0.74)
	Highest tertile	>6.2	121	0.32 (-0.16, 0.79)	51	0.35 (-0.18, 0.87)	59	0.40 (-0.26, 1.05)
	Continuous	SD	364	0.14 (-0.17, 0.46)	174	0.16 (-0.22, 0.54)	190	0.16 (-0.29, 0.61)
MBzP	Lowest tertile	<12.7	128	ref	52	ref	79	ref
	Middle tertile	12.7–30.5	126	-0.18 (-0.56, 0.22)	58	-0.23 (-0.72, 0.26)	54	-0.23 (-0.75, 0.29)
	Highest tertile	>30.5	110	-0.20 (-0.65, 0.25)	64	-0.06 (-0.56, 0.44)	57	-0.38 (-1.02, 0.26)
	Continuous	SD	364	-0.02 (-0.32, 0.27)	174	0.03 (-0.33, 0.38)	190	-0.11 (-0.56, 0.34)
∑DEHP	Lowest tertile	<0.23	120	ref	44	ref	76	ref
	Middle tertile	0.23–0.60	120	-0.10 (-0.49, 0.29)	61	-0.17 (-0.65, 0.30)	59	0.01 (-0.50, 0.52)
	Highest tertile	>0.60	124	-0.13 (-0.55, 0.29)	69	-0.13 (-0.60, 0.35)	55	-0.08 (-0.66, 0.51)
	Continuous	SD	364	-0.05 (-0.25, 0.15)	174	-0.05 (-0.34, 0.24)	190	-0.01 (-0.28, 0.26)

Referent category (ref), standard deviation (SD)

[a] Tertile cut points are expressed as micrograms per gram creatinine (or micromoles per gram creatinine for ∑DEHP).

[b] Number of follow-up visits.

[c] Beta coefficients (95% credible intervals) were estimated in multiple metabolite linear mixed effects regression models adjusted for urine collection date; maternal race/ethnicity, age, education, work status, and smoking during pregnancy; maternal height and pre-pregnancy body mass index; adequacy of gestational weight gain; breastfeeding; months of age and physical activity at follow-up; and, for overall models, child's sex. Models of continuous metabolite concentrations were adjusted for natural log creatinine. Sex-specific estimates were estimated in models including a product term between child's sex and each metabolite or ∑DEHP.

[d] Sex-specific estimates met criteria for heterogeneity (i.e., 80% credible interval for phthalate*sex product term excluded the null value).