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Supplemental Material

Prenatal Exposure to Phthalates and Neurodevelopment in the CHAMACOS Cohort

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Figure S1. Directed Acyclic Graph (DAG) for prenatal exposure to phthalates and neurodevelopment in the CHAMACOS cohort. Generated using daggity.net.

Table S1. Sociodemographic characteristics [*n* (%) or median (P25-P75)] of live-born singletons from the initial CHAMACOS mother-child cohort (*n* = 527) and study participants with prenatal urinary phthalate metabolites who completed at least one of the neurobehavioral assessments at ages 7-16 years (*n* = 334)^a.

Characteristic	9y Assessment		10.5Y Assessment		12Y Assessment		14Y Assessment		16Y Assessment	
	Non-Imputed	Imputed	Non-Imputed	Imputed	Non-Imputed	Imputed	Non-Imputed	Imputed	Non-Imputed	Imputed
<i>Maternal/ household characteristics</i>										
Age at enrollment (years)	26 (22-30)	26 (22-30)	26 (22-29)	26 (22-29)	25.5 (22-29)	25.5 (22-29)	25.5 (22-29)	25.5 (22-29)	25 (22-29)	25 (22-29)
Education										
≤ 6th grade	140 (43.9)	140 (43.9)	132 (43.0)	132 (43.0)	139 (43.2)	139 (43.2)	136 (43.6)	136 (43.6)	133 (44.3)	133 (44.3)
7th-12th grade	112 (35.1)	112 (35.1)	110 (35.8)	110 (35.8)	114 (35.4)	114 (35.4)	111 (35.6)	111 (35.6)	106 (35.3)	106 (35.3)
Completed high school	67 (21.0)	67 (21.0)	65 (21.2)	65 (21.2)	69 (21.4)	69 (21.4)	65 (20.8)	65 (20.8)	61 (20.3)	61 (20.3)
(PPVT score) at 9-year visit ^b	98 (80-108)	98 (80-108)	98 (80-108)	98 (80-108)	98 (80.5-108)	98 (80-108)	98 (80-108)	98 (80-108)	98 (80-108)	98 (80-108)
Country of birth	12	0	8	0	18	0	15	0	13	0
Mexico	275 (86.2)	275 (86.2)	264 (86.0)	264 (86.0)	277 (86.0)	277 (86.0)	270 (86.5)	270 (86.5)	261 (87.0)	261 (87.0)
Other	44 (13.8)	44 (13.8)	43 (14.0)	43 (14.0)	45 (14.0)	45 (14.0)	42 (13.5)	42 (13.5)	39 (13.0)	39 (13.0)
Years in U.S.										
≤ 5	148 (46.4)	148 (46.4)	144 (46.9)	144 (46.9)	152 (47.2)	152 (47.2)	146 (46.8)	146 (46.8)	142 (47.3)	142 (47.3)
6-10	83 (26.0)	83 (26.0)	79 (25.7)	79 (25.7)	81 (25.2)	81 (25.2)	81 (26.0)	81 (26.0)	77 (25.7)	77 (25.7)
≥ 11	88 (27.6)	88 (27.6)	84 (27.4)	84 (27.4)	89 (27.6)	89 (27.6)	85 (27.2)	85 (27.2)	81 (27.0)	81 (27.0)
Maternal depression at visit (≥ 16 CES-D score) ^c										
No	211 (67.4)	230	203 (66.1)	225 (73.3)	115 (66.8)	240 (74.5)	205 (65.7)	229 (73.4)	194 (64.7)	217 (72.3)
Yes	77 (24.6)	83	77 (25.1)	82 (26.7)	76 (23.6)	82 (25.5)	75 (24.0)	83 (26.6)	75 (25.0)	83 (27.7)
Missing ^d	25 (8.0)	0 (0.0)	27 (8.8)	0 (0.0)	31 (9.6)	0 (0.0)	32 (10.3)	0 (0.0)	31 (10.3)	0 (0.0)

assessment									(16.3-16.6)	(16.3-16.6)
Language of assessment										
English	170 (54.3)	170 (54.3)	175 (65.5)	175 (65.5)	297 (95.2)	300 (96.2)	-	-	-	-
Spanish	143 (45.7)	143 (45.7)	92 (34.5)	92 (34.5)	12 (3.9)	12 (3.8)	-	-	-	-
Missing ^f	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (0.9)	0 (0.0)	-	-	-	-
Number of hours played video games per week	4.3 (0-7)	4 (0-7)	-	-	4.5 (0-7)	4.5 (0-7)	-	-	-	-
Missing (<i>n</i>) ^h	1	0	-	-	3	0	-	-	-	-
HOME Score at assessment	0.1 (-0.6 – 0.8)	0.1 (-0.6 – 0.8)	-0.1 (-0.6 – 0.6)	-0.1 (-0.6 – 0.6)	0.0 (-0.6 – 0.6)	0.2 (-0.6 – 0.6)	-0.2 (-0.6 – 0.6)	-0.1 (-0.6 – 0.6)	-0.2 (-0.6 – 0.6)	-0.1 (-0.6 – 0.6)
Missing (<i>n</i>) ^d	0	0	0	0	10	0	9	0	8	0

Abbreviations: CES-D, Center for Epidemiologic Studies Depression Scale; *n*, number of study participants; PPVT, Peabody Picture Vocabulary Test.

- = Not assessed at that time point and not adjusted for in models at that time point

^a At age 9, 319 participants completed at least one neurodevelopmental test (n=319 mothers and 313 youth); at age 10.5, 307 participants completed at least one neurodevelopmental test (n=306 mothers and 307 youth); at age 12, 322 participants completed at least one neurodevelopmental test (n=318 mothers and 312 youth); at age 14, 312 participants completed at least one neurodevelopmental test (n=311 mothers and 306 youth); at age at 16, 300 participants completed at least one neurodevelopmental test (n=296 mothers and 286 youth).

^b Imputed using data from earlier time points. For two participants included in sensitivity analyses who were missing PPVT score from earlier time points, data were imputed using random imputation.

^c Assessed at 9-year visit

^d Imputed using data from earlier time points when available. For 1 participant missing HOME score and maternal depression at age 9 who completed neurodevelopmental assessments at ages 14 and 16, data were imputed using random imputation.

^e Assessed at 7, 9, and 10.5-year visits

^f Imputed using data from earlier time points

^g Assessed at 10.5-year visit

^h Data not available from earlier time points. Imputed using random imputation.

Table S2. Mean executive function, social cognition, behavior, and cognition T scores by age point, based on teacher report, maternal report, and child assessment.								
		Age 7 Years		Age 9 Years	Age 10.5 Years	Age 12 Years	Age 14 Years	Age 16 Years
Outcome	Orientation ^a	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Maternal or Teacher Assessment		Teacher report	Maternal report	Maternal report	Maternal report	Maternal report	Maternal report	Maternal report
<i>Executive Function</i>								
BRIEF ^b								
Behavior Regulation Index	(+)		50.1 ± 10.7	50.6 ± 10.3		50.9 ± 11.1		
Metacognition Index	(+)		50.3 ± 11.3	48.8 ± 10.0		48.2 ± 9.3		
Global Executive Composite	(+)		50.5 ± 11.3	49.5 ± 10.1		49.0 ± 10.1		
<i>Social Cognition</i>								
SRS-2 ^b	(+)						55.6 ± 7.7	
<i>Behavior</i>								
BASC-2 ^b								
Internalizing problems	(+)	50.2 ± 11.6	48.8 ± 9.4		48.5 ± 9.2		49.4 ± 9.5	50.4 ± 10.0
Depression scale	(+)	49.6 ± 9.7	49.4 ± 9.0					
Anxiety scale	(+)	49.5 ± 11.5	51.6 ± 10.1					
Externalizing problems	(+)	49.5 ± 10.0	45.1 ± 9.3		46.4 ± 8.3		45.7 ± 7.2	45.6 ± 8.6
Hyperactivity scale	(+)	49.8 ± 10.2	45.7 ± 8.7		46.7 ± 8.2		45.7 ± 8.1	46.6 ± 9.3
Attention problems scale	(+)	51.4 ± 7.6	49.8 ± 10.5		49.5 ± 10.6		49.1 ± 9.6	49.9 ± 9.8
CADS ^b								
ADHD Index	(+)	53.7 ± 11.5	49.9 ± 8.0	51.4 ± 9.3		49.5 ± 8.2		
DSM-IV total scale	(+)	52.3 ± 9.8	50.3 ± 8.4	52.0 ± 9.8		49.6 ± 8.3		
Inattentive subscale	(+)	48.8 ± 8.7	48.9 ± 7.8	50.1 ± 8.8		48.0 ± 7.2		
Hyperactive/Impulsive subsale	(+)	52.5 ± 10.4	51.9 ± 8.6	53.7 ± 10.8		51.9 ± 9.1		
Child Assessment								
<i>Executive Function</i>								
WCST ^b								

Errors	(-)			48.5 ± 10.6		52.9 ± 11.3		
Perseverative errors	(-)			51.9 ± 14.2		56.3 ± 13.7		
NEPSY-Tower ^b	(-)			9.6 ± 2.7				
<i>Cognition</i>								
WISC-IV ^b								
FSIQ	(-)		104.0 ± 14.4		90.1 ± 11.0			
VCIQ	(-)		106.6 ± 16.9		84.4 ± 11.6			
PRIQ	(-)		102.7 ± 16.2		93.0 ± 14.9			
WMIQ	(-)		93.6 ± 13.8		96.5 ± 11.3			
PSIQ	(-)		108.8 ± 13.2		98.1 ± 12.5			
<i>Social Cognition</i>								
ENI ^c	(-)			6.6 ± 1.2				
NEPSY-II Affect Recognition ^c	(-)					26.6 ± 3.6		
<i>Behavior</i>								
BASC-2 ^b								
Internalizing problems	(+)							49.3 ± 10.4
Depression scale	(+)				50.5 ± 9.5		48.5 ± 9.9	48.2 ± 10.0
Anxiety scale	(+)				51.0 ± 8.4		49.4 ± 10.2	50.9 ± 1.4
Externalizing problems	(+)							
Hyperactivity scale	(+)				46.6 ± 9.5			47.8 ± 9.8
Attention problems scale	(+)				51.0 ± 9.2			49.3 ± 10.0
CPT-II ^b								
Errors of omission	(+)			59.6 ± 18.1		49.1 ± 10.1		
Errors of commission	(+)			49.6 ± 9.7		40.0 ± 11.1		
ADHD Confidence Index ^d	(+)			54.4 ± 22.4		46.9 ± 17.7		

Abbreviations: BRIEF, Behavior Rating Inventory Executive Function; SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; VCIQ, verbal comprehension IQ; PRIQ, perceptual reasoning IQ; WMIQ, working memory IQ; PSIQ, processing speed IQ; ENI, Evaluación Neuropsicológica del Niño; NEPSY, a Developmental Neuropsychological Assessment; CPT-II, Continuous Performance Test, 2nd edition.

^a (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^b BRIEF, SRS-2, BASC-2, CADS, WCST, SRS-2, and CPT T-scores are standardized to mean \pm SD = 50 \pm 10; WISC-IV scores are standardized to mean \pm SD = 100 \pm 15; NEPSY Tower scores are standardized to a mean \pm SD = 10 \pm 3.

^c ENI and NEPSY-II Affect Recognition are raw scores.

^d The CPT ADHD Confidence Index is not a T-score but is rather produced by discriminant function analysis and represents the percentage of children with this performance profile who would be correctly classified as having ADHD.

Table S3. Distribution of phthalate biomarker concentrations (uncorrected) measured in maternal urine samples collected at two time points during pregnancy, CHAMACOS ($n = 327$).

Phthalate biomarker ^a	Average of two measurements					
	GM (GSD)	Min	P25	P50	P75	Max
ΣLMW	1.2 (3.1)	0.1	0.6	1.1	2.4	95.0
MEP	189.2 (2.4)	9.8	83.6	180.0	425.7	18390.0
MBP	22.7 (2.6)	0.9	12.5	21.3	43.1	418.9
MiBP	2.8 (2.9)	0.1	1.5	2.8	5.4	103.5
ΣHMW	0.3 (2.3)	0.03	0.15	0.3	0.4	4.2
MBzP	7.2 (2.8)	0.3	3.8	7.3	13.8	115.2
M CPP	1.7 (2.5)	0.0	1.0	2.0	3.1	29.7
MCOP	3.0 (2.3)	0.1	1.8	3.1	5.1	77.7
MCNP	1.8 (2.2)	0.1	1.2	1.9	3.1	20.5
ΣDEHP	0.2 (2.4)	0.0	0.1	0.2	0.3	4.2
MEHP	4.5 (2.5)	0.1	2.0	3.7	7.0	128.9
MEHHP	15.2 (2.6)	0.5	8.6	15.0	27.4	401.2
MECPP	25.9 (2.3)	2.6	15.6	24.9	42.3	526.5
MEOHP	11.2 (2.6)	0.4	6.4	11.1	20.3	279.2

Abbreviations: MEP, monoethyl phthalate; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; M CPP, mono(3-carboxypropyl) phthalate; MCOP, mono(carboxyoctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; ΣDEHP, sum of di-2-ethylhexyl phthalate metabolites; MEHP, mono-2-ethylhexyl phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECPP, mono(2-ethyl-5-carboxypentyl) phthalate; ΣHMW, sum of high-molecular weight phthalate metabolites; ΣLMW, sum of low-molecular weight phthalate metabolites.

^a Units are ng/mL for all individual metabolites and nmol/mL for the sums of metabolites (ΣDEHP, ΣHMW, ΣLMW).

Table S4. Spearman correlation coefficients for prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted and averaged during pregnancy), CHAMACOS ($n = 327$).

Phthalate biomarker ^a	Σ LMW	MEP	MBP	MiBP	Σ HMW	MBzP	MCPP	MCOP	MCNP	Σ DEHP	MEHP	MEHHP	MECPP	MEOHP
Σ LMW	1.00													
MEP	0.98	1.00												
MBP	0.36	0.24	1.00											
MiBP	0.25	0.18	0.56	1.00										
Σ HMW	0.25	0.19	0.55	0.49	1.00									
MBzP	0.26	0.21	0.51	0.52	0.64	1.00								
MCPP	0.26	0.18	0.55	0.42	0.59	0.54	1.00							
MCOP	0.20	0.15	0.45	0.41	0.64	0.62	0.65	1.00						
MCNP	0.15	0.11	0.35	0.30	0.49	0.48	0.57	0.70	1.00					
Σ DEHP	0.23	0.17	0.50	0.45	0.96	0.50	0.50	0.53	0.40	1.00				
MEHP	0.21	0.16	0.46	0.43	0.80	0.44	0.42	0.45	0.35	0.82	1.00			
MEHHP	0.22	0.16	0.53	0.47	0.94	0.51	0.49	0.51	0.37	0.98	0.81	1.00		
MECPP	0.22	0.16	0.44	0.39	0.93	0.46	0.47	0.51	0.40	0.97	0.73	0.90	1.00	
MEOHP	0.24	0.17	0.55	0.48	0.95	0.53	0.52	0.54	0.40	0.98	0.81	0.98	0.92	1.00

Abbreviations: MEP, monoethyl phthalate; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; MCPP, mono(3-carboxypropyl) phthalate; MCOP, mono(carboxyoctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites; MEHP, mono(2-ethylhexyl) phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECPP, mono-(2-ethyl-5-carboxypentyl) phthalate; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ LMW, sum of metabolites of low-molecular weight phthalates.

^a Units are ng/mL for all individual metabolites and nmol/mL for the sums of metabolites (Σ DEHP, Σ HMW, Σ LMW).

Table S5. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted)^{a,b} categorized in tertiles with **WCST executive function outcomes^c at 9, and/or 12 years** using GEE models for all children and stratified by child sex, CHAMACOS.

	All children ^d	Boys ^e	Girls ^f	p-int
Errors				
Σ LMW				
T1	Reference	Reference	Reference	0.33
T2	-2.1 (-4.3, 0.1)	-1.4 (-4.5, 1.7)	-2.9 (-6.1, 0.4)	
T3	0.8 (-1.3, 2.9)	1.1 (-1.9, 4.1)	-0.4 (-3.5, 2.7)	
Σ HMW				
T1	Reference	Reference	Reference	0.97
T2	0.4 (-1.8, 2.5)	0.2 (-2.9, 3.3)	0.4 (-2.8, 3.6)	
T3	0.9 (-1.3, 3.1)	-0.2 (-3.5, 3.2)	1.3 (-1.9, 4.4)	
Σ DEHP				
T1	Reference	Reference	Reference	0.77
T2	0.0 (-2.2, 2.2)	-0.6 (-3.6, 2.5)	0.4 (-2.8, 3.6)	
T3	1.0 (-1.2, 3.2)	0.1 (-3.2, 3.3)	1.4 (-1.8, 4.7)	
Preservative errors				
Σ LMW				
T1	Reference	Reference	Reference	0.12
T2	-2.4 (-5.2, 0.4)	-0.7 (-5.0, 3.6)	-3.6 (-7.4, 0.2)	
T3	1.9 (-0.7, 4.5)	3.1 (-0.7, 7.0)	0.0 (-3.7, 3.6)	
Σ HMW				
T1	Reference	Reference	Reference	0.93
T2	1.5 (-1.3, 4.3)	2.9 (-1.3, 7.1)	0.7 (-3.2, 4.5)	
T3	1.8 (-1.1, 4.7)	1.7 (-3.0, 6.5)	2.1 (-1.8, 6.0)	
Σ DEHP				
T1	Reference	Reference	Reference	0.92
T2	-0.1 (-3.0, 2.7)	1.3 (-2.9, 5.6)	-0.7 (-4.6, 3.2)	
T3	1.3 (-1.5, 4.1)	1.1 (-3.7, 5.8)	1.7 (-2.2, 5.5)	
<p><i>Abbreviations:</i> T1, Tertile 1; T2, Tertile 2; T3, Tertile 3; WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; MEP, monoethyl phthalate; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; MCP, mono-(3-carboxypropyl) phthalate; MCOP, mono(carboxyoctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; ΣDEHP, sum of di-2-ethylhexyl phthalate metabolites; MEHP, mono(2-ethylhexyl) phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECCP, mono(2-ethyl-5-carboxypentyl) phthalate; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣLMW, sum of metabolites of low-molecular weight phthalates.</p> <p>Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.</p> <p>^aSeparate models created for each phthalate metabolite or sum of metabolites (ΣDEHP, ΣHMW, ΣLMW).</p> <p>^bUnits are ng/mL for all individual metabolites and nmol/mL for the sums of metabolites (ΣDEHP, ΣHMW, ΣLMW).</p> <p>^cHigher scores indicate more symptomatic behavior.</p> <p>^dNumber of children with data = 318.</p> <p>^eNumber of boys with data = 152.</p> <p>^fNumber of girls with data = 166.</p>				

Table S6. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted)^{a,b} categorized in tertiles with **BRIEF (parent-reported) and NEPSY Tower executive function outcomes^c at 7, 9, and/or 12 years** using GEE models for all children and stratified by child sex, CHAMACOS.

	All children ^d	Boys ^e	Girls ^f	p-int
<i>Behavioral regulation</i>				
Σ LMW				
T1	Reference	Reference	Reference	0.08
T2	0.2 (-1.4, 1.9)	1.6 (-1.2, 4.4)	-0.9 (-2.9, 1.1)	
T3	0.2 (-1.4, 1.9)	1.5 (-1.0, 4.0)	-1.0 (-3.2, 1.2)	
Σ HMW				
T1	Reference	Reference	Reference	0.10
T2	-0.2 (-1.8, 1.4)	1.0 (-1.5, 3.5)	-1.2 (-3.3, 0.8)	
T3	0.2 (-1.5, 1.9)	1.5 (-1.2, 4.2)	-0.9 (-3.1, 1.2)	
Σ DEHP				
T1	Reference	Reference	Reference	0.20
T2	1.1 (-0.5, 2.7)	1.2 (-1.3, 3.8)	1.0 (-1.1, 3.0)	
T3	-0.4 (-2.1, 1.2)	0.0 (-2.7, 2.7)	-0.7 (-2.8, 1.4)	
<i>Metacognition</i>				
Σ LMW				
T1	Reference	Reference	Reference	0.49
T2	-0.1 (-1.7, 1.6)	0.5 (-2.0, 3.0)	-0.7 (-2.8, 1.5)	
T3	-1.2 (-2.8, 0.4)	0.0 (-2.1, 2.2)	-2.5 (-4.8, -0.2)	
Σ HMW				
T1	Reference	Reference	Reference	0.64
T2	0.4 (-1.2, 1.9)	0.2 (-2.0, 2.4)	0.5 (-1.7, 2.6)	
T3	-0.9 (-2.5, 0.8)	0.2 (-2.2, 2.6)	-1.9 (-4.2, 0.5)	
Σ DEHP				
T1	Reference	Reference	Reference	0.87
T2	1.4 (-0.2, 2.9)	0.3 (-2.0, 2.6)	2.3 (0.2, 4.5)	
T3	-1.0 (-2.6, 0.6)	-0.6 (-2.9, 1.7)	-1.4 (-3.6, 0.9)	
<i>Global executive composite</i>				
Σ LMW				
T1	Reference	Reference	Reference	0.35
T2	0.1 (-1.6, 1.7)	1.1 (-1.6, 3.7)	-0.8 (-2.9, 1.3)	
T3	-0.7 (-2.3, 0.9)	0.7 (-1.7, 3.0)	-2.1 (-4.3, 0.2)	
Σ HMW				
T1	Reference	Reference	Reference	0.44
T2	0.2 (-1.4, 1.7)	0.6 (-1.8, 2.9)	-0.3 (-2.4, 1.9)	
T3	-0.5 (-2.2, 1.2)	0.8 (-1.8, 3.4)	-1.6 (-3.9, 0.7)	
Σ DEHP				
T1	Reference	Reference	Reference	0.67
T2	1.3 (-0.3, 2.9)	0.8 (-1.7, 3.2)	1.8 (-0.3, 4.0)	
T3	-0.9 (-2.5, 0.8)	-0.4 (-2.9, 2.1)	-1.3 (-3.5, 1.0)	
<i>NEPSY Tower</i>				
Σ LMW				

T1	Reference	Reference	Reference	0.47
T2	0.4 (-0.3, 1.2)	0.8 (-0.4, 2.1)	0.3 (-0.6, 1.3)	
T3	0.7 (0.0, 1.5)	0.4 (-0.8, 1.7)	1.1 (0.1, 2.0)	
ΣHMW				
T1	Reference	Reference	Reference	0.48
T2	-0.3 (-1.0, 0.4)	-0.6 (-1.8, 0.7)	0.1 (-0.9, 1.1)	
T3	0.4 (-0.3, 1.1)	0.4 (-1.0, 1.8)	0.5 (-0.4, 1.4)	
ΣDEHP				
T1	Reference	Reference	Reference	0.51
T2	-0.1 (-0.9, 0.7)	0.0 (-1.2, 1.3)	0.0 (-1.1, 1.1)	
T3	0.3 (-0.4, 1.0)	0.3 (-1.0, 1.6)	0.4 (-0.5, 1.2)	

Abbreviations: T1, Tertile 1; T2, Tertile 2; T3, Tertile 3; BRIEF, Behavior Rating Inventory Executive Function; MEP, monoethyl phthalate; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; MCP, mono(3-carboxypropyl) phthalate; MCOP, mono(carboxyooctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; ΣDEHP, sum of di-2-ethylhexyl phthalate metabolites; MEHP, mono(2-ethylhexyl) phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECCP, mono(2-ethyl-5-carboxypentyl) phthalate; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣLMW, sum of metabolites of low-molecular weight phthalates.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^aSeparate models created for each phthalate metabolite or sum of metabolites (ΣDEHP, ΣHMW, ΣLMW).

^bUnits are ng/mL for all individual metabolites and nmol/mL for the sums of metabolites (ΣDEHP, ΣHMW, ΣLMW).

^cHigher scores indicate more symptomatic behavior.

^dNumber of children with behavioral regulation and global executive composite data = 331, with metacognition index data = 330.

^eNumber of boys with behavioral regulation index and global executive composite data = 159, with metacognition index data = 158.

^fNumber of girls with data = 172.

Table S7. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted)^{a,b} categorized in tertiles with **WISC-IV cognitive outcomes^c at 7 and/or 10.5 years** using GEE models for all children and stratified by child sex, CHAMACOS.

	All children ^d	Boys ^e	Girls ^f	p-int
Full-Scale IQ				
Σ LMW				
T1	Reference	Reference	Reference	0.88
T2	-2.8 (-5.1, -0.5)	-0.7 (-4.0, 2.7)	-3.7 (-7.1, -0.3)	
T3	-1.5 (-4.0, 1.0)	-1.5 (-5.3, 2.3)	-1.5 (-5.0, 2.0)	
Σ HMW				
T1	Reference	Reference	Reference	<0.01
T2	1.1 (-1.4, 3.5)	-1.3 (-5.1, 2.6)	3.6 (0.1, 7.0)	
T3	1.9 (-0.6, 4.4)	-2.8 (-7.0, 1.4)	5.8 (2.7, 8.9)	
Σ DEHP				
T1	Reference	Reference	Reference	0.02
T2	1.2 (-1.3, 3.6)	-0.6 (-4.2, 3.1)	2.9 (-0.7, 6.4)	
T3	1.4 (-1.2, 3.9)	-1.9 (-6.0, 2.2)	4.1 (0.9, 7.4)	
Verbal Comprehension IQ				
Σ LMW				
T1	Reference	Reference	Reference	0.87
T2	-1.6 (-3.9, 0.7)	0.0 (-3.5, 3.5)	-3.2 (-6.4, 0.0)	
T3	-1.4 (-4.0, 1.1)	-1.8 (-5.7, 2.2)	-1.8 (-5.4, 1.7)	
Σ HMW				
T1	Reference	Reference	Reference	0.16
T2	0.0 (-2.5, 2.4)	0.3 (-3.5, 4.2)	0.5 (-2.8, 3.7)	
T3	0.6 (-1.9, 3.1)	-1.1 (-5.2, 3.0)	2.7 (-0.6, 5.9)	
Σ DEHP				
T1	Reference	Reference	Reference	0.37
T2	-0.4 (-2.8, 2.0)	-0.5 (-4.2, 3.3)	0.2 (-3.2, 3.6)	
T3	-0.6 (-3.1, 1.9)	-1.5 (-5.6, 2.6)	0.7 (-2.6, 4.0)	
Perceptual Reasoning IQ				
Σ LMW				
T1	Reference	Reference	Reference	0.63
T2	-0.6 (-3.5, 2.2)	1.4 (-2.7, 5.5)	-1.7 (-5.7, 2.4)	
T3	0.2 (-2.7, 3.2)	1.5 (-3.0, 5.9)	0.0 (-4.1, 4.1)	
Σ HMW				
T1	Reference	Reference	Reference	0.10
T2	3.6 (0.6, 6.6)	1.1 (-3.5, 5.6)	5.4 (1.1, 9.6)	
T3	2.8 (-0.1, 5.8)	-0.9 (-5.9, 4.0)	5.2 (1.3, 9.2)	
Σ DEHP				

T1	Reference	Reference	Reference	0.24
T2	4.0 (1.1, 6.9)	2.6 (-1.8, 7.0)	4.5 (0.4, 8.7)	
T3	1.8 (-1.2, 4.8)	-1.0 (-5.7, 3.8)	3.5 (-0.5, 7.6)	
Working Memory IQ				
ΣLMW				
T1	Reference	Reference	Reference	0.70
T2	-4.4 (-6.9, -2.0)	-1.2 (-4.8, 2.3)	-5.8 (-9.2, -2.5)	
T3	-2.6 (-5.0, -0.1)	-2.6 (-6.4, 1.1)	-2.9 (-6.3, 0.5)	
ΣHMW				
T1	Reference	Reference	Reference	<0.01
T2	-0.6 (-3.1, 1.9)	-2.3 (-6.2, 1.5)	1.6 (-1.7, 5.0)	
T3	0.4 (-2.0, 2.8)	-4.0 (-7.8, -0.2)	4.4 (1.4, 7.4)	
ΣDEHP				
T1	Reference	Reference	Reference	<0.01
T2	-0.4 (-3.0, 2.1)	-2.8 (-6.6, 1.0)	2.3 (-1.2, 5.8)	
T3	0.2 (-2.1, 2.6)	-3.4 (-7.1, 0.3)	3.7 (0.6, 6.8)	
Processing Speed IQ				
ΣLMW				
T1	Reference	Reference	Reference	0.70
T2	-2.6 (-5.2, -0.1)	-3.9 (-8.2, 0.4)	-0.9 (-4.2, 2.4)	
T3	-0.2 (-2.6, 2.2)	-0.8 (-4.5, 3.0)	0.3 (-2.9, 3.5)	
ΣHMW				
T1	Reference	Reference	Reference	0.01
T2	1.2 (-1.3, 3.7)	-1.5 (-5.6, 2.6)	3.8 (0.5, 7.2)	
T3	2.3 (-0.2, 4.8)	-1.6 (-6.2, 2.9)	5.2 (2.2, 8.3)	
ΣDEHP				
T1	Reference	Reference	Reference	0.19
T2	1.4 (-1.1, 4.0)	0.5 (-3.7, 4.6)	2.7 (-0.6, 6.1)	
T3	3.1 (0.6, 5.6)	1.1 (-3.4, 5.7)	4.7 (1.6, 7.8)	

Abbreviations: T1, Tertile 1; T2, Tertile 2; T3, Tertile 3; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; FSIQ, full scale intellectual quotient (IQ); VCIQ, verbal comprehension IQ; PRIQ, perceptual reasoning IQ; WMIQ, working memory IQ; PSIQ, processing speed IQ; MEP, monoethyl phthalate; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; MCP, mono(3-carboxypropyl) phthalate; MCOP, mono(carboxyoctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; ΣDEHP, sum of di(2-ethylhexyl) phthalate metabolites; MEHP, mono(2-ethylhexyl) phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECCP, mono(2-ethyl-5-carboxypentyl) phthalate; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣLMW, sum of metabolites of low-molecular weight phthalates.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^aSeparate models created for each phthalate metabolite or sum of metabolites (ΣDEHP, ΣHMW, ΣLMW).

^bUnits are ng/mL for all individual metabolites and nmol/mL for the sums of metabolites

(ΣDEHP, ΣHMW, ΣLMW).

^cHigher scores indicate more symptomatic behavior.

^dNumber of children with FSIQ data = 321, with VCIQ and PRIQ data = 324, with WMIQ and PSIQ data = 323.

^eNumber of boys with FSIQ data = 154, with VCIQ and PRIQ data = 157, with WMIQ and PSIQ data = 156.

^fNumber of girls with FSIQ, VCIQ, PRIQ, WMIQ, and PSIQ data = 167

Table S8. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted)^{a,b} categorized in tertiles with **social cognition outcomes^c at 7, 9, and 14 years** using linear regression models for all children and stratified by child sex, CHAMACOS.

	All children ^d	Boys ^e	Girls ^f	p-int
SRS				
Σ LMW				
T1	Reference	Reference	Reference	0.79
T2	0.6 (-1.7, 2.8)	0.7 (-2.7, 4.1)	0.8 (-2.2, 3.9)	
T3	1.6 (-0.4, 3.6)	2.1 (-1.0, 5.3)	2.0 (-0.9, 4.9)	
Σ HMW				
T1	Reference	Reference	Reference	0.57
T2	-1.3 (-3.5, 0.9)	1.2 (-2.0, 4.3)	-2.6 (-5.9, 0.7)	
T3	-1.6 (-3.8, 0.6)	-0.1 (-3.4, 3.2)	-1.2 (-4.5, 2.0)	
Σ DEHP				
T1	Reference	Reference	Reference	0.67
T2	-0.6 (-2.9, 1.8)	0.9 (-2.5, 4.2)	-0.7 (-4.3, 2.8)	
T3	-1.6 (-3.7, 0.6)	-0.4 (-3.6, 2.9)	-1.3 (-4.7, 2.1)	
ENI				
Σ LMW				
T1	Reference	Reference	Reference	0.45
T2	0.1 (-0.2, 0.5)	-0.1 (-0.7, 0.4)	0.3 (-0.2, 0.8)	
T3	0.2 (-0.1, 0.6)	0.2 (-0.3, 0.7)	0.4 (-0.1, 0.9)	
Σ HMW				
T1	Reference	Reference	Reference	0.33
T2	0.0 (-0.4, 0.3)	-0.1 (-0.6, 0.4)	-0.2 (-0.7, 0.3)	
T3	0.2 (-0.2, 0.5)	-0.1 (-0.6, 0.5)	0.4 (-0.1, 0.8)	
Σ DEHP				
T1	Reference	Reference	Reference	0.25
T2	0.2 (-0.2, 0.5)	-0.1 (-0.5, 0.4)	0.2 (-0.3, 0.7)	
T3	0.3 (-0.1, 0.6)	0.0 (-0.6, 0.6)	0.6 (0.1, 1.0)	
NEPSY-II				
Σ LMW				
T1	Reference	Reference	Reference	0.71
T2	-0.4 (-1.5, 0.6)	-0.9 (-2.5, 0.7)	0.0 (-1.5, 1.5)	
T3	-0.1 (-1.2, 0.9)	-0.5 (-2.1, 1.1)	0.1 (-1.4, 1.5)	
Σ HMW				
T1	Reference	Reference	Reference	0.86
T2	-1.1 (-2.1, -0.1)	-1.7 (-3.3, -0.1)	-0.6 (-2.0, 0.8)	
T3	-0.8 (-1.8, 0.2)	-0.8 (-2.5, 0.9)	-0.8 (-2.3, 0.7)	
Σ DEHP				
T1	Reference	Reference	Reference	0.59
T2	-0.7 (-1.7, 0.3)	-1.6 (-3.2, 0.0)	0.1 (-1.3, 1.5)	
T3	-0.9 (-1.9, 0.1)	-1.1 (-2.8, 0.7)	-0.8 (-2.2, 0.6)	

Abbreviations: T1, Tertile 1; T2, Tertile 2; T3, Tertile 3; SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; NEPSY-II, A Developmental Neuropsychological Assessment, 2nd edition;; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; MCP, mono(3-carboxypropyl) phthalate; MCOP, mono(carboxyooctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites; MEHP, mono(2-ethylhexyl) phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECCP, mono(2-ethyl-5-carboxypentyl) phthalate; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ LMW, sum of metabolites of low-molecular weight phthalates.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^aSeparate models created for each phthalate metabolite or sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^bUnits are ng/mL for all individual metabolites and nmol/mL for the sums of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^cHigher scores indicate more symptomatic behavior.

^dNumber of children with SRS data = 245, with ENI data = 313, with NEPSY-II data = 310.

^eNumber of boys with SRS data = 113, with ENI data = 144, with NEPSY-II data = 143.

^fNumber of girls with SRS data = 132, with ENI data = 169, with NEPSY-II data = 167.

Table S9. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted)^{a,b} categorized in tertiles with **CADS behavioral outcomes^c at 7, 9, and/or 12 years** using GEE models for all children and stratified by child sex, CHAMACOS.

	All children ^d	Boys ^e	Girls ^f	p-int
Parent-Report				
ADHD Index				
Σ LMW				
T1	Reference	Reference	Reference	0.48
T2	0.4 (-1.0, 1.7)	1.4 (-0.6, 3.3)	-2.1 (-3.9, -0.3)	
T3	-1.0 (-2.3, 0.2)	-0.3 (-2.0, 1.4)	-1.4 (-3.3, 0.6)	
Σ HMW				
T1	Reference	Reference	Reference	0.68
T2	-0.3 (-1.5, 1.0)	0.1 (-1.8, 2.1)	-0.4 (-2.3, 1.5)	
T3	-1.2 (-2.5, 0.1)	-0.6 (-2.4, 1.2)	-1.2 (-3.1, 0.7)	
Σ DEHP				
T1	Reference	Reference	Reference	0.86
T2	0.4 (-0.9, 1.7)	-0.3 (-2.2, 1.7)	1.3 (-0.5, 3.1)	
T3	-1.3 (-2.5, 0.0)	-1.2 (-2.9, 0.6)	-1.1 (-2.9, 0.7)	
DSM-IV Total Scale				
Σ LMW				
T1	Reference	Reference	Reference	0.56
T2	0.3 (-1.1, 1.7)	1.3 (-0.8, 3.3)	-0.4 (-2.4, 1.7)	
T3	-1.1 (-2.4, 0.3)	-0.6 (-2.4, 1.3)	-1.3 (-3.3, 0.7)	
Σ HMW				
T1	Reference	Reference	Reference	0.9
T2	-1.0 (-2.3, 0.3)	-0.1 (-2.2, 1.9)	-1.3 (-3.2, 0.6)	
T3	-1.0 (-2.3, 0.4)	-0.3 (-2.1, 1.6)	-0.8 (-2.9, 1.2)	
Σ DEHP				
T1	Reference	Reference	Reference	0.76
T2	-0.5 (-1.8, 0.9)	-0.3 (-2.4, 1.7)	-0.1 (-2.0, 1.8)	
T3	-1.2 (-2.5, 0.1)	-1.2 (-3.0, 0.7)	-0.7 (-2.7, 1.2)	
DSM-IV Inattentive subscale				
Σ LMW				
T1	Reference	Reference	Reference	0.34
T2	0.2 (-1.0, 1.5)	0.8 (-0.9, 2.5)	-0.2 (-2.1, 1.6)	
T3	-1.0 (-2.2, 0.1)	-0.3 (-1.9, 1.3)	-1.4 (-3.2, 0.3)	
Σ HMW				
T1	Reference	Reference	Reference	0.99
T2	-0.8 (-2.0, 0.4)	-0.6 (-2.4, 1.3)	-0.9 (-2.6, 0.9)	
T3	-1.1 (-2.4, 0.1)	-0.7 (-2.4, 1.0)	-0.9 (-2.8, 1.0)	
Σ DEHP				
T1	Reference	Reference	Reference	0.64
T2	-0.3 (-1.5, 1.0)	-0.7 (-2.6, 1.1)	0.4 (-1.4, 2.1)	
T3	-1.1 (-2.3, 0.1)	-1.4 (-3.1, 0.3)	-0.6 (-2.3, 1.2)	
DSM-IV Hyperactive/impulsive subscale				
Σ LMW				
T1	Reference	Reference	Reference	0.99

T2	0.3 (-1.2, 1.9)	1.7 (-0.7, 4.1)	-0.5 (-2.6, 1.6)	
T3	-0.9 (-2.4, 0.5)	-0.9 (-3.0, 1.2)	-0.9 (-3.0, 1.3)	
ΣHMW				
T1	Reference	Reference	Reference	0.88
T2	-1.0 (-2.4, 0.5)	0.4 (-1.9, 2.7)	-1.5 (-3.5, 0.5)	
T3	-0.5 (-1.9, 0.9)	0.4 (-1.8, 2.6)	-0.5 (-2.6, 1.6)	
ΣDEHP				
T1	Reference	Reference	Reference	0.87
T2	-0.6 (-2.1, 0.8)	0.4 (-1.9, 2.7)	-0.9 (-2.8, 1.1)	
T3	-1.1 (-2.5, 0.3)	-0.7 (-2.8, 1.4)	-0.8 (-2.8, 1.2)	
Teacher-Report				
<i>ADHD Index</i>				
ΣLMW				
T1	Reference	Reference	Reference	0.57
T2	0.6 (-3.0, 4.1)	2.5 (-2.6, 7.6)	-1.4 (-6.4, 3.7)	
T3	-0.8 (-4.3, 2.6)	-0.1 (-4.8, 4.7)	-2.1 (-7.3, 3.1)	
ΣHMW				
T1	Reference	Reference	Reference	0.12
T2	-1.7 (-5.2, 1.8)	-1.8 (-6.7, 3.1)	-1.8 (-7.3, 3.6)	
T3	-0.9 (-4.6, 2.7)	2.2 (-3.0, 7.4)	-4.1 (-9.6, 1.5)	
ΣDEHP				
T1	Reference	Reference	Reference	0.36
T2	0.8 (-2.8, 4.3)	1.3 (-3.6, 6.2)	-0.1 (-5.7, 5.5)	
T3	-1.6 (-5.1, 1.9)	0.1 (-5.0, 5.2)	-3.9 (-9.2, 1.5)	
<i>DSM-IV Total Scale</i>				
ΣLMW				
T1	Reference	Reference	Reference	0.95
T2	0.4 (-2.6, 3.3)	0.8 (-3.6, 5.1)	-0.1 (-4.3, 4.0)	
T3	-0.4 (-3.3, 2.6)	-0.4 (-4.5, 3.7)	-0.7 (-5.1, 3.7)	
ΣHMW				
T1	Reference	Reference	Reference	0.10
T2	-1.1 (-4.1, 1.9)	-1.2 (-5.3, 2.9)	-1.1 (-5.7, 3.5)	
T3	-0.4 (-3.5, 2.7)	2.5 (-2.0, 7.0)	-3.3 (-7.9, 1.3)	
ΣDEHP				
T1	Reference	Reference	Reference	0.29
T2	0.6 (-2.4, 3.7)	1.4 (-2.8, 5.6)	-0.1 (-4.7, 4.4)	
T3	-0.8 (-3.8, 2.2)	1.1 (-3.3, 5.5)	-2.9 (-7.5, 1.6)	
<i>DSM-IV Inattentive subscale</i>				
ΣLMW				
T1	Reference	Reference	Reference	0.97
T2	0.7 (-1.9, 3.3)	0.2 (-4.2, 4.6)	1.0 (-2.2, 4.2)	
T3	-0.1 (-2.7, 2.6)	-0.3 (-4.4, 3.8)	-0.2 (-3.6, 3.2)	
ΣHMW				
T1	Reference	Reference	Reference	0.08
T2	-1.0 (-3.6, 1.6)	-1.7 (-5.7, 2.4)	-0.6 (-4.1, 3.0)	
T3	-0.5 (-3.1, 2.2)	2.6 (-1.9, 7.1)	-3.1 (-6.5, 0.3)	
ΣDEHP				

T1	Reference	Reference	Reference	0.26
T2	0.1 (-2.5, 2.7)	0.8 (-3.4, 5.0)	-0.7 (-4.1, 2.8)	
T3	-0.7 (-3.3, 2.0)	1.4 (-3.1, 5.9)	-2.5 (-5.9, 0.8)	
<i>DSM-IV Hyperactive/impulsive subscale</i>				
ΣLMW				
T1	Reference	Reference	Reference	0.90
T2	0.0 (-3.2, 3.1)	1.0 (-3.5, 5.6)	-1.0 (-5.3, 3.4)	
T3	-0.2 (-3.3, 3.0)	0.0 (-4.3, 4.4)	-0.6 (-5.1, 4.0)	
ΣHMW				
T1	Reference	Reference	Reference	0.24
T2	-0.2 (-3.4, 3.1)	0.0 (-4.4, 4.5)	0.0 (-4.9, 4.9)	
T3	1.0 (-2.2, 4.2)	2.6 (-2.2, 7.3)	-1.3 (-6.0, 3.5)	
ΣDEHP				
T1	Reference	Reference	Reference	0.52
T2	2.1 (-1.1, 5.4)	2.3 (-2.3, 6.9)	2.1 (-2.6, 6.7)	
T3	0.3 (-2.8, 3.4)	1.0 (-3.5, 5.5)	-1.5 (-6.2, 3.1)	
<p><i>Abbreviations:</i> T1, Tertile 1; T2, Tertile 2; T3, Tertile 3; ADHD, Attention Deficit Hyperactivity Disorder; CADS, Conners' ADHD/DSM-IV Scales; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; MEP, monoethyl phthalate; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; MCP, mono(3-carboxypropyl) phthalate; MCOP, mono(carboxyoctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; ΣDEHP, sum of di(2-ethylhexyl) phthalate metabolites; MEHP, mono(2-ethylhexyl) phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECCP, mono(2-ethyl-5-carboxypentyl) phthalate; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣLMW, sum of metabolites of low-molecular weight phthalates.</p> <p>Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment or interview; child sex, child age at time of assessment or interview, language of assessment or interview, HOME score, and household income at time of assessment or interview.</p> <p>^aSeparate models created for each phthalate metabolite or sum of metabolites (ΣDEHP, ΣHMW, ΣLMW).</p> <p>^bUnits are ng/mL for all individual metabolites and nmol/mL for the sums of metabolites (ΣDEHP, ΣHMW, ΣLMW).</p> <p>^cHigher scores indicate more symptomatic behavior.</p> <p>^dNumber of children with parent-report data = 332, with teacher-report ADHD Index data=261, with teacher-report DSM-IV total scale data = 260, with teacher-report inattentive scale and hyperactive/impulsive scale data = 264.</p> <p>^eNumber of boys with parent-report data = 159, with teacher-report ADHD Index and DSM-IV total scale data=122, with teacher-report inattentive scale and hyperactive/impulsive scale data = 123.</p> <p>^fNumber of girls with parent-report data = 173, with teacher-report ADHD Index = 139, with teacher-report DSM-IV total scale data = 138, with teacher-report inattentive scale and hyperactive/impulsive scale data = 141.</p>				

Table S10. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted)^{a,b} categorized in tertiles with **BASC behavioral outcomes^c at 7 and/or 10.5 years** using GEE models for all children and stratified by child sex, CHAMACOS.

	All children ^d	Boys ^e	Girls ^f	p-int
Parent-Report				
<i>Internalizing problems</i>				
Σ LMW				
T1	Reference	Reference	Reference	0.89
T2	-0.3 (-2.0, 1.4)	1.3 (-1.3, 3.8)	-1.6 (-3.8, 0.7)	
T3	1.4 (-0.4, 3.1)	2.0 (-0.5, 4.6)	1.7 (-0.7, 4.0)	
Σ HMW				
T1	Reference	Reference	Reference	0.85
T2	0.7 (-0.9, 2.4)	1.1 (-1.3, 3.5)	0.3 (-2.1, 2.6)	
T3	1.4 (-0.4, 3.2)	1.8 (-0.9, 4.6)	1.5 (-0.8, 3.9)	
Σ DEHP				
T1	Reference	Reference	Reference	0.92
T2	0.3 (-1.3, 2.0)	0.2 (-2.2, 2.5)	0.5 (-1.7, 2.8)	
T3	0.8 (-1.0, 2.7)	0.6 (-2.2, 3.4)	1.4 (-1.0, 3.8)	
<i>Depression Scale</i>				
Σ LMW				
T1	Reference	Reference	Reference	0.37
T2	1.4 (-1.0, 3.8)	2.9 (-0.3, 6.1)	0.0 (-3.6, 3.5)	
T3	1.0 (-1.5, 3.4)	1.6 (-1.7, 4.8)	0.3 (-3.3, 4.0)	
Σ HMW				
T1	Reference	Reference	Reference	0.31
T2	0.0 (-2.5, 2.4)	1.3 (-2.1, 4.7)	-1.4 (-5.0, 2.2)	
T3	0.0 (-2.4, 2.4)	0.4 (-2.8, 3.6)	-0.7 (-4.2, 2.9)	
Σ DEHP				
T1	Reference	Reference	Reference	0.23
T2	0.0 (-2.5, 2.4)	0.6 (-2.7, 4.0)	-0.7 (-4.3, 2.9)	
T3	0.0 (-2.4, 2.4)	-0.1 (-3.3, 3.2)	-0.1 (-3.5, 3.4)	
<i>Anxiety Scale</i>				
Σ LMW				
T1	Reference	Reference	Reference	0.07
T2	1.4 (-1.3, 4.2)	1.9 (-2.0, 5.9)	0.6 (-3.2, 4.3)	
T3	1.9 (-1.0, 4.7)	2.5 (-1.4, 6.5)	1.1 (-2.8, 5.1)	
Σ HMW				
T1	Reference	Reference	Reference	0.08
T2	-0.1 (-2.7, 2.6)	2.4 (-1.2, 5.9)	-2.7 (-6.6, 1.3)	
T3	1.0 (-1.9, 3.9)	1.3 (-3.0, 5.6)	0.1 (-3.8, 4.1)	
Σ DEHP				
T1	Reference	Reference	Reference	0.04
T2	0.1 (-2.6, 2.8)	2.0 (-1.6, 5.7)	-1.8 (-5.7, 2.1)	
T3	0.8 (-2.0, 3.7)	0.3 (-3.9, 4.4)	1.0 (-2.9, 4.9)	
<i>Externalizing problems</i>				

Σ LMW				
T1	Reference	Reference	Reference	0.61
T2	0.4 (-1.2, 2.0)	2.4 (-0.3, 5.0)	-1.2 (-3.2, 0.7)	
T3	0.1 (-1.5, 1.7)	0.5 (-2.0, 2.9)	-0.5 (-2.5, 1.5)	
Σ HMW				
T1	Reference	Reference	Reference	0.83
T2	0.1 (-1.4, 1.7)	0.8 (-1.9, 3.6)	-0.1 (-2.1, 1.9)	
T3	0.7 (-0.8, 2.2)	0.8 (-2.1, 3.6)	0.4 (-1.6, 2.4)	
Σ DEHP				
T1	Reference	Reference	Reference	0.58
T2	0.7 (-0.9, 2.3)	0.3 (-2.4, 3.1)	1.3 (-0.7, 3.3)	
T3	0.4 (-1.1, 1.8)	-0.4 (-3.1, 2.2)	0.5 (-1.3, 2.4)	
Attention problems				
Σ LMW				
T1	Reference	Reference	Reference	<0.01
T2	0.3 (-1.7, 2.3)	3.1 (-0.1, 6.3)	-2.1 (-4.9, 0.6)	
T3	0.0 (-1.8, 1.9)	3.1 (0.3, 5.9)	-2.7 (-5.3, -0.1)	
Σ HMW				
T1	Reference	Reference	Reference	0.81
T2	1.1 (-1.0, 3.1)	0.6 (-2.7, 3.9)	1.6 (-1.2, 4.4)	
T3	-1.6 (-3.5, 0.3)	-1.2 (-4.4, 2.0)	-1.8 (-4.4, 0.8)	
Σ DEHP				
T1	Reference	Reference	Reference	0.85
T2	1.9 (-0.1, 3.9)	0.0 (-3.3, 3.2)	3.9 (1.3, 6.5)	
T3	-1.4 (-3.2, 0.5)	-1.2 (-4.3, 2.0)	-1.5 (-4.1, 1.0)	
Hyperactivity				
Σ LMW				
T1	Reference	Reference	Reference	0.84
T2	0.0 (-1.5, 1.6)	2.3 (-0.3, 5.0)	-1.7 (-3.5, 0.1)	
T3	-0.5 (-2.0, 1.1)	-0.6 (-3.1, 1.8)	-0.5 (-2.4, 1.4)	
Σ HMW				
T1	Reference	Reference	Reference	0.82
T2	-0.4 (-2.0, 1.1)	0.5 (-2.3, 3.3)	-0.8 (-2.7, 1.1)	
T3	0.2 (-1.2, 1.7)	0.3 (-2.5, 3.1)	0.2 (-1.6, 2.1)	
Σ DEHP				
T1	Reference	Reference	Reference	0.20
T2	0.3 (-1.2, 1.9)	0.1 (-2.6, 2.9)	1.0 (-0.9, 2.9)	
T3	-0.1 (-1.5, 1.3)	-1.1 (-3.6, 1.5)	0.6 (-1.2, 2.4)	
Teacher-Report				
Internalizing problems				
Σ LMW				
T1	Reference	Reference	Reference	0.57
T2	-5.3 (-8.8, -1.7)	-3.7 (-8.3, 1.0)	-6.9 (-12.2, -1.6)	
T3	-2.8 (-6.6, 1.0)	-4.1 (-8.6, 0.5)	-2.1 (-8.2, 3.9)	
Σ HMW				
T1	Reference	Reference	Reference	0.84
T2	-3.6 (-7.3, 0.1)	-3.2 (-7.9, 1.5)	-4.2 (-9.9, 1.4)	

T3	-2.3 (-6.1, 1.6)	-2.9 (-8.2, 2.3)	-3.4 (-9.3, 2.5)	
ΣDEHP				
T1	Reference	Reference	Reference	0.03
T2	-4.2 (-7.7, -0.6)	-3.5 (-8.1, 1.2)	-5.0 (-10.4, 0.4)	
T3	-3.6 (-7.4, 0.3)	-3.2 (-8.6, 2.2)	-5.6 (-11.5, 0.2)	
Depression Scale				
ΣLMW				
T1	Reference	Reference	Reference	0.45
T2	-4.3 (-7.3, -1.2)	-2.4 (-6.8, 2.0)	-5.8 (-10.2, -1.3)	
T3	-2.6 (-5.8, 0.6)	-1.5 (-5.8, 2.9)	-3.9 (-8.6, 0.8)	
ΣHMW				
T1	Reference	Reference	Reference	0.11
T2	-1.9 (-4.9, 1.0)	0.1 (-4.1, 4.3)	-3.8 (-8.4, 0.9)	
T3	-1.0 (-4.0, 2.0)	1.5 (-3.1, 6.2)	-3.6 (-8.2, 0.9)	
ΣDEHP				
T1	Reference	Reference	Reference	0.14
T2	-2.0 (-5.0, 1.0)	0.6 (-3.7, 4.8)	-4.4 (-8.8, 0.1)	
T3	-3.0 (-6.0, -0.0)	-0.9 (-5.5, 3.6)	-5.7 (-10.4, -1.1)	
Anxiety Scale				
ΣLMW				
T1	Reference	Reference	Reference	0.82
T2	-5.2 (-8.8, -1.6)	-3.2 (-7.9, 1.4)	-7.1 (-12.8, -1.5)	
T3	-3.4 (-7.0, 0.3)	-4.0 (-8.5, 0.4)	-3.3 (-9.1, 2.5)	
ΣHMW				
T1	Reference	Reference	Reference	0.86
T2	-3.0 (-6.7, 0.7)	-2.3 (-7.2, 2.5)	-3.5 (-9.2, 2.2)	
T3	-3.4 (-7.0, 0.1)	-3.5 (-9.2, 2.1)	-4.2 (-9.7, 1.2)	
ΣDEHP				
T1	Reference	Reference	Reference	0.45
T2	-3.6 (-7.3, 0.1)	-2.6 (-7.4, 2.2)	-4.4 (-9.9, 1.2)	
T3	-4.5 (-8.1, -0.9)	-2.9 (-8.5, 2.8)	-6.7 (-12.2, -1.1)	
Externalizing problems				
ΣLMW				
T1	Reference	Reference	Reference	0.39
T2	-0.7 (-3.4, 2.1)	0.5 (-4.3, 5.2)	-1.6 (-4.8, 1.5)	
T3	-0.7 (-3.7, 2.4)	0.8 (-4.3, 5.9)	-2.2 (-5.5, 1.1)	
ΣHMW				
T1	Reference	Reference	Reference	0.43
T2	-1.3 (-4.1, 1.4)	0.7 (-4.2, 5.7)	-2.4 (-5.4, 0.7)	
T3	0.5 (-2.4, 3.4)	1.4 (-3.6, 6.5)	-1.0 (-4.6, 2.6)	
ΣDEHP				
T1	Reference	Reference	Reference	0.79
T2	1.0 (-2.1, 4.0)	3.1 (-2.0, 8.2)	-0.4 (-3.6, 2.9)	
T3	0.0 (-2.7, 2.7)	0.3 (-4.4, 5.1)	-1.1 (-4.6, 2.4)	
Attention problems				
ΣLMW				
T1	Reference	Reference	Reference	0.78

T2	0.1 (-2.3, 2.4)	0.0 (-3.8, 3.8)	-0.1 (-3.1, 2.9)	
T3	-0.4 (-2.7, 1.9)	-0.3 (-3.7, 3.1)	-0.9 (-4.2, 2.3)	
ΣHMW				
T1	Reference	Reference	Reference	0.49
T2	-0.8 (-3.1, 1.4)	-1.6 (-5.2, 1.9)	-0.3 (-3.5, 2.9)	
T3	-1.0 (-3.3, 1.3)	0.2 (-3.8, 4.1)	-2.0 (-5.2, 1.2)	
ΣDEHP				
T1	Reference	Reference	Reference	0.96
T2	0.3 (-2.0, 2.5)	0.8 (-2.5, 4.1)	-0.4 (-3.6, 2.8)	
T3	-1.2 (-3.5, 1.1)	-0.9 (-4.8, 3.0)	-1.5 (-4.8, 1.7)	
Hyperactivity				
ΣLMW				
T1	Reference	Reference	Reference	0.71
T2	0.0 (-2.9, 2.8)	1.4 (-3.6, 6.5)	-1.2 (-4.4, 2.0)	
T3	-0.1 (-3.1, 3.0)	0.6 (-4.5, 5.6)	-0.9 (-4.4, 2.6)	
ΣHMW				
T1	Reference	Reference	Reference	0.52
T2	-1.7 (-4.7, 1.3)	-0.7 (-5.8, 4.4)	-2.1 (-5.6, 1.3)	
T3	-0.1 (-3.1, 2.9)	0.4 (-4.8, 5.7)	-1.5 (-5.2, 2.3)	
ΣDEHP				
T1	Reference	Reference	Reference	0.85
T2	0.7 (-2.4, 3.9)	1.8 (-3.4, 7.1)	0.0 (-3.5, 3.5)	
T3	-0.6 (-3.4, 2.3)	-0.6 (-5.5, 4.4)	-1.6 (-5.2, 2.0)	
Self-Report				
Internalizing problems				
ΣLMW				
T1	Reference	Reference	Reference	0.62
T2	0.8 (-2.1, 3.8)	1.6 (-2.9, 6.1)	0.5 (-3.8, 4.8)	
T3	3.2 (0.3, 6.2)	5.0 (0.9, 9.1)	2.5 (-1.9, 6.8)	
ΣHMW				
T1	Reference	Reference	Reference	0.93
T2	-2.8 (-5.8, 0.3)	1.3 (-3.1, 5.7)	-6.8 (-11.0, -2.5)	
T3	0.7 (-2.3, 3.7)	0.7 (-3.4, 4.7)	0.3 (-4.2, 4.8)	
ΣDEHP				
T1	Reference	Reference	Reference	0.70
T2	-1.7 (-4.8, 1.4)	-0.6 (-5.0, 3.8)	-2.6 (-7.3, 2.0)	
T3	0.9 (-2.0, 3.8)	1.5 (-2.6, 5.6)	0.6 (-3.6, 4.8)	
Depression Scale				
ΣLMW				
T1	Reference	Reference	Reference	0.21
T2	0.8 (-1.9, 3.5)	0.3 (-3.3, 3.9)	2.0 (-1.9, 5.8)	
T3	1.4 (-1.3, 4.0)	0.1 (-3.6, 3.7)	3.3 (-1.0, 7.6)	
ΣHMW				
T1	Reference	Reference	Reference	0.78
T2	0.3 (-2.5, 3.0)	0.0 (-3.6, 3.5)	0.2 (-4.0, 4.4)	
T3	0.8 (-2.0, 3.7)	-0.2 (-4.0, 3.6)	1.1 (-3.2, 5.4)	
ΣDEHP				
T1	Reference	Reference	Reference	0.75

T2	1.4 (-1.6, 4.3)	1.2 (-2.6, 5.0)	1.3 (-3.2, 5.9)	
T3	0.7 (-2.2, 3.5)	-0.6 (-4.4, 3.3)	1.2 (-3.2, 5.6)	
Anxiety Scale				
ΣLMW				
T1	Reference	Reference	Reference	0.28
T2	0.3 (-2.0, 2.5)	-0.1 (-3.7, 3.6)	0.6 (-2.5, 3.7)	
T3	1.9 (-0.6, 4.5)	0.7 (-3.1, 4.5)	3.1 (-0.4, 6.7)	
ΣHMW				
T1	Reference	Reference	Reference	0.81
T2	-0.1 (-2.6, 2.4)	-0.6 (-4.6, 3.4)	0.4 (-3.1, 3.9)	
T3	0.4 (-2.0, 2.9)	-0.6 (-4.9, 3.7)	0.9 (-2.6, 4.4)	
ΣDEHP				
T1	Reference	Reference	Reference	0.95
T2	0.2 (-2.4, 2.8)	-0.6 (-4.6, 3.4)	1.0 (-2.7, 4.6)	
T3	0.7 (-1.8, 3.2)	-0.3 (-4.5, 3.9)	1.1 (-2.5, 4.6)	
Attention problems				
ΣLMW				
T1	Reference	Reference	Reference	0.79
T2	-1.6 (-4.2, 1.0)	-2.7 (-6.8, 1.5)	0.2 (-3.2, 3.6)	
T3	-0.1 (-2.8, 2.6)	0.7 (-3.3, 4.7)	-0.5 (-4.2, 3.2)	
ΣHMW				
T1	Reference	Reference	Reference	0.99
T2	1.1 (-1.6, 3.9)	1.8 (-2.6, 6.3)	0.3 (-3.3, 3.9)	
T3	0.1 (-2.5, 2.7)	1.1 (-2.7, 5.0)	-0.3 (-3.9, 3.4)	
ΣDEHP				
T1	Reference	Reference	Reference	0.69
T2	2.4 (-0.4, 5.1)	2.1 (-2.3, 6.6)	2.6 (-0.9, 6.1)	
T3	-0.4 (-2.9, 2.2)	-0.4 (-4.4, 3.6)	0.1 (-3.4, 3.7)	
Hyperactivity				
ΣLMW				
T1	Reference	Reference	Reference	0.86
T2	-0.3 (-3.0, 2.3)	0.6 (-3.8, 5.0)	-0.6 (-4.1, 3.0)	
T3	0.8 (-1.7, 3.4)	0.7 (-3.2, 4.6)	0.9 (-2.6, 4.5)	
ΣHMW				
T1	Reference	Reference	Reference	0.48
T2	0.7 (-2.1, 3.5)	1.6 (-2.8, 6.1)	-0.2 (-4.0, 3.6)	
T3	1.0 (-1.6, 3.7)	2.4 (-1.9, 6.7)	-0.2 (-3.9, 3.5)	
ΣDEHP				
T1	Reference	Reference	Reference	0.74
T2	1.1 (-1.8, 3.9)	1.7 (-3.0, 6.3)	0.7 (-3.0, 4.5)	
T3	0.4 (-2.0, 2.9)	0.7 (-3.4, 4.7)	-0.2 (-3.8, 3.4)	
<p><i>Abbreviations:</i> T1, Tertile 1; T2, Tertile 2; T3, Tertile 3; BASC-2, Behavior Assessment System for Children, 2nd edition; MEP, monoethyl phthalate; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; MCP, mono(3-carboxypropyl) phthalate; MCOP, mono(carboxyooctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; ΣDEHP, sum of di(2-ethylhexyl) phthalate metabolites; MEHP, mono(2-ethylhexyl) phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECCP, mono(2-ethyl-5-carboxypentyl) phthalate; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣLMW, sum of</p>				

metabolites of low-molecular weight phthalates.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^aSeparate models created for each phthalate metabolite or sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^bUnits are ng/mL for all individual metabolites and nmol/mL for the sums of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^cHigher scores indicate more symptomatic behavior.

^dNumber of children with parent-report internalizing problems, externalizing problems, hyperactivity, and attention problems data = 328, with parent-report depression scale data = 322, with parent-report anxiety scale data = 313, with teacher-report data = 265, with self-report internalizing problems = 276, with self-report depression scale data = 317, with self-report anxiety scale data = 316, with self-report hyperactivity and attention problems scale data = 315.

^eNumber of boys with parent-report internalizing problems, externalizing problems, hyperactivity, and attention problems data = 158, with parent-report depression scale data = 153, with parent-report anxiety scale data = 150, with teacher-report data = 123, with self-report internalizing problems = 128, with self-report depression scale data = 151, with self-report anxiety scale, hyperactivity, and attention problems scale data = 150.

^fNumber of girls with parent-report internalizing problems, externalizing problems, hyperactivity, and attention problems data = 170, with parent-report depression scale data = 169 with parent-report anxiety scale data = 163, with teacher-report data = 142, with self-report internalizing problems = 128, with self-report depression scale and anxiety scale data = 166, with self-report hyperactivity and attention problems scale data = 165.

Table S11. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted)^{a,b} categorized in tertiles with **CPT-II behavioral outcomes^c at 9 and/or 12 years** using GEE models for all children and stratified by child sex, CHAMACOS.

	All children ^c	Boys ^d	Girls ^e	p-int
Errors of omission				
Σ LMW				
T1	Reference	Reference	Reference	0.80
T2	-1.5 (-4.0, 1.1)	-2.2 (-6.1, 1.8)	-0.4 (-4.1, 3.2)	
T3	2.6 (-0.6, 5.9)	2.7 (-2.5, 7.9)	3.4 (-1.3, 8.1)	
Σ HMW				
T1	Reference	Reference	Reference	0.11
T2	-1.8 (-4.7, 1.2)	-2.3 (-6.3, 1.7)	-1.1 (-5.5, 3.4)	
T3	-0.5 (-3.4, 2.5)	3.7 (-1.3, 8.7)	-2.7 (-6.6, 1.2)	
Σ DEHP				
T1	Reference	Reference	Reference	0.3
T2	-1.7 (-4.6, 1.3)	-2.6 (-6.7, 1.6)	-0.8 (-5.2, 3.5)	
T3	-1.1 (-4.1, 1.8)	1.3 (-3.6, 6.2)	-2.7 (-6.6, 1.3)	
Errors of commission				
Σ LMW				
T1	Reference	Reference	Reference	0.96
T2	-0.4 (-2.5, 1.8)	0.5 (-3.0, 4.0)	-1.0 (-3.8, 1.8)	
T3	1.3 (-0.7, 3.3)	1.3 (-1.9, 4.5)	1.4 (-1.5, 4.2)	
Σ HMW				
T1	Reference	Reference	Reference	0.92
T2	-1.3 (-3.6, 0.9)	-2.2 (-5.7, 1.3)	-1.0 (-4.0, 2.0)	
T3	0.2 (-1.9, 2.3)	0.6 (-3.0, 4.2)	-0.2 (-3.0, 2.6)	
Σ DEHP				
T1	Reference	Reference	Reference	0.47
T2	-1.0 (-3.2, 1.2)	-1.4 (-4.8, 2.1)	-1.1 (-4.0, 1.8)	
T3	-0.5 (-2.6, 1.6)	-1.7 (-5.1, 1.8)	0.0 (-2.8, 2.9)	
ADHD Confidence Index				
Σ LMW				
T1	Reference	Reference	Reference	0.24
T2	0.6 (-3.1, 4.3)	-4.6 (-10.2, 1.1)	4.9 (-0.3, 10.0)	
T3	2.9 (-1.2, 7.0)	0.6 (-5.3, 6.4)	5.6 (-0.4, 11.7)	
Σ HMW				
T1	Reference	Reference	Reference	0.16
T2	2.6 (-1.4, 6.6)	-1.0 (-6.9, 5.0)	-3.3 (-9.1, 2.5)	
T3	-1.6 (-5.5, 2.4)	1.7 (-4.3, 7.7)	-4.3 (-9.9, 1.3)	
Σ DEHP				
T1	Reference	Reference	Reference	0.47
T2	-1.7 (-5.6, 2.3)	-3.6 (-9.6, 2.5)	-0.5 (-6.2, 5.1)	
T3	-2.2 (-6.2, 1.7)	-1.2 (-7.2, 4.8)	-3.9 (-9.6, 1.8)	
<i>Abbreviations:</i> T1, Tertile 1; T2, Tertile 2; T3, Tertile 3; CPT-II, Continuous Performance Test, 2nd edition; MEP, monoethyl phthalate; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; MCP, mono(3-carboxypropyl)				

phthalate; MCOP, mono(carboxyooctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites; MEHP, mono(2-ethylhexyl) phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECCP, mono(2-ethyl-5-carboxypentyl) phthalate; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ LMW, sum of metabolites of low-molecular weight phthalates.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^aSeparate models created for each phthalate metabolite or sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^bUnits are ng/mL for all individual metabolites and nmol/mL for the sums of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^cHigher scores indicate more symptomatic behavior.

^dNumber of children with data = 317.

^eNumber of boys with data = 151.

^fNumber of girls with data = 166.

Table S12. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years using GEE models stratified by sex, CHAMACOS.

Outcomes	Orientation ^b	Σ LMW			Σ HMW			Σ DEHP		
		Boys	Girls	p-int	Boys	Girls	p-int	Boys	Girls	p-int
<i>Executive function</i>										
WCST (<i>T</i> -score)										
Errors ^c	(-)	0.4 (-0.5, 1.4)	-0.2 (-0.9, 0.6)	0.23	0.7 (-0.7, 2.0)	0.4 (-0.8, 1.6)	0.74	0.6 (-0.7, 1.8)	0.4 (-0.7, 1.6)	0.87
Perseverative Errors ^c	(-)	1.4 (0.3, 2.5)	0.1 (-0.9, 1.1)	0.08	0.9 (-1.0, 2.7)	0.8 (-0.9, 2.4)	0.86	0.9 (-0.9, 2.6)	0.6 (-0.9, 2.2)	0.80
BRIEF – parent report (<i>T</i> -score)										
Behavioral regulation Index ^d	(+)	0.3 (-0.6, 1.1)	0.0 (-0.7, 0.6)	0.56	-0.1 (-1.6, 1.5)	0.3 (-0.9, 1.5)	0.78	-0.4 (-1.8, 1.0)	0.3 (-0.8, 1.4)	0.47
Metacognition Index ^e	(+)	-0.3 (-1.0, 0.5)	-0.4 (-1.1, 0.2)	0.66	-0.2 (-1.5, 1.0)	0.2 (-1.1, 1.6)	0.71	-0.5 (-1.7, 0.6)	0.3 (-0.9, 1.5)	0.39
Global Executive Composite ^d	(+)	-0.1 (-0.9, 0.7)	-0.3 (-1.0, 0.4)	0.62	-0.1 (-1.5, 1.3)	0.3 (-1.0, 1.5)	0.77	-0.5 (-1.8, 0.8)	0.3 (-0.8, 1.5)	0.43
NEPSY Tower ^f	(-)	0.0 (-0.3, 0.3)	0.2 (-0.1, 0.5)	0.35	0.1 (-0.5, 0.6)	0.2 (-0.2, 0.5)	0.72	0.0 (-0.5, 0.5)	0.1 (-0.2, 0.5)	0.69
<i>Cognition</i>										
WISC-IV ^g										
FSIQ ^h	(-)	-0.3 (-1.5, 0.9)	-0.1 (-1.2, 0.9)	0.89	-1.9 (-4.1, 0.3)	1.8 (0.1, 3.4)	0.01	-1.7 (-3.8, 0.3)	1.6 (0.0, 3.2)	0.01
VCIQ ⁱ	(-)	-0.4 (-1.6, 0.9)	-0.4 (-1.4, 0.5)	0.92	-1.0 (-3.3, 1.4)	0.6 (-0.8, 2.0)	0.26	-0.8 (-3.1, 1.4)	0.5 (-0.8, 1.8)	0.30
PRIQ ⁱ	(-)	0.4 (-1.0, 1.7)	0.2 (-1.1, 1.6)	0.89	-1.4 (-3.5, 0.7)	1.7 (-0.5, 3.9)	0.04	-1.4 (-3.3, 0.4)	1.4 (-0.6, 3.5)	0.04
WMIQ ^j	(-)	-1.0 (-2.0, 0.0)	-0.3 (-1.4, 0.8)	0.37	-2.1 (-4.2, 0.0)	1.8 (0.1, 3.4)	<0.01	-1.9 (-3.9, 0.1)	1.6 (0.1, 3.2)	<0.01
PSIQ ^j	(-)	0.1 (-1.0, 1.1)	0.3 (-0.6, 1.2)	0.68	-0.8 (-2.9, 1.2)	1.5 (0.2, 2.9)	0.06	-0.8 (-2.7, 1.1)	1.5 (0.1, 2.8)	0.05

Abbreviations: WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; BRIEF, Behavior Rating Inventory Executive Function; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; VCIQ, verbal comprehension IQ; PRIQ, perceptual reasoning IQ; WMIQ, working memory IQ; PSIQ, processing speed IQ; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di-2-ethylhexyl phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment. WCST models were also adjusted for children’s video game usage.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^c Number of children with data = 318 (152 boys and 166 girls).

^d Number of children with data = 331 (159 boys and 172 girls).

^e Number of children with data = 330 (158 boys and 172 girls).

^f Number of children with data = 313 (148 boys and 165 girls).

^g Data presented in Figure 1.

^h Number of children with data = 321 (154 boys and 167 girls).

ⁱ Number of children with data = 324 (157 boys and 167 girls).

^j Number of children with data = 323 (156 boys and 167 girls)

Table S13. Adjusted associations [β (95% CI)] of individual prenatal urinary phthalate biomarker concentrations (ng/mL; log₂-transformed and specific gravity-adjusted)^a with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years using GEE models, CHAMACOS.

Outcome	MEP	MBP	MiBP	MBzP	MCPP	MCOP	MCNP	MEHP	MEHHP	MECPP	MEOHP
<i>Executive function</i>											
WCST (<i>T</i> -score)											
Errors ^b	0.1 (-0.4, 0.7)	0.2 (-0.6, 1.0)	0.0 (-0.6, 0.6)	0.0 (-0.8, 0.7)	0.2 (-0.5, 1.0)	0.3 (-0.6, 1.1)	0.6 (-0.3, 1.4)	0.3 (-0.4, 1.0)	0.2 (-0.6, 1.0)	0.8 (-0.1, 1.6)	0.4 (-0.4, 1.1)
Perseverative Errors ^b	0.5 (-0.2, 1.2)	0.6 (-0.4, 1.6)	0.1 (-0.6, 0.9)	0.1 (-0.7, 1.1)	0.3 (-0.6, 1.3)	0.5 (-0.7, 1.8)	0.7 (-0.5, 1.9)	0.3 (-0.6, 1.2)	0.4 (-0.7, 1.4)	0.9 (-0.3, 2.0)	0.5 (-0.6, 1.5)
BRIEF – parent report (<i>T</i> -score)											
Behavioral regulation Index ^c	0.1 (-0.4, 0.6)	0.0 (-0.8, 0.8)	0.0 (-0.6, 0.6)	0.6 (-0.2, 1.3)	0.1 (-0.7, 0.8)	0.3 (-0.7, 1.4)	-0.4 (-1.3, 0.4)	0.2 (-0.5, 0.9)	0.0 (-0.8, 0.8)	-0.1 (-0.9, 0.8)	-0.1 (-0.9, 0.7)
Metacognition Index ^d	-0.4 (-0.8, 0.1)	-0.3 (-1.0, 0.5)	-0.2 (-0.8, 0.5)	0.2 (-0.6, 0.9)	-0.2 (-0.9, 0.5)	0.5 (-0.5, 1.4)	-0.3 (-1.1, 0.6)	0.1 (-0.6, 0.8)	-0.2 (-1.0, 0.6)	-0.1 (-1.0, 0.8)	-0.2 (-1.0, 0.6)
Global Executive Composite ^e	-0.2 (-0.7, 0.3)	-0.2 (-0.9, 0.6)	-0.1 (-0.8, 0.5)	0.4 (-0.4, 1.1)	-0.1 (-0.8, 0.7)	0.4 (-0.6, 1.4)	-0.4 (-1.2, 0.5)	0.2 (-0.5, 0.9)	-0.1 (-0.9, 0.7)	-0.1 (-1.0, 0.8)	-0.1 (-1.0, 0.6)
NEPSY Tower	0.1 (-0.1, 0.3)	0.3 (0.1, 0.6)	0.1 (-0.1, 0.3)	0.2 (0.0, 0.4)	0.2 (0.0, 0.5)	0.2 (-0.1, 0.5)	0.2 (-0.1, 0.6)	0.1 (-0.1, 0.3)	0.1 (-0.2, 0.3)	0.0 (-0.3, 0.3)	0.1 (-0.1, 0.4)
<i>Cognition</i>											
WISC-IV (scaled score)											
FSIQ ^f	-0.3 (-1.0, 0.4)	0.1 (-0.8, 1.1)	0.2 (-0.7, 1.0)	-0.2 (-1.1, 0.7)	0.4 (-0.7, 1.5)	0.1 (-1.0, 1.3)	0.6 (-0.7, 2.0)	0.0 (-1.1, 1.0)	0.0 (-1.2, 1.2)	0.1 (-1.2, 1.5)	-0.1 (-1.2, 1.1)
VCIQ ^g	-0.4 (-1.1, 0.3)	0.2 (-0.6, 1.1)	0.0 (-0.7, 0.7)	-0.2 (-1.2, 0.6)	0.5 (-0.5, 1.6)	-0.2 (-1.2, 0.8)	0.5 (-0.5, 1.6)	-0.1 (-1.0, 0.9)	-0.1 (-1.2, 1.1)	-0.4 (-1.6, 0.9)	-0.3 (-1.4, 0.8)
PRIQ ^g	0.1 (-0.8, 1.0)	0.3 (-0.9, 1.5)	0.3 (-0.7, 1.3)	0.1 (-1.0, 1.2)	0.6 (-0.7, 1.9)	0.9 (-0.6, 2.3)	0.8 (-0.9, 2.5)	0.2 (-1.0, 1.3)	0.1 (-1.2, 1.4)	0.4 (-1.0, 1.9)	0.2 (-1.1, 1.5)
WMIQ ^h	-0.6 (-1.3, 0.1)	-0.5 (-1.5, 0.4)	-0.4 (-1.2, 0.4)	-0.5 (-1.4, 0.4)	0.2 (-0.9, 1.3)	-0.2 (-1.3, 0.9)	0.2 (-1.1, 1.6)	-0.2 (-1.2, 0.8)	-0.1 (-1.3, 1.1)	0.1 (-1.2, 1.5)	-0.2 (-1.4, 1.0)
PSIQ ^h	0.1 (-0.5, 0.8)	0.6 (-0.3, 1.5)	0.9 (0.0, 1.8)	0.4 (-0.4, 1.2)	0.1 (-0.7, 1.0)	0.7 (-0.5, 1.9)	0.8 (-0.4, 2.0)	0.1 (-0.9, 1.1)	0.4 (-0.6, 1.4)	0.7 (-0.5, 1.9)	0.4 (-0.7, 1.4)

Abbreviations: WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; BRIEF, Behavior Rating Inventory Executive Function; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; VCIQ, verbal comprehension IQ; PRIQ, perceptual reasoning IQ; WMIQ, working memory IQ; PSIQ, processing speed IQ; MEP, monoethyl phthalate; MBP, mono-n-butyl phthalate; MiBP, mono-isobutyl phthalate; MBzP, monobenzyl phthalate; MCPP, mono(3-carboxypropyl) phthalate; MCOP, mono(carboxyoctyl) phthalate; MCNP, mono(carboxynonyl) phthalate; MEHP, mono(2-ethylhexyl) phthalate; MEHHP, mono(2-ethyl-5-hydroxyhexyl) phthalate; MEOHP, mono(2-ethyl-5-oxohexyl) phthalate; MECCP, mono(2-ethyl-5-carboxypentyl) phthalate

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment. WCST models were also adjusted for children’s video game usage.

^a Separate models created for each phthalate metabolite

^b Number of children with data = 318 (152 boys and 166 girls).

^c Number of children with data = 331 (159 boys and 172 girls).

^d Number of children with data = 330 (158 boys and 172 girls).

^e Number of children with data = 313 (148 boys and 165 girls).

^f Number of children with data = 321 (154 boys and 167 girls).

^g Number of children with data = 324 (157 boys and 167 girls).

^h Number of children with data = 323 (156 boys and 167 girls).

Table S14. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with social cognition and behavior outcomes at 7, 9, 10.5, 12, 14, and/or 16 years using GEE models stratified by sex, CHAMACOS.

Outcomes	Orientation ^b	ΣLMW			ΣHMW			ΣDEHP		
		Boys	Girls	p-int	Boys	Girls	p-int	Boys	Girls	p-int
<i>Social Cognition</i> ^c										
SRS Total Score ^d	(+)	0.3 (-0.5, 1.2)	0.8 (-0.1, 1.6)	0.71	0.2 (-0.9, 1.3)	-0.1 (-1.5, 1.3)	0.76	0.1 (-0.9, 1.2)	-0.1 (-1.4, 1.1)	0.74
ENI ^e	(-)	0.0 (-0.1, 0.2)	0.1 (-0.1, 0.2)	0.67	0.0 (-0.2, 0.2)	0.2 (0.0, 0.4)	0.15	0.0 (-0.2, 0.2)	0.2 (0.0, 0.4)	0.10
NEPSY-II Affect Recognition ^f	(-)	-0.2 (-0.6, 0.3)	0.0 (-0.3, 0.4)	0.46	-0.1 (-0.7, 0.5)	-0.4 (-1.0, 0.2)	0.57	0.0 (-0.6, 0.6)	-0.3 (-0.9, 0.3)	0.42
<i>Behavior</i>										
BASC-2 – parent report (T-score)										
Internalizing problems ^g	(+)	0.5 (-0.3, 1.3)	0.7 (0.0, 1.4)	0.76	0.7 (-0.9, 2.3)	0.8 (-0.3, 2.0)	0.91	0.4 (-1.1, 1.9)	0.7 (-0.3, 1.7)	0.75
Depression scale ^{c,h}	(+)	0.4 (-0.5, 1.2)	0.6 (-0.2, 1.3)	0.74	0.6 (-1.0, 2.2)	0.6 (-0.5, 1.6)	0.99	0.2 (-1.3, 1.7)	0.5 (-0.4, 1.5)	0.70
Anxiety scale ^{c,i}	(+)	0.5 (-0.5, 1.4)	0.2 (-0.7, 1.0)	0.59	1.0 (-1.0, 2.9)	0.4 (-1.0, 1.8)	0.65	0.6 (-1.3, 2.5)	0.4 (-0.9, 1.8)	0.89
Externalizing problems ^g	(+)	-0.1 (-0.8, 0.6)	-0.1 (-0.7, 0.5)	0.99	-0.1 (-1.5, 1.2)	0.5 (-0.5, 1.5)	0.46	-0.4 (-1.6, 0.8)	0.4 (-0.4, 1.3)	0.29
Hyperactivity scale ^g	(+)	-0.3 (-1.0, 0.4)	-0.1 (-0.6, 0.5)	0.59	-0.5 (-1.8, 0.7)	0.4 (-0.5, 1.3)	0.22	-0.7 (-1.8, 0.4)	0.4 (-0.4, 1.1)	0.12
Attention problems scale ^g	(+)	0.5 (-0.3, 1.3)	-0.8 (-1.5, 0.0)	0.03	-0.4 (-1.9, 1.0)	-0.1 (-1.5, 1.3)	0.75	-0.4 (-1.8, 1.0)	0.0 (-1.3, 1.2)	0.72
BASC-2 – teacher-report (T-score) ^c										
Internalizing problems ⁱ	(+)	-0.9 (-2.3, 0.5)	-0.8 (-2.0, 0.5)	0.89	-0.9 (-2.8, 1.0)	-0.8 (-3.0, 1.4)	0.96	-0.5 (-2.3, 1.2)	-0.8 (-2.9, 1.2)	0.84
Depression scale ^j	(+)	-0.4 (-1.5, 0.8)	-0.9 (-1.9, 0.1)	0.45	0.3 (-1.8, 2.4)	-1.0 (-2.6, 0.7)	0.35	0.4 (-1.7, 2.4)	-1.0 (-2.5, 0.6)	0.30
Anxiety scale ^j	(+)	-0.8 (-2.1, 0.5)	-1.0 (-2.4, 0.3)	0.83	-0.9 (-2.7, 0.8)	-1.1 (-3.4, 1.1)	0.90	-0.7 (-2.4, 1.0)	-1.1 (-3.2, 1.0)	0.76
Externalizing problems ^j	(+)	0.2 (-1.1, 1.5)	-0.5 (-1.2, 0.1)	0.33	0.2 (-1.7, 2.0)	-0.4 (-1.7, 0.8)	0.61	0.4 (-1.3, 2.1)	-0.2 (-1.3, 0.9)	0.55
Hyperactivity	(+)	0.3 (-1.0, 1.6)	-0.4 (-1.1, 0.3)	0.37	-0.2 (-2.2, 1.9)	-0.7 (-2.1, 0.7)	0.69	0.1 (-1.9, 2.0)	-0.5 (-1.8, 0.7)	0.61

scale ^j										
Attention problems scale ^j	(+)	-0.1 (-0.9, 0.8)	-0.5 (-1.3, 0.2)	0.41	-0.2 (-1.8, 1.3)	-0.9 (-2.2, 0.3)	0.49	0.0 (-1.5, 1.5)	-0.7 (-1.9, 0.5)	0.47
CADS – parent report (T-score)										
ADHD Index ^o	(+)	-0.3 (-0.8, 0.3)	-0.3 (-0.9, 0.3)	0.94	-0.4 (-1.4, 0.6)	0.0 (-1.1, 1.1)	0.58	-0.6 (-1.4, 0.4)	0.1 (-0.9, 1.1)	0.36
DSM-IV Total Scale ^o	(+)	-0.3 (-0.9, 0.3)	-0.2 (-0.8, 0.4)	0.81	-0.4 (-1.4, 0.7)	0.3 (-0.9, 1.5)	0.42	-0.6 (-1.5, 0.3)	0.3 (-0.8, 1.4)	0.21
Inattentive Scale ^o	(+)	-0.3 (-0.8, 0.3)	-0.3 (-0.8, 0.2)	0.34	-0.4 (-1.3, 0.4)	0.0 (-1.0, 1.1)	0.49	-0.6 (-1.4, 0.2)	0.1 (-0.8, 1.1)	0.24
Hyperactive/impulsive scale ^o	(+)	-0.3 (-1.1, 0.4)	0.0 (-0.7, 0.6)	0.53	-0.3 (-1.5, 0.9)	0.5 (-0.7, 1.8)	0.37	-0.5 (-1.6, 0.5)	0.5 (-0.7, 1.7)	0.21
CADS – teacher-report (T-score) ^c										
ADHD Index ^p	(+)	-0.1 (-1.3, 1.1)	-0.8 (-1.9, 0.4)	0.43	0.5 (-1.8, 2.7)	-1.5 (-3.5, 0.4)	0.20	0.5 (-1.7, 2.7)	-1.2 (-3.0, 0.6)	0.22
DSM-IV Total Scale ^q	(+)	-0.1 (-1.1, 0.9)	-0.5 (-1.5, 0.5)	0.57	0.6 (-1.4, 2.6)	-1.1 (-2.7, 0.6)	0.19	0.8 (-1.1, 2.6)	-0.9 (-2.4, 0.6)	0.18
Inattentive Scale ^r	(+)	-0.1 (-1.2, 1.0)	-0.4 (-1.2, 0.5)	0.71	0.7 (-1.3, 2.6)	-1.0 (-2.3, 0.3)	0.15	0.8 (-1.0, 2.6)	-0.9 (-2.0, 0.3)	0.13
Hyperactive/impulsive scale ^r	(+)	0.1 (-0.9, 1.2)	-0.3 (-1.2, 0.6)	0.52	0.6 (-1.3, 2.6)	-0.6 (-2.2, 1.1)	0.35	0.7 (-1.2, 2.6)	-0.4 (-1.9, 1.1)	0.36
CPT-II (T-score)										
Errors of omission ^s	(+)	1.2 (-0.3, 2.8)	0.8 (-0.3, 1.9)	0.65	1.4 (-0.6, 3.4)	-1.1 (-2.6, 0.3)	0.04	1.1 (-0.8, 2.9)	-1.0 (-2.4, 0.4)	0.07
Errors of commission ^s	(+)	0.3 (-0.5, 1.2)	0.4 (-0.3, 1.2)	0.88	-0.4 (-1.7, 0.9)	0.1 (-1.2, 1.4)	0.61	-0.7 (-1.9, 0.5)	0.0 (-1.2, 1.2)	0.44
ADHD confidence index ^s	(+)	0.4 (-1.2, 2.0)	1.1 (-0.8, 3.0)	0.60	0.1 (-2.6, 2.8)	-2.2 (-4.6, 0.0)	0.19	-0.1 (-2.6, 2.4)	-2.1 (-4.3, 0.1)	0.24

Abbreviations: SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; CPT-II, Continuous Performance Test, 2nd edition; ΣLMW, sum of metabolites of low-molecular weight phthalates; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣDEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment. CPT-II models were also adjusted for children's video game usage.

^a Separate models created for each sum of metabolites (ΣDEHP, ΣHMW, ΣLMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^c Outcomes measured at one time point and modeled using linear regression.

^d Number of children with data = 245 (113 boys and 132 girls).

^e Number of children with data = 313 (144 boys and 169 girls).

^f Number of children with data = 310 (143 boy sand 167 girls)

^g Number of children with data = 328 (158 boys and 170 girls).

^h Number of children with data = 322 (153 boys and 169 girls).

ⁱ Number of children with data = 313 (150 boys and 163 girls).

^j Number of children with data = 265 (123 boys and 142 girls).

^k Number of children with data = 276 (128 boys and 148 girls).

^l Number of children with data = 317 (151 boys and 166 girls).

^m Number of children with data = 316 (150 boys and 166 girls).

ⁿ Number of children with data = 315 (150 boys and 165 girls).

^o Number of children with data = 332 (159 boys and 173 girls).

^p Number of children with data = 261 (122 boys and 139 girls).

^q Number of children with data = 260 (122 boys and 138 girls).

^r Number of children with data = 264 (123 boys and 141 girls).

^s Number of children with data = 327 (151 boys and 166 girls).

Table S15. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years using linear regression models stratified by sex, CHAMACOS.

Outcomes	Orientation ^b	ΣLMW			ΣHMW			ΣDEHP		
		Boys	Girls	p-int	Boys	Girls	p-int	Boys	Girls	p-int
10.5-year assessment										
Internalizing problems	(+)	-	-	-	-	-	-	-	-	-
Depression scale ^c	(+)	0.0 (-0.8, 0.8)	1.0 (-0.1, 2.0)	0.15	0.6 (-1.1, 2.2)	0.4 (-1.4, 2.3)	0.90	0.4 (-1.2, 1.9)	0.4 (-1.4, 2.1)	0.99
Anxiety scale ^c	(+)	0.0 (-0.9, 1.0)	0.5 (-0.2, 1.3)	0.44	0.1 (-1.7, 1.9)	0.6 (-0.8, 1.9)	0.70	0.0 (-1.7, 1.7)	0.6 (-0.7, 1.9)	0.58
Externalizing problems	(+)									
Hyperactivity scale ^d	(+)	0.3 (-0.7, 1.2)	0.1 (-0.6, 0.9)	0.79	0.7 (-1.0, 2.4)	0.2 (-1.3, 1.6)	0.65	0.4 (-1.2, 1.9)	0.2 (-1.2, 1.5)	0.84
Attention problems scale ^e	(+)	0.6 (-0.4, 1.6)	-0.2 (-1.0, 0.5)	0.21	0.3 (-1.2, 1.8)	-0.2 (-1.7, 1.3)	0.64	0.2 (-1.2, 1.7)	0.0 (-1.4, 1.3)	0.76
14-year assessment										
Internalizing problems	(+)									
Depression scale ^f	(+)	0.1 (-0.8, 1.0)	0.9 (-0.2, 1.9)	0.26	1.1 (-0.7, 2.8)	0.6 (-1.1, 2.3)	0.67	1.2 (-0.4, 2.8)	0.2 (-1.3, 1.7)	0.38
Anxiety scale ^g	(+)	0.1 (-0.7, 1.0)	0.7 (-0.3, 1.7)	0.44	1.2 (-0.1, 2.6)	-1.1 (-2.5, 0.4)	0.02	1.2 (-0.1, 2.5)	-1.2 (-2.5, 0.2)	0.01
Externalizing problems	(+)									
Hyperactivity scale	(+)	-	-	-	-	-	-	-	-	-
Attention problems scale	(+)	-	-	-	-	-	-	-	-	-
16-year assessment										
Internalizing problems ^h	(+)	1.6 (0.6, 2.7)	1.0 (-0.1, 2.1)	0.44	1.0 (-0.4, 2.5)	0.3 (-1.3, 1.8)	0.48	1.0 (-0.4, 2.4)	0.2 (-1.3, 1.7)	0.43
Depression scale ⁱ	(+)	0.7 (-0.2, 1.5)	0.9 (-0.3, 2.1)	0.74	0.7 (-0.5, 1.9)	0.0 (-1.8, 1.9)	0.54	0.7 (-0.4, 1.8)	0.1 (-1.6, 1.8)	0.52
Anxiety scale ⁱ	(+)	1.2 (0.0, 2.5)	0.7 (-0.6, 2.0)	0.57	1.3 (-0.4, 3.0)	0.9 (-0.8, 2.6)	0.74	1.4 (-0.2, 2.9)	0.6 (-1.0, 2.2)	0.53
Externalizing problems	(+)									
Hyperactivity scale ^j	(+)	0.8 (-0.4, 2.0)	0.6 (-0.2, 1.5)	0.82	0.9 (-0.7, 2.5)	-0.4 (-1.8, 1.0)	0.23	0.6 (-1.0, 2.2)	-0.6 (-1.9, 0.7)	0.27
Attention problems scale ⁱ	(+)	2.2 (1.0, 3.4)	1.0 (0.1, 2.0)	0.14	0.4 (-1.0, 1.9)	-0.8 (-2.2, 0.6)	0.23	0.4 (-0.9, 1.7)	-0.9 (-2.2, 0.5)	0.19

Abbreviations: BASC-2, Behavior Assessment System for Children, 2nd edition; ΣLMW, sum of metabolites of low-molecular weight phthalates; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣDEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (ΣDEHP, ΣHMW, ΣLMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^c Number of children with data = 289 (135 boys and 154 girls).

^d Number of children with data = 299 (141 boys and 158 girls).

^e Number of children with data = 290 (137 boys and 153 girls).

^f Number of children with data = 301 (139 boy sand 162 girls)

^g Number of children with data = 300 (139 boys and 161 girls).

^h Number of children with data = 283 (132 boys and 151 girls).

ⁱ Number of children with data = 286 (133 boys and 153 girls).

^j Number of children with data = 285 (133 boys and 152 girls).

Table S16. Adjusted associations [β (95% CI)] of individual prenatal urinary phthalate biomarker concentrations (ng/mL; log₂-transformed and specific gravity-adjusted)^a with social cognition and behavior outcomes at 7, 9, 10.5, 12, 14, and/or 16 years using GEE models, CHAMACOS.

Outcome	MEP	MBP	MiBP	MBzP	MCP	MCOP	MCNP	MEHP	MEHHP	MECPP	MEOHP
<i>Social Cognition</i> ^b											
SRS Total Score ^c	0.4 (-0.1, 0.9)	-0.1 (-0.8, 0.7)	-0.3 (-0.9, 0.3)	-0.1 (-0.8, 0.5)	0.0 (-0.7, 0.7)	0.1 (-0.7, 0.8)	0.1 (-0.7, 0.9)	-0.2 (-0.8, 0.5)	-0.3 (-1.0, 0.4)	-0.3 (-1.1, 0.5)	-0.2 (-1.0, 0.5)
ENI ^d	0.0 (-0.1, 0.1)	0.1 (0.0, 0.2)	0.1 (0.0, 0.2)	0.0 (0.0, 0.1)	0.0 (-0.1, 0.2)	0.0 (-0.1, 0.2)	0.0 (-0.1, 0.1)	0.0 (0.0, 0.1)	0.1 (0.0, 0.2)	0.1 (0.0, 0.2)	0.1 (0.0, 0.2)
NEPSY-II Affect Recognition ^e	0.0 (-0.3, 0.2)	-0.2 (-0.5, 0.1)	-0.2 (-0.4, 0.1)	-0.3 (-0.6, 0.0)	-0.2 (-0.5, 0.1)	-0.5 (-0.9, -0.2)	-0.2 (-0.5, 0.2)	-0.1 (-0.4, 0.2)	-0.2 (-0.5, 0.2)	-0.1 (-0.5, 0.3)	-0.2 (-0.5, 0.1)
<i>Behavior</i>											
BASC-2 – parent report (T-score)											
Internalizing problems ^f	0.4 (0.0, 0.9)	0.4 (-0.2, 1.0)	0.3 (-0.3, 0.9)	0.7 (0.0, 1.4)	0.6 (-0.1, 1.3)	0.8 (0.0, 1.5)	0.1 (-0.7, 0.9)	0.2 (-0.5, 0.9)	0.3 (-0.5, 1.0)	0.5 (-0.4, 1.4)	0.3 (-0.5, 1.0)
Depression scale ^{cbg}	0.4 (-0.1, 0.9)	0.0 (-0.7, 0.7)	0.6 (-0.1, 1.3)	0.8 (0.0, 1.5)	0.0 (-0.7, 0.7)	0.3 (-0.6, 1.2)	0.1 (-0.8, 1.0)	0.3 (-0.4, 1.0)	0.3 (-0.5, 1.0)	0.2 (-0.6, 1.1)	0.3 (-0.5, 1.1)
Anxiety scale ^{bh}	0.3 (-0.3, 0.8)	0.4 (-0.3, 1.2)	0.4 (-0.4, 1.1)	0.4 (-0.5, 1.2)	0.2 (-0.7, 1.0)	0.7 (-0.5, 1.8)	-0.2 (-1.3, 0.8)	0.6 (-0.3, 1.5)	0.5 (-0.5, 1.5)	0.6 (-0.5, 1.7)	0.5 (-0.5, 1.5)
Externalizing problems ^f	0.1 (-0.3, 0.5)	0.1 (-0.5, 0.7)	0.2 (-0.4, 0.7)	0.5 (-0.1, 1.1)	0.5 (-0.1, 1.2)	0.5 (-0.2, 1.3)	-0.1 (-0.8, 0.6)	0.1 (-0.5, 0.7)	0.0 (-0.6, 0.6)	0.1 (-0.7, 0.8)	0.0 (-0.6, 0.6)
Hyperactivity scale ^f	0.0 (-0.4, 0.4)	0.1 (-0.5, 0.7)	0.0 (-0.5, 0.5)	0.4 (-0.2, 0.9)	0.3 (-0.3, 0.9)	0.3 (-0.4, 1.0)	-0.3 (-0.9, 0.4)	-0.1 (-0.6, 0.5)	-0.2 (-0.7, 0.4)	-0.1 (-0.8, 0.5)	-0.1 (-0.7, 0.4)
Attention problems scale ^f	0.1 (-0.4, 0.5)	-0.2 (-0.9, 0.5)	-0.1 (-0.7, 0.5)	0.1 (-0.6, 0.7)	0.2 (-0.6, 1.0)	0.2 (-0.6, 1.0)	-0.4 (-1.2, 0.4)	-0.1 (-0.8, 0.6)	-0.2 (-0.9, 0.6)	0.0 (-0.9, 0.8)	-0.1 (-0.9, 0.6)
BASC-2 – teacher-report (T-score) ^f											
Internalizing problems ⁱ	-0.6 (-1.4, 0.2)	-0.2 (-1.3, 0.9)	-0.1 (-0.9, 0.8)	-0.3 (-1.4, 0.7)	-0.3 (-1.5, 0.9)	-1.0 (-2.2, 0.3)	-1.8 (-3.1, -0.4)	-0.4 (-1.4, 0.6)	-0.4 (-1.6, 0.8)	-0.2 (-1.6, 1.2)	-0.3 (-1.5, 0.8)
Depression scale ⁱ	-0.6 (-1.2, 0.1)	-0.4 (-1.2, 0.5)	0.2 (-0.4, 0.9)	-0.1 (-0.9, 0.7)	-0.3 (-1.3, 0.7)	-0.1 (-1.2, 0.9)	-1.0 (-2.0, 0.1)	-0.2 (-1.2, 0.8)	-0.2 (-1.2, 0.8)	-0.2 (-1.4, 1.0)	-0.2 (-1.2, 0.8)
Anxiety scale ⁱ	-0.7 (-1.5, 0.1)	-0.6 (-1.7, 0.5)	-0.1 (-1.1, 0.9)	-0.6 (-1.7, 0.4)	-0.6 (-1.8, 0.6)	-1.4 (-2.6, -0.2)	-1.7 (-3.1, -0.3)	-0.6 (-1.6, 0.4)	-0.8 (-2.0, 0.3)	-0.5 (-1.8, 0.8)	-0.7 (-1.9, 0.4)
Externalizing problems ⁱ	-0.1 (-0.7, 0.6)	-0.5 (-1.4, 0.4)	0.3 (-0.6, 1.2)	-0.4 (-1.2, 0.5)	0.1 (-0.8, 1.0)	-0.5 (-1.6, 0.5)	-1.2 (-2.2, -0.2)	-0.2 (-1.0, 0.6)	0.0 (-0.8, 0.8)	0.4 (-0.6, 1.3)	0.1 (-0.7, 0.9)
Hyperactivity scale ⁱ	0.1 (-0.6, 0.7)	-0.5 (-1.4, 0.4)	0.2 (-0.8, 1.2)	-0.5 (-1.4, 0.5)	0.0 (-1.1, 1.1)	-0.6 (-1.8, 0.7)	-1.3 (-2.4, -0.3)	-0.2 (-1.1, 0.6)	-0.2 (-1.2, 0.7)	0.1 (-1.0, 1.1)	-0.2 (-1.1, 0.8)
Attention problems scale ⁱ	-0.1 (-0.7, 0.4)	-0.3 (-1.1, 0.4)	0.1 (-0.6, 0.7)	-0.6 (-1.3, 0.1)	-0.6 (-1.4, 0.2)	-0.4 (-1.2, 0.4)	-0.8 (-1.7, 0.0)	-0.2 (-0.9, 0.5)	-0.5 (-1.3, 0.3)	-0.1 (-1.0, 0.8)	-0.4 (-1.2, 0.4)
BASC-2 – self-report (T-score)											
Internalizing problems ^{bj}	1.2 (0.5, 1.9)	0.2 (-0.7, 1.1)	0.1 (-0.8, 0.9)	0.1 (-0.8, 0.9)	1.1 (0.2, 1.9)	0.8 (-0.2, 1.8)	0.3 (-0.9, 1.4)	0.1 (-0.7, 0.9)	0.2 (-0.7, 1.1)	0.5 (-0.5, 1.5)	0.2 (-0.6, 1.1)
Depression scale ^k	0.5 (0.1, 0.9)	0.1 (-0.6, 0.8)	0.1 (-0.4, 0.7)	0.5 (-0.1, 1.2)	0.5 (-0.1, 1.1)	0.4 (-0.4, 1.2)	0.7 (-0.1, 1.4)	0.2 (-0.5, 0.8)	0.2 (-0.4, 0.9)	0.5 (-0.3, 1.4)	0.3 (-0.4, 1.0)
Anxiety scale ^l	0.5 (0.1, 1.0)	0.0 (-0.7, 0.7)	-0.2 (-0.7, 0.4)	0.3 (-0.3, 0.9)	0.5 (-0.1, 1.1)	0.4 (-0.3, 1.2)	0.4 (-0.4, 1.1)	0.1 (-0.6, 0.7)	0.0 (-0.7, 0.6)	0.3 (-0.4, 1.1)	0.1 (-0.6, 0.7)
Externalizing problems	-	-	-	-	-	-	-	-	-	-	-
Hyperactivity scale ^m	0.5 (0.1, 0.9)	-0.1 (-0.8, 0.6)	-0.2 (-0.8, 0.4)	0.7 (0.1, 1.3)	0.9 (0.4, 1.5)	0.7 (-0.1, 1.5)	0.5 (-0.3, 1.3)	0.0 (-0.6, 0.7)	0.1 (-0.6, 0.8)	0.0 (-0.8, 0.8)	0.1 (-0.6, 0.8)
Attention problems scale ^m	0.7 (0.3, 1.2)	0.2 (-0.5, 0.9)	-0.2 (-0.7, 0.4)	0.4 (-0.2, 1.0)	0.9 (0.3, 1.5)	0.5 (-0.3, 1.2)	0.3 (-0.4, 1.1)	-0.1 (-0.7, 0.5)	-0.2 (-0.8, 0.4)	-0.2 (-1.0, 0.5)	-0.1 (-0.8, 0.5)
CADS – parent report (T-score)											
ADHD Index ⁿ	-0.3 (-0.6, 0.1)	-0.3 (-0.9, 0.2)	-0.2 (-0.7, 0.3)	0.0 (-0.7, 0.6)	-0.4 (-1.0, 0.2)	0.0 (-0.8, 0.9)	-0.4 (-1.1, 0.2)	-0.1 (-0.7, 0.5)	-0.3 (-0.9, 0.3)	-0.2 (-0.9, 0.6)	-0.3 (-1.0, 0.4)
DSM-IV Total Scale ⁿ	-0.2 (-0.6, 0.1)	-0.2 (-0.8, 0.4)	-0.1 (-0.7, 0.4)	0.1 (-0.5, 0.8)	-0.2 (-0.8, 0.4)	0.1 (-0.8, 0.9)	-0.3 (-1.0, 0.4)	0.0 (-0.7, 0.6)	-0.2 (-0.9, 0.5)	-0.2 (-0.9, 0.6)	-0.3 (-1.0, 0.4)
Inattentive Scale ⁿ	-0.2 (-0.6, 0.1)	-0.4 (-0.9, 0.2)	-0.2 (-0.7, 0.3)	-0.1 (-0.7, 0.5)	-0.3 (-0.8, 0.2)	0.0 (-0.8, 0.8)	-0.4 (-1.0, 0.2)	0.0 (-0.6, 0.5)	-0.3 (-0.9, 0.3)	-0.2 (-0.9, 0.5)	-0.3 (-0.9, 0.3)
Hyperactive/impulsive scale ⁿ	-0.2 (-0.7, 0.2)	0.0 (-0.6, 0.7)	-0.1 (-0.6, 0.5)	0.3 (-0.3, 1.0)	0.0 (-0.7, 0.6)	0.1 (-0.9, 1.1)	-0.1 (-0.9, 0.7)	0.0 (-0.7, 0.7)	-0.1 (-0.9, 0.6)	-0.1 (-1.0, 0.7)	-0.2 (-1.0, 0.6)
CADS – teacher-report (T-score) ^b											
ADHD Index ^o	-0.3 (-1.0, 0.5)	-0.3 (-1.4, 0.7)	0.0 (-1.0, 0.9)	-0.2 (-1.4, 0.9)	-0.6 (-1.9, 0.7)	-0.5 (-1.7, 0.8)	-1.4 (-2.8, 0.0)	-0.1 (-1.2, 0.9)	-0.6 (-1.7, 0.6)	-0.1 (-1.5, 1.2)	-0.5 (-1.7, 0.7)
DSM-IV Total Scale ^p	-0.1 (-0.8, 0.5)	-0.2 (-1.2, 0.8)	0.3 (-0.5, 1.1)	-0.1 (-1.0, 0.8)	-0.5 (-1.6, 0.6)	-0.4 (-1.5, 0.8)	-1.2 (-2.5, 0.0)	0.0 (-0.9, 0.9)	-0.3 (-1.2, 0.7)	0.1 (-1.0, 1.3)	-0.2 (-1.2, 0.8)
Inattentive Scale ^q	-0.1 (-0.7, 0.5)	0.0 (-0.9, 0.8)	0.2 (-0.4, 0.9)	-0.1 (-0.9, 0.7)	-0.5 (-1.4, 0.4)	0.0 (-0.9, 0.9)	-0.8 (-1.9, 0.2)	0.0 (-0.7, 0.8)	-0.2 (-1.1, 0.6)	0.1 (-0.9, 1.1)	-0.2 (-1.0, 0.7)
Hyperactive/impulsive scale ^q	0.0 (-0.7, 0.6)	-0.2 (-1.2, 0.7)	0.4 (-0.5, 1.2)	0.1 (-0.9, 1.1)	-0.2 (-1.3, 1.0)	-0.5 (-1.7, 0.7)	-1.3 (-2.5, -0.1)	0.1 (-0.9, 1.0)	0.0 (-1.0, 1.0)	0.4 (-0.8, 1.5)	0.1 (-0.9, 1.1)
CPT-II (T-score)											
Errors of omission ^r	0.8 (0.0, 1.6)	0.3 (-0.7, 1.3)	0.3 (-0.5, 1.1)	0.5 (-0.4, 1.3)	0.2 (-0.6, 1.0)	0.5 (-0.7, 1.6)	0.1 (-1.1, 1.2)	-0.3 (-1.4, 0.7)	0.0 (-1.0, 1.0)	-0.3 (-1.4, 0.8)	0.0 (-1.0, 1.0)
Errors of commission ^r	0.3 (-0.1, 0.8)	-0.4 (-1.1, 0.4)	-0.1 (-0.7, 0.6)	0.4 (-0.3, 1.1)	0.6 (-0.2, 1.5)	0.9 (-0.1, 1.8)	0.4 (-0.6, 1.4)	-0.2 (-1.0, 0.5)	-0.2 (-1.0, 0.6)	-0.2 (-1.1, 0.7)	-0.3 (-1.1, 0.5)
ADHD confidence index ^r	0.6 (-0.4, 1.7)	0.2 (-1.2, 1.6)	0.9 (-0.4, 2.1)	0.5 (-1.0, 1.9)	0.2 (-1.1, 1.5)	-0.1 (-1.8, 1.7)	-0.8 (-2.6, 0.9)	-1.3 (-2.7, 0.1)	-0.6 (-2.1, 0.9)	-1.2 (-2.9, 0.4)	-0.6 (-2.1, 0.9)

Abbreviations: SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; CPT-II, Continuous Performance Test, 2nd edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b Outcomes measured at one time point and modeled using linear regression.

^c Number of children with data = 245 (113 boys and 132 girls).

^d Number of children with data = 313 (144 boys and 169 girls).

^e Number of children with data = 310 (143 boys and 167 girls).

^f Number of children with data = 328 (168 boys and 170 girls).

^g Number of children with data = 322 (153 boys and 169 girls).

^h Number of children with data = 313 (150 boys and 163 girls).

ⁱ Number of children with data = 265 (123 boys and 142 girls).

^j Number of children with data = 276 (128 boys and 148 girls).

^k Number of children with data = 317 (151 boys and 166 girls).

^l Number of children with data = 316 (150 boys and 166 girls).

^m Number of children with data = 315 (150 boys and 165 girls).

ⁿ Number of children with data = 332 (159 boys and 173 girls).

^o Number of children with data = 261 (122 boys and 139 girls).

^p Number of children with data = 260 (122 boys and 138 girls).

^q Number of children with data = 264 (123 boys and 141 girls).

^r Number of children with data = 317 (151 boys and 166 girls).

Table S17. Adjusted associations [β (95% CI)] of individual prenatal urinary phthalate biomarker concentrations (ng/mL; log₂-transformed and specific gravity-adjusted)^a with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years using linear regression models, CHAMACOS.

Outcome	MEP	MBP	MiBP	MBzP	MCP	MCOP	MCNP	MEHP	MEHHP	MCCPP	MEOHP
10.5-year assessment											
Internalizing problems											
Depression scale ^c	0.5 (-0.1, 1.1)	0.1 (-0.7, 1.0)	0.0 (-0.8, 0.8)	0.5 (-0.3, 1.4)	0.3 (-0.5, 1.1)	0.4 (-0.5, 1.3)	0.5 (-0.5, 1.6)	0.3 (-0.7, 1.2)	0.4 (-0.6, 1.3)	0.8 (-0.4, 2.0)	0.6 (-0.4, 1.6)
Anxiety scale ^c	0.4 (-0.2, 0.9)	0.2 (-0.7, 1.0)	-0.1 (-0.8, 0.7)	0.3 (-0.5, 1.0)	0.5 (-0.2, 1.2)	0.4 (-0.5, 1.3)	0.7 (-0.3, 1.6)	0.2 (-0.6, 1.0)	0.2 (-0.7, 1.0)	0.6 (-0.4, 1.6)	0.3 (-0.6, 1.2)
Externalizing problems											
Hyperactivity scale ^d	0.2 (-0.3, 0.8)	0.1 (-0.8, 1.0)	-0.1 (-0.9, 0.6)	0.9 (0.1, 1.6)	0.7 (-0.0, 1.5)	0.9 (-0.0, 1.9)	0.8 (-0.2, 1.8)	0.3 (-0.5, 1.1)	0.2 (-0.6, 1.1)	0.3 (-0.7, 1.4)	0.3 (-0.5, 1.2)
Attention problems scale ^e	0.1 (-0.5, 0.7)	0.2 (-0.6, 1.1)	-0.4 (-1.0, 0.3)	0.2 (-0.6, 1.0)	0.7 (-0.1, 1.4)	0.5 (-0.5, 1.4)	0.5 (-0.6, 1.5)	-0.1 (-0.9, 0.7)	-0.1 (-1.0, 0.7)	0.0 (-1.0, 1.0)	0.0 (-0.8, 0.9)
14-year assessment											
Internalizing problems											
Depression scale ^f	0.5 (-0.1, 1.1)	0.3 (-0.7, 1.2)	0.2 (-0.6, 0.9)	0.8 (-0.1, 1.8)	0.4 (-0.4, 1.3)	0.4 (-1.1, 1.7)	1.1 (0.1, 2.2)	0.4 (-0.6, 1.3)	0.2 (-0.7, 1.2)	0.6 (-0.5, 1.8)	0.3 (-0.7, 1.4)
Anxiety scale ^g	0.5 (-0.1, 1.1)	-0.2 (-1.1, 0.7)	-0.5 (-1.2, 0.3)	0.2 (-0.6, 1.0)	0.3 (-0.5, 1.1)	0.2 (-0.8, 1.2)	0.2 (-0.8, 1.3)	-0.2 (-1.0, 0.6)	-0.5 (-1.4, 0.4)	-0.3 (-1.2, 0.7)	-0.4 (-1.2, 0.5)
Externalizing problems											
Hyperactivity scale	-	-	-	-	-	-	-	-	-	-	-
Attention problems scale	-	-	-	-	-	-	-	-	-	-	-
16-year assessment											
Internalizing problems ^h	1.2 (0.5, 1.9)	0.1 (-0.8, 1.0)	0.0 (-0.8, 0.8)	0.2 (-0.7, 1.1)	1.3 (0.4, 2.1)	0.6 (-0.4, 1.6)	0.2 (-1.0, 1.3)	0.2 (-0.7, 0.9)	0.2 (-0.7, 1.1)	0.5 (-0.5, 1.5)	0.2 (-0.6, 1.1)
Depression scale ⁱ	0.8 (0.1, 1.5)	-0.2 (-1.0, 0.7)	0.1 (-0.7, 0.9)	-0.1 (-0.9, 0.8)	0.7 (-0.1, 1.6)	0.3 (-0.7, 1.3)	0.3 (-0.8, 1.4)	0.0 (-0.9, 0.8)	0.2 (-0.7, 1.0)	0.4 (-0.6, 1.4)	0.1 (-0.7, 1.0)
Anxiety scale ⁱ	0.9 (0.1, 1.7)	-0.1 (-1.1, 1.0)	-0.2 (-1.1, 0.8)	0.3 (-0.6, 1.3)	0.9 (-0.1, 1.8)	0.9 (-0.2, 2.0)	0.3 (-0.9, 1.4)	0.2 (-0.7, 1.1)	0.4 (-0.6, 1.3)	0.9 (-0.2, 2.0)	0.4 (-0.6, 1.4)
Externalizing problems											
Hyperactivity scale ^j	0.8 (0.2, 1.4)	-0.4 (-1.3, 0.4)	-0.4 (-1.2, 0.3)	0.4 (-0.4, 1.2)	1.4 (0.6, 2.1)	0.5 (-0.6, 1.6)	0.3 (-0.8, 1.3)	-0.3 (-1.2, 0.6)	-0.1 (-1.0, 0.8)	-0.3 (-1.3, 0.8)	-0.2 (-1.1, 0.7)
Attention problems scale ⁱ	1.5 (0.8, 2.1)	0.0 (-1.0, 0.9)	-0.1 (-1.0, 0.7)	0.5 (-0.4, 1.3)	1.2 (0.4, 2.1)	0.4 (-0.7, 1.6)	0.1 (-1.0, 1.3)	0.1 (-0.9, 0.8)	-0.2 (-1.0, 0.7)	-0.4 (-1.3, 0.5)	-0.2 (-1.1, 0.6)

Abbreviations: BASC-2, Behavior Assessment System for Children, 2nd edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ EDEHP, sum of di(2-ethylhexyl) phthalate metabolites. Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (Σ EDEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^c Number of children with data = 289 (135 boys and 154 girls).

^d Number of children with data = 299 (141 boys and 158 girls).

^e Number of children with data = 290 (137 boys and 153 girls).

^f Number of children with data = 301 (139 boys and 162 girls).

^g Number of children with data = 300 (139 boys and 161 girls).

^h Number of children with data = 283 (132 boys and 151 girls).

ⁱ Number of children with data = 286 (133 boys and 153 girls).

^j Number of children with data = 285 (133 boys and 152 girls).

Table S18. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years **excluding preterm birth and low birthweight** using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Executive function</i>						
WCST						
Errors (T-scores)	(-)	551	294	0.2 (-0.4, 0.8)	0.6 (-0.2, 1.5)	0.6 (-0.2, 1.4)
Preservative Errors (T-scores)	(-)	551	294	0.7 (-0.1, 1.5)	0.6 (-0.7, 1.9)	0.6 (-0.6, 1.8)
BRIEF – maternal report (T-scores)						
Behavioral Regulation Index	(+)	856	307	-0.1 (-0.6, 0.5)	-0.1 (-1.1, 1.0)	-0.1 (-1.1, 0.8)
Metacognition Index	(+)	855	306	-0.6 (-1.1, -0.0)	-0.2 (-1.2, 0.8)	-0.2 (-1.2, 0.7)
Global Executive Composite	(+)	856	307	-0.4 (-0.9, 0.1)	-0.1 (-1.2, 0.9)	-0.2 (-1.1, 0.8)
NEPSY Tower	(-)	291	291	0.1 (-0.1, 0.3)	0.1 (-0.2, 0.4)	0.1 (-0.3, 0.4)
<i>Cognition</i>						
WISC-IV Full-Scale IQ (scaled scores)	(-)	551	298	-0.1 (-0.9, 0.7)	0.1 (-1.4, 1.6)	0.1 (-1.4, 1.6)
Verbal comprehension IQ	(-)	577	301	-0.2 (-1.1, 0.6)	-0.5 (-1.9, 0.9)	-0.5 (-1.8, 0.8)
Perceptual reasoning IQ	(-)	577	301	0.3 (-0.7, 1.3)	0.6 (-1.0, 2.2)	0.6 (-1.0, 2.0)
Working memory IQ	(-)	554	300	-0.5 (-1.3, 0.2)	-0.1 (-1.5, 1.4)	-0.0 (-1.4, 1.4)
Processing speed IQ	(-)	555	300	0.4 (-0.3, 1.1)	0.9 (-0.3, 2.1)	0.9 (-0.3, 2.0)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point; WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; BRIEF, Behavior Rating Inventory Executive Function; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment. WCST models were also adjusted for children’s video game usage.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S19. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with behavior and social cognition outcomes at 7, 9, 10.5, 12, 14 and/or 16 years **excluding preterm birth and low birthweight** using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Social Cognition</i> ^c						
SRS Total Score	(+)	220	220	0.3 (-0.3, 1.0)	-0.2 (-1.1, 0.7)	-0.2 (-1.1, 0.6)
ENI	(-)	291	291	0.1 (0.0, 0.1)	0.0 (-0.1, 0.2)	0.1 (-0.1, 0.2)
NEPSY-II Affect Recognition	(-)	286	286	0.0 (-0.3, 0.2)	-0.3 (-0.8, 0.1)	-0.2 (-0.6, 0.2)
<i>Behavior</i>						
BASC-2 – maternal report (T-scores)						
Internalizing problems	(+)	575	300	0.5 (0.0, 1.1)	0.6 (-0.4, 1.6)	0.4 (-0.5, 1.4)
Depression scale	(+)	298	298	0.4 (-0.2, 1.0)	0.5 (-0.5, 1.4)	0.3 (-0.6, 1.2)
Anxiety scale	(+)	298	298	0.4 (-0.2, 1.1)	0.6 (-0.6, 1.8)	0.4 (-0.7, 1.5)
Externalizing problems	(+)	568	300	-0.1 (-0.6, 0.4)	0.3 (-0.6, 1.2)	0.2 (-0.6, 1.0)
Hyperactivity scale	(+)	575	300	-0.3 (-0.7, 0.1)	0.0 (-0.8, 0.8)	-0.1 (-0.8, 0.6)
Attention problems scale	(+)	575	300	-0.3 (-0.9, 0.2)	-0.2 (-1.3, 0.8)	-0.2 (-1.1, 0.8)
BASC-2 – teacher-report (T-score) ^c						
Internalizing problems	(+)	246	246	-0.8 (-1.8, 0.1)	-0.5 (-2.0, 1.1)	-0.3 (-1.8, 1.1)
Depression scale	(+)	246	246	-0.8 (-1.5, 0.0)	-0.1 (-1.4, 1.2)	-0.1 (-1.3, 1.1)
Anxiety scale	(+)	246	246	-1.0 (-2.0, 0.0)	-0.9 (-2.4, 0.6)	-0.8 (-2.2, 0.6)
Externalizing problems	(+)	246	246	-0.1 (-0.8, 0.6)	-0.1 (-1.2, 1.0)	0.1 (-0.9, 1.0)
Hyperactivity scale	(+)	246	246	-0.1 (-0.8, 0.7)	-0.4 (-1.6, 0.8)	-0.2 (-1.3, 0.9)
Attention problems scale	(+)	246	246	-0.2 (-0.8, 0.3)	-0.6 (-1.5, 0.3)	-0.4 (-1.2, 0.5)
CADS – parent report (T-scores)						
ADHD Index	(+)	855	307	-0.5 (-0.9, -0.1)	-0.2 (-1.1, 0.6)	-0.2 (-1.0, 0.6)
DSM-IV Total Scale	(+)	854	307	-0.4 (-0.8, 0.0)	-0.2 (-1.1, 0.7)	-0.2 (-1.1, 0.6)
Inattentive Scale	(+)	854	307	-0.4 (-0.8, 0.0)	-0.3 (-1.1, 0.5)	-0.3 (-1.0, 0.4)
Hyperactive/impulsive scale	(+)	854	307	-0.3 (-0.8, 0.2)	-0.1 (-1.0, 0.9)	-0.2 (-1.1, 0.7)
CADS – teacher-report (T-score) ^c						
ADHD Index	(+)	242	242	-0.5 (-1.3, 0.4)	-0.7 (-2.2, 0.8)	-0.5 (-1.9, 0.8)
DSM-IV Total Scale	(+)	241	241	-0.3 (-1.0, 0.4)	-0.3 (-1.6, 1.0)	-0.1 (-1.3, 1.0)
Inattentive Scale	(+)	245	245	-0.2 (-0.9, 0.4)	-0.2 (-1.3, 0.9)	-0.1 (-1.1, 0.9)
Hyperactive/impulsive scale	(+)	245	245	-0.1 (-0.8, 0.6)	0.0 (-1.2, 1.3)	0.2 (-1.0, 1.4)

CPT-II (T-scores)							
Errors of omission	(+)	554	294	0.8 (-0.1, 1.8)		0.1 (-1.2, 1.3)	0.0 (-1.2, 1.1)
Errors of commission	(+)	554	294	0.2 (-0.4, 0.8)		0.0 (-1.0, 1.0)	-0.1 (-1.1, 0.8)
ADHD confidence index	(+)	555	294	0.6 (-0.6, 1.9)		-0.7 (-2.5, 1.1)	-0.7 (-2.4, 1.0)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point; SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; CPT-II, Continuous Performance Test, 2nd edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment. CPT-II models were also adjusted for children's video game usage at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^c Outcomes measured at one time point and modeled using linear regression.

Table S20. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **excluding preterm birth and low birthweight** using linear regression models, CHAMACOS.

Outcome	Orientation ^b	<i>n</i>	Σ LMW	Σ HMW	Σ DEHP
10.5-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	269	0.5 (-0.2, 1.2)	0.6 (-0.6, 1.9)	0.6 (-0.6, 1.8)
Anxiety scale	(+)	269	0.4 (-0.2, 1.1)	0.3 (-0.8, 1.3)	0.2 (-0.8, 1.2)
Externalizing problems					
Hyperactivity scale	(+)	278	0.2 (-0.4, 0.8)	0.4 (-0.6, 1.5)	0.3 (-0.7, 1.3)
Attention problems scale	(+)	270	0.1 (-0.6, 0.8)	0.1 (-0.9, 1.2)	0.1 (-0.8, 1.1)
14-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	279	0.4 (-0.3, 1.1)	0.7 (-0.6, 2.0)	0.6 (-0.6, 1.8)
Anxiety scale	(+)	278	0.3 (-0.4, 1.0)	-0.6 (-1.7, 0.5)	-0.6 (-1.6, 0.4)
Externalizing problems					
Hyperactivity scale	(+)	-	-	-	-
Attention problems scale	(+)	-	-	-	-
16-year assessment					
Internalizing problems	(+)	262	1.2 (0.4, 2.0)	0.2 (-0.8, 1.3)	0.2 (-0.8, 1.2)
Depression scale	(+)	265	0.8 (0.1, 1.6)	0.1 (-1.0, 1.2)	0.2 (-0.8, 1.3)
Anxiety scale	(+)	265	0.9 (0.0, 1.9)	0.5 (-0.7, 1.7)	0.5 (-0.6, 1.6)
Externalizing problems					
Hyperactivity scale	(+)	264	0.7 (0.0, 1.4)	-0.2 (-1.3, 0.8)	-0.5 (-1.5, 0.5)
Attention problems scale	(+)	265	1.4 (0.6, 2.2)	0.0 (-1.0, 1.1)	-0.1 (-1.1, 0.9)

Abbreviations: BASC-2, Behavior Assessment System for Children, 2nd edition; *n*, number of observations; *k*, number of children; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S21. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years including maternal PPVT score using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Executive function</i>						
WCST						
Errors (T-scores)	(-)	593	317	0.1 (-0.5, 0.8)	0.5 (-0.4, 1.4)	0.5 (-0.4, 1.3)
Preservative Errors (T-scores)	(-)	593	317	0.7 (-0.1, 1.4)	0.7 (-0.6, 1.9)	0.6 (-0.5, 1.8)
BRIEF – maternal report (T-scores)						
Behavioral Regulation Index	(+)	922	331	0.1 (-0.4, 0.6)	0.1 (-0.8, 1.0)	0.0 (-0.8, 0.8)
Metacognition Index	(+)	921	330	-0.4 (-0.9, 0.1)	-0.1 (-1.0, 0.9)	-0.1 (-1.0, 0.7)
Global Executive Composite	(+)	922	331	-0.2 (-0.8, 0.3)	0.0 (-0.9, 1.0)	-0.1 (-0.9, 0.8)
NEPSY Tower	(-)	313	313	0.1 (-0.1, 0.3)	0.1 (0.2, 0.4)	0.1 (0.2, 0.4)
<i>Cognition</i>						
WISC-IV (scaled scores)						
Full-Scale IQ	(-)	589	321	-0.2 (-1.0, 0.7)	0.1 (-1.2, 1.5)	0.1 (-1.2, 1.4)
Verbal comprehension IQ	(-)	621	324	-0.3 (-1.1, 0.5)	-0.3 (-1.5, 1.0)	-0.2 (-1.4, 1.0)
Perceptual reasoning IQ	(-)	621	324	0.3 (-0.7, 1.3)	0.5 (-1.0, 2.0)	0.4 (-1.0, 1.8)
Working memory IQ	(-)	593	323	-0.6 (-1.4, 0.2)	-0.1 (-1.4, 1.3)	-0.0 (-1.3, 1.3)
Processing speed IQ	(-)	593	323	0.2 (-0.4, 0.9)	0.5 (-0.7, 1.8)	0.5 (-0.6, 1.7)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point; WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; BRIEF, Behavior Rating Inventory Executive Function; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites. Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and maternal IQ. WCST models were also adjusted for children’s video game usage.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S22. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with behavior and social cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years **including maternal PPVT score** using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Social Cognition</i> ^c						
SRS Total Score	(+)	235	235	0.4 (-0.2, 1.0)	-0.3 (-1.2, 0.5)	-0.4 (-1.1, 0.4)
ENI	(-)	313	313	0.0 (-0.1, 0.1)	0.1 (-0.1, 0.2)	0.1 (-0.1, 0.2)
NEPSY-II Affect Recognition	(-)	308	308	0.0 (-0.3, 0.2)	-0.2 (-0.7, 0.2)	-0.1 (-0.5, 0.2)
<i>Behavior</i>						
BASC-2 – maternal report (T-scores)						
Internalizing problems	(+)	619	323	0.5 (0.0, 1.1)	0.8 (-0.1, 1.8)	0.6 (-0.3, 1.5)
Depression scale	(+)	322	322	0.4 (-0.1, 1.0)	0.5 (-0.5, 1.4)	0.3 (-0.5, 1.1)
Anxiety scale	(+)	313	313	0.4 (-0.3, 1.0)	0.8 (-0.3, 2.0)	0.7 (-0.4, 1.8)
Externalizing problems	(+)	612	323	0.0 (-0.5, 0.5)	0.4 (-0.5, 1.2)	0.2 (-0.5, 1.0)
Hyperactivity scale	(+)	619	323	-0.1 (-0.6, 0.3)	0.0 (-0.7, 0.7)	-0.1 (-0.8, 0.6)
Attention problems scale	(+)	619	323	-0.2 (-0.7, 0.4)	-0.3 (-1.3, 0.7)	-0.2 (-1.1, 0.7)
BASC-2 – teacher-report (T-score) ^c						
Internalizing problems	(+)	265	265	-0.7 (-1.6, 0.2)	-0.4 (-1.8, 1.0)	-0.3 (-1.6, 1.0)
Depression scale	(+)	265	265	-0.6 (-1.3, 0.1)	-0.2 (-1.4, 1.0)	-0.2 (-1.4, 0.9)
Anxiety scale	(+)	265	265	-0.9 (-1.8, 0.1)	-0.8 (-2.1, 0.5)	-0.7 (-2.0, 0.6)
Externalizing problems	(+)	265	265	-0.1 (-0.8, 0.6)	0.0 (-1.0, 1.0)	0.2 (-0.7, 1.1)
Hyperactivity scale	(+)	265	265	0.0 (-0.7, 0.7)	-0.3 (-1.4, 0.9)	-0.1 (-1.1, 0.9)
Attention problems scale	(+)	265	265	-0.2 (-0.8, 0.3)	-0.5 (-1.4, 0.4)	-0.3 (-1.2, 0.5)
CADS – maternal report (T-scores)						
ADHD Index	(+)	921	331	-0.3 (-0.7, 0.1)	-0.2 (-1.0, 0.5)	-0.2 (-1.0, 0.5)
DSM-IV Total Scale	(+)	920	331	-0.3 (-0.7, 0.1)	-0.1 (-1.0, 0.7)	-0.2 (-0.9, 0.6)
Inattentive Scale	(+)	920	331	-0.3 (-0.7, 0.1)	-0.2 (-1.0, 0.5)	-0.2 (-0.9, 0.4)
Hyperactive/impulsive scale	(+)	920	331	-0.2 (-0.7, 0.3)	0.0 (-0.9, 0.9)	-0.1 (-1.0, 0.7)
CADS – teacher-report (T-score) ^c						
ADHD Index	(+)	261	261	-0.4 (-1.2, 0.5)	-0.5 (-1.9, 0.9)	-0.4 (-1.6, 0.9)
DSM-IV Total Scale	(+)	260	260	-0.2 (-0.9, 0.5)	-0.2 (-1.4, 1.0)	-0.1 (-1.2, 1.0)

Inattentive Scale	(+)		264	264	-0.2 (-0.8, 0.5)	-0.1 (-1.2, 0.8)	-0.1 (-1.0, 0.9)
Hyperactive/impulsive scale	(+)		264	264	-0.1 (-0.8, 0.6)	-0.1 (-0.8, 0.6)	0.2 (-0.9, 1.3)
CPT-II (T-scores)							
Errors of omission	(+)		595	316	0.9 (0.0, 1.8)	0.0 (-1.2, 1.1)	-0.1 (-1.2, 1.0)
Errors of commission	(+)		595	316	0.3 (-0.2, 0.9)	-0.1 (-1.1, 0.8)	-0.3 (-1.2, 0.6)
ADHD confidence index	(+)		596	316	0.7 (-0.4, 1.9)	-0.9 (-2.7, 0.8)	-1.0 (-2.6, 0.7)
<p><i>Abbreviations:</i> <i>n</i>, number of observations from all time points; <i>k</i>, number of children with data for at least one time point; SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; CPT-II, Continuous Performance Test, 2nd edition; ΣLMW, sum of metabolites of low-molecular weight phthalates; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣDEHP, sum of di(2-ethylhexyl) phthalate metabolites.</p> <p>Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and maternal IQ. CPT-II models were also adjusted for children's video game usage at time of assessment.</p> <p>^a Separate models created for each sum of metabolites (ΣDEHP, ΣHMW, ΣLMW).</p> <p>^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.</p> <p>^c Outcomes measured at one time point and modeled using linear regression.</p>							

Table S23. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including maternal PPVT score** using linear regression models, CHAMACOS.

Outcome	Orientation ^b	<i>n</i>	Σ LMW	Σ HMW	Σ DEHP
10.5-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	289	0.5 (-0.1, 1.1)	0.7 (-0.5, 1.9)	0.6 (-0.5, 1.7)
Anxiety scale	(+)	289	0.3 (-0.3, 1.0)	0.5 (-0.5, 1.4)	0.4 (-0.5, 1.3)
Externalizing problems					
Hyperactivity scale	(+)	299	0.2 (-0.4, 0.8)	0.6 (-0.5, 1.6)	0.4 (-0.6, 1.4)
Attention problems scale	(+)	290	0.1 (-0.6, 0.8)	0.0 (-1.0, 1.0)	0.1 (-0.9, 1.0)
14-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	301	0.6 (-0.1, 1.2)	0.7 (-0.6, 1.9)	0.5 (-0.6, 1.6)
Anxiety scale	(+)	300	0.5 (-0.2, 1.1)	-0.3 (-1.2, 0.7)	-0.3 (-1.3, 0.6)
Externalizing problems					
Hyperactivity scale	(+)	-	-	-	-
Attention problems scale	(+)	-	-	-	-
16-year assessment					
Internalizing problems	(+)	283	1.2 (0.4, 2.0)	0.4 (-0.6, 1.4)	0.4 (-0.5, 1.3)
Depression scale	(+)	286	0.8 (0.0, 1.6)	0.3 (-0.8, 1.3)	0.3 (-0.6, 1.3)
Anxiety scale	(+)	286	0.9 (0.0, 1.8)	0.7 (-0.4, 1.9)	0.6 (-0.4, 1.7)
Externalizing problems					
Hyperactivity scale	(+)	285	0.8 (0.1, 1.5)	0.0 (-1.0, 1.1)	-0.2 (-1.1, 0.8)
Attention problems scale	(+)	286	1.5 (0.8, 2.3)	-0.2 (-1.1, 0.8)	-0.2 (-1.1, 0.7)

Abbreviations: BASC-2, Behavior Assessment System for Children, 2nd edition; *n*, number of observations; *k*, number of children; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S24. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years **including breastfeeding** using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Executive function</i>						
WCST						
Errors (T-scores)	(-)	593	317	0.2 (-0.4, 0.8)	0.5 (-0.4, 1.4)	0.5 (-0.3, 1.3)
Preservative Errors (T-scores)	(-)	593	317	0.7 (-0.1, 1.4)	0.7 (-0.6, 1.9)	0.6 (-0.5, 1.8)
BRIEF – maternal report (T-scores)						
Behavioral Regulation Index	(+)	922	331	0.1 (-0.4, 0.7)	0.1 (-0.8, 1.0)	0.0 (-0.8, 0.8)
Metacognition Index	(+)	921	330	-0.4 (-0.9, 0.1)	-0.1 (-1.0, 0.9)	-0.1 (-1.0, 0.7)
Global Executive Composite	(+)	922	331	-0.2 (-0.8, 0.3)	0.0 (-0.9, 1.0)	-0.1 (-0.9, 0.8)
NEPSY Tower	(-)	313	313	0.1 (-0.1, 0.3)	0.1 (-0.2, 0.4)	0.1 (-0.2, 0.4)
<i>Cognition</i>						
WISC-IV (scaled scores)						
Full Scale IQ	(-)	589	321	-0.2 (-1.0, 0.6)	0.0 (-1.4, 1.4)	0.1 (-1.3, 1.4)
Verbal comprehension IQ	(-)	621	324	-0.4 (-1.1, 0.4)	-0.3 (-1.6, 1.0)	-0.3 (-1.5, 0.9)
Perceptual reasoning IQ	(-)	621	324	0.2 (-0.7, 1.2)	0.4 (-1.1, 1.9)	0.3 (-1.1, 1.7)
Working memory IQ	(-)	593	323	-0.7 (-1.4, 0.1)	-0.1 (-1.5, 1.2)	-0.1 (-1.4, 1.2)
Processing speed IQ	(-)	593	323	0.2 (-0.4, 0.9)	0.5 (-0.7, 1.7)	0.5 (-0.6, 1.7)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point; WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; BRIEF, Behavior Rating Inventory Executive Function; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and breastfeeding. WCST models were also adjusted for children’s video game usage.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S25. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with behavior and social cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years including breastfeeding using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	ΣLMW	ΣHMW	ΣDEHP
<i>Social Cognition</i> ^c						
SRS Total Score	(+)	235	235	0.5 (-0.1, 1.1)	-0.3 (-1.1, 0.6)	-0.3 (-1.1, 0.5)
ENI	(-)	313	313	0.0 (-0.1, 0.1)	0.1 (-0.1, 0.2)	0.1 (-0.1, 0.2)
NEPSY-II Affect Recognition	(-)	308	308	0.0 (-0.3, 0.2)	-0.3 (-0.7, 0.1)	-0.2 (-0.6, 0.2)
<i>Behavior</i>						
BASC-2 – maternal report (T-scores)						
Internalizing problems	(+)	619	323	0.6 (0.0, 1.1)	0.6 (0.0, 1.1)	0.6 (-0.3, 1.5)
Depression scale	(+)	322	322	0.5 (-0.1, 1.1)	0.5 (-0.4, 1.4)	0.3 (-0.5, 1.1)
Anxiety scale	(+)	313	313	0.4 (-0.3, 1.0)	0.8 (-0.4, 1.9)	0.6 (-0.4, 1.7)
Externalizing problems	(+)	612	323	0.0 (-0.5, 0.5)	0.3 (-0.5, 1.1)	0.3 (-0.5, 1.1)
Hyperactivity ^f	(+)	619	323	-0.1 (-0.6, 0.3)	0.0 (-0.8, 0.7)	0.0 (-0.8, 0.7)
Attention problems	(+)	619	323	-0.2 (-0.8, 0.4)	-0.3 (-1.3, 0.6)	-0.2 (-1.2, 0.7)
BASC-2 – teacher-report (T-score) ^c						
Internalizing problems	(+)	265	265	-0.7 (-1.6, 0.2)	-0.4 (-1.8, 1.0)	-0.3 (-1.6, 1.0)
Depression scale	(+)	265	265	-0.6 (-1.4, 0.1)	-0.2 (-1.4, 0.9)	-0.2 (-1.4, 0.9)
Anxiety scale	(+)	265	265	-0.9 (-1.8, 0.1)	-0.8 (-2.1, 0.6)	-0.7 (-2.0, 0.6)
Externalizing problems	(+)	265	265	-0.1 (-0.8, 0.6)	0.0 (-1.0, 1.0)	0.2 (-0.7, 1.1)
Hyperactivity scale	(+)	265	265	0.0 (-0.7, 0.7)	-0.2 (-1.4, 0.9)	-0.1 (-1.1, 0.9)
Attention problems scale	(+)	265	265	-0.2 (-0.8, 0.4)	-0.5 (-1.4, 0.4)	-0.3 (-1.2, 0.5)
CADS – maternal report (T-scores)						
ADHD Index	(+)	921	331	-0.3 (-0.7, 0.1)	-0.2 (-1.0, 0.5)	-0.2 (-1.0, 0.5)
DSM-IV Total Scale	(+)	920	331	-0.1 (-1.0, 0.7)	-0.1 (-1.0, 0.7)	-0.2 (-0.9, 0.6)
Inattentive Scale	(+)	920	331	-0.3 (-0.7, 0.1)	-0.3 (-0.7, 0.1)	-0.3 (-0.9, 0.4)
Hyperactive/impulsive scale	(+)	920	331	-0.2 (-0.7, 0.3)	0.0 (-0.9, 0.9)	-0.1 (-1.0, 0.7)
CADS – teacher-report (T-score) ^c						
ADHD Index	(+)	261	261	-0.3 (-1.2, 0.5)	-0.5 (-1.9, 0.9)	-0.3 (-1.6, 1.0)
DSM-IV Total Scale	(+)	260	260	-0.2 (-0.9, 0.5)	-0.2 (-1.3, 1.0)	-0.1 (-1.2, 1.0)
Inattentive Scale	(+)	264	264	-0.1 (-0.8, 0.5)	-0.1 (-1.2, 0.9)	-0.1 (-1.0, 0.9)
Hyperactive/impulsive scale	(+)	264	264	0.0 (-0.7, 0.7)	0.1 (-1.1, 1.3)	0.2 (-0.9, 1.3)

CPT-II (T-scores)							
Errors of omission	(+)	595	316	0.9 (0.0, 1.8)		-0.1 (-1.2, 1.1)	-0.2 (-1.3, 0.9)
Errors of commission	(+)	595	316	0.3 (-0.3, 0.8)		-0.1 (-1.0, 0.8)	-0.3 (-1.1, 0.6)
ADHD confidence index	(+)	596	316	0.8 (-0.4, 1.9)		-1.0 (-2.7, 0.8)	-1.0 (-2.6, 0.6)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point; SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; CPT-II, Continuous Performance Test, 2nd edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and breastfeeding. CPT-II models were also adjusted for children's video game usage at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^c Outcomes measured at one time point and modeled using linear regression.

Table S26. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including breastfeeding** using linear regression models, CHAMACOS.

Outcome	Orientation ^b	<i>n</i>	Σ LMW	Σ HMW	Σ DEHP
10.5-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	289	0.5 (-0.2, 1.1)	0.7 (-0.5, 1.8)	0.6 (-0.6, 1.7)
Anxiety scale	(+)	289	0.3 (-0.4, 0.9)	0.5 (-0.5, 1.4)	0.4 (-0.5, 1.3)
Externalizing problems					
Hyperactivity scale	(+)	299	0.2 (-0.4, 0.8)	0.6 (-0.5, 1.6)	0.4 (-0.6, 1.4)
Attention problems scale	(+)	290	0.1 (-0.6, 0.8)	0.0 (-1.0, 1.0)	0.1 (-0.9, 1.0)
14-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	301	0.6 (-0.1, 1.2)	0.6 (-0.6, 1.8)	0.5 (-0.7, 1.6)
Anxiety scale	(+)	300	0.4 (-0.2, 1.1)	-0.3 (-1.3, 0.7)	-0.4 (-1.3, 0.6)
Externalizing problems					
Hyperactivity scale	(+)	-	-	-	-
Attention problems scale	(+)	-	-	-	-
16-year assessment					
Internalizing problems	(+)	283	1.2 (0.4, 2.0)	0.3 (-0.7, 1.4)	0.3 (-0.6, 1.3)
Depression scale	(+)	286	0.7 (0.0, 1.5)	0.2 (-0.8, 1.2)	0.3 (-0.7, 1.2)
Anxiety scale	(+)	286	0.9 (0.0, 1.8)	0.7 (-0.5, 1.8)	0.6 (-0.5, 1.6)
Externalizing problems					
Hyperactivity scale	(+)	285	0.8 (0.1, 1.4)	0.0 (-1.1, 1.0)	-0.2 (-1.2, 0.8)
Attention problems scale	(+)	286	1.5 (0.7, 2.2)	-0.2 (-1.2, 0.8)	-0.3 (-1.2, 0.6)

Abbreviations: BASC-2, Behavior Assessment System for Children, 2nd edition; *n*, number of observations; *k*, number of children; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S27. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years including prenatal PBDE exposure using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Executive function</i>						
WCST						
Errors (T-scores)	(-)	468	251	0.2 (-0.4, 0.9)	0.6 (-0.4, 1.7)	0.5 (-0.5, 1.5)
Preservative Errors (T-scores)	(-)	468	251	0.8 (-0.1, 1.6)	1.0 (-0.5, 2.4)	0.9 (-0.5, 2.2)
BRIEF – maternal report (T-scores)						
Behavioral Regulation Index	(+)	728	263	0.1 (-0.5, 0.7)	0.2 (-0.9, 1.3)	0.1 (-0.8, 1.1)
Metacognition Index	(+)	727	262	-0.3 (-0.9, 0.2)	0.0 (-1.1, 1.1)	0.0 (-1.0, 1.0)
Global Executive Composite	(+)	728	263	-0.1 (-0.7, 0.4)	0.1 (-1.0, 1.2)	0.0 (-1.0, 1.0)
NEPSY Tower	(-)	246	246	0.2 (-0.1, 0.4)	0.1 (-0.2, 0.5)	0.9 (-0.3, 0.4)
<i>Cognition</i>						
WISC-IV (scaled scores)						
Full-Scale IQ	(-)	461	254	-0.2 (-1.1, 0.7)	0.1 (-1.6, 1.8)	0.1 (-1.5, 1.7)
Verbal comprehension IQ	(-)	488	257	-0.2 (-1.0, 0.7)	-0.5 (-2.1, 1.2)	-0.4 (-2.0, 1.1)
Perceptual reasoning IQ	(-)	488	257	0.0 (-1.1, 1.1)	0.6 (-1.2, 2.3)	0.5 (-1.2, 2.1)
Working memory IQ	(-)	464	256	-0.6 (-1.4, 0.2)	-0.4 (-1.9, 1.1)	-0.3 (-1.7, 1.2)
Processing speed IQ	(-)	465	256	0.3 (-0.4, 1.0)	1.0 (-0.4, 2.5)	1.0 (-0.4, 2.4)
<p><i>Abbreviations:</i> <i>n</i>, number of observations from all time points; <i>k</i>, number of children with data for at least one time point; WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; BRIEF, Behavior Rating Inventory Executive Function; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; ΣLMW, sum of metabolites of low-molecular weight phthalates; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣDEHP, sum of di(2-ethylhexyl) phthalate metabolites. Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and prenatal PBDE exposure. WCST models were also adjusted for children’s video game usage.</p> <p>^a Separate models created for each sum of metabolites (ΣDEHP, ΣHMW, ΣLMW).</p> <p>^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.</p>						

Table S28. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with behavior and social cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years including prenatal PBDE exposures using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Social Cognition</i> ^c						
SRS Total Score	(+)	174	174	0.7 (-0.1, 1.3)	0.0 (-1.1, 0.9)	-0.1 (-1.1, 0.8)
ENI	(-)	246	246	0.0 (-0.1, 0.1)	0.0 (-0.2, 0.1)	0.0 (-0.1, 0.1)
NEPSY-II Affect Recognition	(-)	243	243	0.0 (-0.3, 0.2)	-0.3 (-0.8, 0.2)	-0.2 (-0.6, 0.3)
<i>Behavior</i>						
BASC-2 – maternal report (T-scores)						
Internalizing problems	(+)	486	256	0.5 (-0.1, 1.1)	0.8 (-0.3, 2.0)	0.7 (-0.4, 1.8)
Depression scale	(+)	254	254	0.4 (-0.2, 1.0)	0.6 (-0.4, 1.7)	0.5 (-0.5, 1.5)
Anxiety scale	(+)	246	246	0.4 (-0.4, 1.1)	1.0 (-0.4, 2.4)	0.9 (-0.4, 2.2)
Externalizing problems	(+)	482	256	-0.1 (-0.6, 0.4)	-0.1 (-0.9, 0.8)	-0.2 (-1.0, 0.6)
Hyperactivity	(+)	486	256	-0.2 (-0.7, 0.3)	-0.4 (-1.2, 0.4)	-0.5 (-1.2, 0.2)
Attention problems	(+)	486	256	-0.2 (-0.8, 0.4)	-0.6 (-1.7, 0.5)	-0.5 (-1.5, 0.5)
BASC-2 – teacher-report (T-score) ^c						
Internalizing problems	(+)	208	208	-0.7 (-1.7, 0.3)	-0.6 (-2.1, 1.0)	-0.5 (-1.9, 1.0)
Depression scale	(+)	208	208	-0.5 (-1.3, 0.3)	-0.8 (-1.9, 0.3)	-0.8 (-1.9, 0.2)
Anxiety scale	(+)	208	208	-0.8 (-1.9, 0.2)	-0.7 (-2.3, 0.8)	-0.6 (-2.1, 0.8)
Externalizing problems	(+)	208	208	-0.1 (-0.8, 0.6)	-0.4 (-1.5, 0.8)	-0.3 (-1.3, 0.8)
Hyperactivity scale	(+)	208	208	0.1 (-0.7, 0.8)	-0.6 (-1.9, 0.7)	-0.5 (-1.7, 0.7)
Attention problems scale	(+)	208	208	-0.2 (-0.8, 0.4)	-0.5 (-1.5, 0.6)	-0.3 (-1.3, 0.7)
CADS – maternal report (T-scores)						
ADHD Index	(+)	727	263	-0.3 (-0.7, 0.2)	-0.4 (-1.3, 0.6)	-0.3 (-1.2, 0.5)
DSM-IV Total Scale	(+)	726	263	-0.1 (-0.6, 0.3)	-0.1 (-1.1, 0.8)	-0.2 (-1.0, 0.7)
Inattentive Scale	(+)	726	263	-0.2 (-0.6, 0.2)	-0.2 (-1.0, 0.7)	-0.2 (-0.9, 0.6)
Hyperactive/impulsive scale	(+)	726	263	0.0 (-0.5, 0.5)	-0.1 (-1.1, 0.9)	-0.2 (-1.2, 0.7)
CADS – teacher-report (T-score) ^c						
ADHD Index	(+)	204	204	-0.3 (-1.2, 0.6)	-0.6 (-2.2, 1.0)	-0.5 (-2.0, 0.9)
DSM-IV Total Scale	(+)	203	203	-0.1 (-0.9, 0.6)	-0.1 (-1.5, 1.2)	-0.1 (-1.4, 1.1)
Inattentive Scale	(+)	207	207	-0.1 (-0.8, 0.6)	0.1 (-1.0, 1.2)	0.1 (-0.9, 1.1)
Hyperactive/impulsive scale	(+)	207	207	0.0 (-0.8, 0.8)	-0.2 (-1.6, 1.2)	-0.2 (-1.5, 1.1)

CPT-II (T-scores)								
Errors of omission	(+)	468	250	1.0 (0.0, 2.0)		-0.5 (-1.7, 0.6)		-0.7 (-1.8, 0.4)
Errors of commission	(+)	468	250	0.3 (-0.3, 1.0)		0.7 (-0.3, 1.7)		0.5 (-0.5, 1.4)
ADHD confidence index	(+)	469	250	0.8 (-0.5, 2.1)		-1.7 (-3.6, 0.1)		-1.8 (-3.5, -0.1)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point; SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; CPT-II, Continuous Performance Test, 2nd edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and prenatal PBDE exposure. CPT-II models were also adjusted for children's video game usage at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^c Outcomes measured at one time point and modeled using linear regression.

Table S29. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including prenatal PBDE exposures** using linear regression models, CHAMACOS.

Outcome	Orientation ^b	<i>n</i>	Σ LMW	Σ HMW	Σ DEHP
10.5-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	226	0.5 (-0.2, 1.2)	0.2 (-1.0, 1.5)	0.1 (-1.1, 1.3)
Anxiety scale	(+)	227	0.2 (-0.5, 1.0)	0.3 (-0.9, 1.5)	0.2 (-0.9, 1.4)
Externalizing problems					
Hyperactivity scale	(+)	235	0.1 (-0.6, 0.8)	0.1 (-1.0, 1.3)	-0.1 (-1.1, 1.0)
Attention problems scale	(+)	227	0.1 (-0.6, 0.8)	-0.2 (-1.4, 0.9)	-0.2 (-1.3, 0.9)
14-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	235	0.3 (-0.4, 1.1)	0.3 (-1.0, 1.6)	0.3 (-0.9, 1.5)
Anxiety scale	(+)	235	0.5 (-0.2, 1.2)	-0.4 (-1.5, 0.8)	-0.4 (-1.5, 0.7)
Externalizing problems					
Hyperactivity scale	(+)	-	-	-	-
Attention problems scale	(+)	-	-	-	-
16-year assessment					
Internalizing problems	(+)	222	1.1 (0.2, 2.0)	0.2 (-0.9, 1.4)	0.2 (-0.8, 1.3)
Depression scale	(+)	225	0.6 (-0.3, 1.5)	0.2 (-0.9, 1.4)	0.2 (-0.8, 1.3)
Anxiety scale	(+)	225	0.9 (-0.1, 1.9)	0.5 (-0.8, 1.8)	0.3 (-0.9, 1.6)
Externalizing problems					
Hyperactivity scale	(+)	285	0.9 (0.1, 1.6)	0.0 (-1.3, 1.2)	-0.2 (-1.4, 1.0)
Attention problems scale	(+)	225	1.3 (0.5, 2.1)	-0.3 (-1.4, 0.8)	-0.4 (-1.4, 0.6)

Abbreviations: BASC-2, Behavior Assessment System for Children, 2nd edition; *n*, number of observations; *k*, number of children; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S30. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years including prenatal OP pesticide exposure using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Executive function</i>						
WCST						
Errors (T-scores)	(-)	593	317	0.2 (-0.4, 0.8)	0.5 (-0.4, 1.4)	0.5 (-0.4, 1.3)
Preservative Errors (T-scores)	(-)	593	317	0.7 (-0.1, 1.4)	0.6 (-0.7, 1.8)	0.6 (-0.6, 1.7)
BRIEF – maternal report (T-scores)						
Behavioral Regulation Index	(+)	922	331	0.1 (-0.4, 0.6)	0.1 (-0.8, 1.0)	0.0 (-0.8, 0.8)
Metacognition Index	(+)	921	330	-0.5 (-0.9, 0.0)	-0.1 (-1.0, 0.9)	-0.1 (-1.0, 0.7)
Global Executive Composite	(+)	922	331	-0.3 (-0.8, 0.2)	0.0 (-0.9, 1.0)	-0.1 (-0.9, 0.8)
NEPSY Tower	(-)	313	313	0.1 (-0.1, 0.3)	0.1 (-0.2, 0.4)	0.1 (-0.2, 0.4)
<i>Cognition</i>						
WISC-IV (scaled scores)						
Full-Scale IQ	(-)	589	321	-0.2 (-1.0, 0.6)	0.0 (-1.4, 1.4)	0.1 (-1.3, 1.4)
Verbal comprehension IQ	(-)	621	324	-0.4 (-1.1, 0.4)	-0.4 (-1.7, 1.0)	-0.3 (-1.5, 1.0)
Perceptual reasoning IQ	(-)	621	324	0.2 (-0.7, 1.2)	0.4 (-1.2, 1.9)	0.3 (-1.1, 1.7)
Working memory IQ	(-)	593	323	-0.6 (-1.4, 0.1)	-0.2 (-1.6, 1.2)	-0.1 (-1.4, 1.3)
Processing speed IQ	(-)	593	323	0.2 (-0.4, 0.9)	0.5 (-0.7, 1.7)	0.5 (-0.6, 1.6)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point; WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; BRIEF, Behavior Rating Inventory Executive Function; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites. Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and prenatal pesticide exposure. WCST models were also adjusted for children’s video game usage.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S31. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with behavior and social cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years including prenatal OP pesticide exposures using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Social Cognition</i> ^c						
SRS Total Score	(+)	235	235	0.5 (-0.1, 1.1)	-0.2 (-1.0, 0.6)	-0.2 (-1.0, 0.5)
ENI	(-)	313	313	0.0 (-0.1, 0.1)	0.1 (-0.1, 0.2)	0.1 (-0.1, 0.2)
NEPSY-II Affect Recognition	(-)	308	308	0.0 (-0.3, 0.2)	-0.2 (-0.7, 0.1)	-0.2 (-0.6, 0.2)
<i>Behavior</i>						
BASC-2 – maternal report (T-scores)						
Internalizing problems	(+)	619	323	0.5 (-0.1, 1.1)	0.8 (-0.2, 1.8)	0.6 (-0.3, 1.5)
Depression scale	(+)	322	322	0.4 (-0.1, 1.0)	0.4 (-0.5, 1.3)	0.3 (-0.6, 1.1)
Anxiety scale	(+)	313	313	0.3 (-0.3, 1.0)	0.8 (-0.4, 1.9)	0.6 (-0.5, 1.7)
Externalizing problems	(+)	612	323	0.0 (-0.5, 0.4)	0.3 (-0.5, 1.2)	0.2 (-0.6, 0.9)
Hyperactivity	(+)	619	323	-0.2 (-0.6, 0.2)	0.0 (-0.7, 0.7)	-0.1 (-0.8, 0.5)
Attention problems	(+)	619	323	-0.2 (-0.7, 0.3)	-0.3 (-1.3, 0.7)	-0.2 (-1.2, 0.7)
BASC-2 – teacher-report (T-score) ^c						
Internalizing problems	(+)	265	265	-0.7 (-1.6, 0.2)	-0.4 (-1.8, 1.0)	-0.3 (-1.6, 1.0)
Depression scale	(+)	265	265	-0.6 (-1.3, 0.1)	-0.2 (-1.4, 0.9)	-0.2 (-1.4, 0.9)
Anxiety scale	(+)	265	265	-0.8 (-1.8, 0.1)	-0.8 (-2.1, 0.5)	-0.7 (-2.0, 0.6)
Externalizing problems	(+)	265	265	-0.1 (-0.8, 0.6)	0.0 (-1.0, 1.0)	0.2 (-0.8, 1.1)
Hyperactivity scale	(+)	265	265	-0.0 (-0.7, 0.7)	-0.2 (-1.4, 0.9)	-0.1 (-1.1, 0.9)
Attention problems scale	(+)	265	265	-0.2 (-0.8, 0.3)	-0.5 (-1.4, 0.4)	-0.3 (-1.2, 0.6)
CADS – maternal report (T-scores)						
ADHD Index	(+)	921	331	-0.4 (-0.7, 0.0)	-0.2 (-1.0, 0.5)	-0.3 (-1.0, 0.4)
DSM-IV Total Scale	(+)	920	331	-0.3 (-0.7, 0.1)	-0.1 (-0.9, 0.7)	-0.2 (-0.9, 0.5)
Inattentive Scale	(+)	920	331	-0.3 (-0.7, 0.1)	-0.3 (-1.0, 0.4)	-0.3 (-0.9, 0.4)
Hyperactive/impulsive scale	(+)	920	331	-0.2 (-0.7, 0.2)	0.0 (-0.9, 0.9)	-0.2 (-1.0, 0.6)
CADS – teacher-report (T-score) ^c						
ADHD Index	(+)	261	261	-0.4 (-1.2, 0.4)	-0.5 (-1.9, 0.9)	-0.4 (-1.7, 1.0)
DSM-IV Total Scale	(+)	260	260	-0.2 (-0.9, 0.5)	-0.2 (-1.4, 1.0)	-0.1 (-1.2, 1.0)
Inattentive Scale	(+)	264	264	-0.2 (-0.8, 0.5)	-0.1 (-1.2, 0.9)	-0.1 (-1.0, 0.9)
Hyperactive/impulsive scale	(+)	264	264	-0.1 (-0.8, 0.6)	0.1 (-1.1, 1.3)	0.2 (-0.9, 1.3)

CPT-II (T-scores)							
Errors of omission	(+)	595	316	0.9 (0.0, 1.8)		0.0 (-1.2, 1.1)	-0.1 (-1.2, 1.0)
Errors of commission	(+)	595	316	0.3 (-0.2, 0.8)		-0.1 (-1.0, 0.8)	-0.3 (-1.1, 0.6)
ADHD confidence index	(+)	596	316	0.7 (-0.5, 1.9)		-0.9 (-2.7, 0.8)	-1.0 (-2.6, 0.6)

Abbreviations *n*, number of observations from all time points; *k*, number of children with data for at least one time point; SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; CPT-II, Continuous Performance Test, 2nd edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and prenatal pesticide exposure. CPT-II models were also adjusted for children's video game usage at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^c Outcomes measured at one time point and modeled using linear regression.

Table S32. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including prenatal OP pesticide exposures** using linear regression models, CHAMACOS.

Outcome	Orientation ^b	<i>n</i>	Σ LMW	Σ HMW	Σ DEHP
10.5-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	289	0.5 (-0.1, 1.1)	0.7 (-0.4, 1.9)	0.6 (-0.5, 1.8)
Anxiety scale	(+)	289	0.3 (-0.3, 1.0)	0.5 (-0.5, 1.4)	0.4 (-0.5, 1.3)
Externalizing problems					
Hyperactivity scale	(+)	299	0.2 (-0.4, 0.8)	0.6 (-0.4, 1.6)	0.4 (-0.6, 1.4)
Attention problems scale	(+)	290	0.1 (-0.6, 0.8)	0.1 (-1.0, 1.1)	0.1 (-0.9, 1.0)
14-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	301	0.5 (-0.1, 1.2)	0.6 (-0.6, 1.9)	0.5 (-0.6, 1.6)
Anxiety scale	(+)	300	0.4 (-0.2, 1.1)	-0.3 (-1.3, 0.7)	-0.4 (-1.3, 0.6)
Externalizing problems					
Hyperactivity scale	(+)	-	-	-	-
Attention problems scale	(+)	-	-	-	-
16-year assessment					
Internalizing problems	(+)	283	1.2 (0.4, 1.9)	0.3 (-0.7, 1.4)	0.3 (-0.6, 1.3)
Depression scale	(+)	286	0.7 (-0.1, 1.5)	0.2 (-0.8, 1.3)	0.3 (-0.7, 1.2)
Anxiety scale	(+)	286	0.9 (-0.0, 1.8)	0.7 (-0.5, 1.8)	0.6 (-0.5, 1.7)
Externalizing problems					
Hyperactivity scale	(+)	285	0.7 (0.1, 1.4)	-0.1 (-1.1, 1.0)	-0.2 (-1.2, 0.8)
Attention problems scale	(+)	286	1.5 (0.7, 2.2)	-0.2 (-1.2, 0.7)	-0.3 (-1.2, 0.6)

Abbreviations: BASC-2, Behavior Assessment System for Children, 2nd edition; *n*, number of observations; *k*, number of children; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S33. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years **including prenatal OC pesticide exposure** using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Executive function</i>						
WCST						
Errors (T-scores)	(-)	466	250	0.3 (-0.4, 1.0)	0.6 (-0.5, 1.6)	0.5 (-0.5, 1.5)
Preservative Errors (T-scores)	(-)	466	250	0.8 (-0.1, 1.6)	0.8 (-0.6, 2.2)	0.8 (-0.5, 2.1)
BRIEF – maternal report (T-scores)						
Behavioral Regulation Index	(+)	725	262	0.1 (-0.5, 0.7)	0.2 (-0.9, 1.3)	0.1 (-0.9, 1.2)
Metacognition Index	(+)	724	261	-0.3 (-0.9, 0.2)	0.1 (-1.1, 1.2)	0.0 (-1.1, 1.0)
Global Executive Composite	(+)	725	262	-0.2 (-0.7, 0.4)	0.1 (-1.0, 1.3)	0.1 (-1.0, 1.1)
NEPSY Tower	(-)	245	245	0.2 (-0.1, 0.4)	0.1 (-0.2, 0.5)	0.1 (-0.3, 0.5)
<i>Cognition</i>						
WISC-IV (scaled scores)						
Full-Scale IQ	(-)	459	253	-0.2 (-1.1, 0.7)	0.1 (-1.6, 1.7)	0.1 (-1.5, 1.7)
Verbal comprehension IQ	(-)	486	256	-0.2 (-1.0, 0.7)	-0.4 (-2.1, 1.2)	-0.4 (-2.0, 1.2)
Perceptual reasoning IQ	(-)	486	256	0.0 (-1.1, 1.1)	0.6 (-1.2, 2.3)	0.5 (-1.1, 2.2)
Working memory IQ	(-)	462	255	-0.6 (-1.4, 0.2)	-0.5 (-2.0, 1.1)	-0.3 (-1.8, 1.1)
Processing speed IQ	(-)	463	255	0.3 (-0.4, 1.0)	1.0 (-0.5, 2.4)	0.9 (-0.5, 2.3)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point; WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; BRIEF, Behavior Rating Inventory Executive Function; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and prenatal pesticide exposure. WCST models were also adjusted for children’s video game usage.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S34. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with behavior and social cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years including prenatal OC pesticide exposures using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Social Cognition</i> ^c						
SRS Total Score	(+)	173	173	0.6 (0.0, 1.3)	-0.1 (-1.1, 0.9)	-0.2 (-1.1, 0.7)
ENI	(-)	245	245	0.0 (-0.1, 0.1)	0.0 (-0.1, 0.1)	0.0 (-0.1, 0.1)
NEPSY-II Affect Recognition	(-)	242	242	0.0 (-0.3, 0.2)	-0.3 (-0.8, 0.2)	-0.2 (-0.6, 0.3)
<i>Behavior</i>						
BASC-2 – maternal report (T-scores)						
Internalizing problems	(+)	484	255	0.5 (-0.1, 1.1)	0.8 (-0.3, 2.0)	0.7 (-0.4, 1.8)
Depression scale	(+)	253	253	0.4 (-0.2, 1.0)	0.6 (-0.4, 1.7)	0.5 (-0.4, 1.5)
Anxiety scale	(+)	245	245	0.3 (-0.4, 1.1)	1.0 (-0.4, 2.4)	1.0 (-0.4, 2.3)
Externalizing problems	(+)	481	255	-0.1 (-0.6, 0.4)	-0.1 (-0.9, 0.8)	-0.2 (-1.0, 0.6)
Hyperactivity	(+)	484	255	-0.2 (-0.9, 0.4)	-0.6 (-1.8, 0.5)	-0.5 (-1.6, 0.5)
Attention problems	(+)	484	255	-0.2 (-0.7, 0.3)	-0.5 (-1.2, 0.3)	-0.6 (-1.2, 0.1)
BASC-2 – teacher-report (T-score) ^c						
Internalizing problems	(+)	207	207	-0.7 (-1.7, 0.3)	-0.6 (-2.1, 0.9)	-0.5 (-1.9, 0.9)
Depression scale	(+)	207	207	-0.5 (-1.3, 0.3)	-0.8 (-1.9, 0.3)	-0.8 (-1.9, 0.2)
Anxiety scale	(+)	207	207	-0.8 (-1.9, 0.2)	-0.7 (-2.2, 0.8)	-0.6 (-2.0, 0.8)
Externalizing problems	(+)	207	207	-0.1 (-0.8, 0.6)	-0.3 (-1.5, 0.8)	-0.3 (-1.3, 0.8)
Hyperactivity scale	(+)	207	207	0.1 (-0.7, 0.8)	-0.6 (-1.8, 0.7)	-0.5 (-1.7, 0.7)
Attention problems scale	(+)	207	207	-0.2 (-0.8, 0.5)	-0.4 (-1.4, 0.6)	-0.3 (-1.3, 0.7)
CADS – maternal report (T-scores)						
ADHD Index	(+)	724	262	-0.3 (-0.7, 0.2)	-0.3 (-1.3, 0.6)	-0.3 (-1.2, 0.5)
DSM-IV Total Scale	(+)	723	262	-0.1 (-0.6, 0.3)	-0.1 (-1.1, 0.8)	-0.2 (-1.1, 0.7)
Inattentive Scale	(+)	723	262	-0.2 (-0.6, 0.2)	-0.2 (-1.0, 0.7)	-0.2 (-0.9, 0.6)
Hyperactive/impulsive scale	(+)	723	262	0.0 (-0.5, 0.5)	-0.1 (-1.1, 0.9)	-0.2 (-1.2, 0.7)
CADS – teacher-report (T-score) ^c						
ADHD Index	(+)	203	203	-0.3 (-1.2, 0.6)	-0.5 (-2.0, 1.1)	-0.5 (-2.0, 0.9)
DSM-IV Total Scale	(+)	202	202	-0.1 (-0.9, 0.6)	-0.1 (-1.4, 1.2)	-0.1 (-1.4, 1.1)
Inattentive Scale	(+)	206	206	-0.1 (-0.8, 0.6)	0.1 (-1.0, 1.2)	0.1 (-1.0, 1.1)
Hyperactive/impulsive scale	(+)	206	206	-0.0 (-0.8, 0.8)	-0.1 (-1.5, 1.2)	-0.2 (-1.4, 1.1)

CPT-II (T-scores)							
Errors of omission	(+)	466	249	1.0 (0.0, 2.0)		-0.5 (-1.7, 0.7)	-0.6 (-1.8, 0.5)
Errors of commission	(+)	466	249	0.3 (-0.3, 1.0)		0.7 (-0.2, 1.7)	0.5 (-0.4, 1.4)
ADHD confidence index	(+)	467	249	0.8 (-0.5, 2.1)		-1.7 (-3.5, 0.1)	-1.8 (-3.4, -0.1)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point; SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; CPT-II, Continuous Performance Test, 2nd edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and prenatal pesticide exposure. CPT-II models were also adjusted for children's video game usage at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

^c Outcomes measured at one time point and modeled using linear regression.

Table S35. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including prenatal OC exposures** using linear regression models, CHAMACOS.

Outcome	Orientation ^b	<i>n</i>	Σ LMW	Σ HMW	Σ DEHP
10.5-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	225	0.5 (-0.2, 1.2)	0.3 (-0.9, 1.5)	0.2 (-1.0, 1.3)
Anxiety scale	(+)	226	0.2 (-0.5, 1.0)	0.3 (-0.8, 1.5)	0.3 (-0.9, 1.4)
Externalizing problems					
Hyperactivity scale	(+)	234	0.1 (-0.6, 0.8)	0.2 (-1.0, 1.3)	-0.1 (-1.2, 1.1)
Attention problems scale	(+)	226	0.1 (-0.6, 0.8)	-0.2 (-1.4, 1.0)	-0.2 (-1.4, 0.9)
14-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	234	0.3 (-0.4, 1.1)	0.4 (-1.0, 1.7)	0.3 (-0.9, 1.5)
Anxiety scale	(+)	234	0.5 (-0.2, 1.2)	-0.3 (-1.4, 0.9)	-0.3 (-1.4, 0.8)
Externalizing problems					
Hyperactivity scale	(+)	-	-	-	-
Attention problems scale	(+)	-	-	-	-
16-year assessment					
Internalizing problems	(+)	221	1.1 (0.2, 2.0)	0.3 (-0.8, 1.5)	0.3 (-0.8, 1.4)
Depression scale	(+)	224	0.3 (-0.8, 1.4)	0.3 (-0.8, 1.4)	0.3 (-0.8, 1.3)
Anxiety scale	(+)	224	0.9 (-0.1, 1.9)	0.6 (-0.7, 1.8)	0.5 (-0.7, 1.7)
Externalizing problems					
Hyperactivity scale	(+)	223	0.8 (0.1, 1.6)	0.1 (-1.1, 1.4)	-0.1 (-1.3, 1.1)
Attention problems scale	(+)	224	1.3 (0.5, 2.1)	-0.3 (-1.4, 0.8)	-0.4 (-1.5, 0.6)

Abbreviations: BASC-2, Behavior Assessment System for Children, 2nd edition; *n*, number of observations; *k*, number of children; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S36. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years including prenatal Mn exposure using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	Σ LMW	Σ HMW	Σ DEHP
<i>Executive function</i>						
WCST						
Errors (T-scores)	(-)	388	206	0.3 (-0.4, 1.1)	0.8 (-0.3, 1.8)	0.6 (-0.3, 1.6)
Preservative Errors (T-scores)	(-)	388	206	0.6 (-0.4, 1.5)	0.6 (-0.9, 2.1)	0.5 (-0.8, 1.9)
BRIEF – maternal report (T-scores)						
Behavioral Regulation Index	(+)	604	215	0.3 (-0.4, 0.9)	0.2 (-0.9, 1.3)	0.1 (-0.9, 1.2)
Metacognition Index	(+)	604	215	-0.4 (-1.0, 0.3)	0.1 (-1.1, 1.3)	0.1 (-1.0, 1.2)
Global Executive Composite	(+)	604	215	-0.1 (-0.8, 0.5)	0.1 (-1.0, 1.3)	0.1 (-1.0, 1.2)
NEPSY Tower	(-)	206	206	0.2 (-0.1, 0.5)	0.2 (-0.2, 0.6)	0.1 (-0.3, 0.5)
<i>Cognition</i>						
WISC-IV (scaled scores)						
Full-Scale IQ	(-)	384	209	-0.2 (-1.2, 0.8)	-0.2 (-1.8, 1.3)	-0.3 (-1.8, 1.2)
Verbal comprehension IQ	(-)	407	212	-0.3 (-1.2, 0.6)	-0.5 (-2.2, 1.2)	-0.5 (-2.1, 1.0)
Perceptual reasoning IQ	(-)	407	212	0.3 (-1.0, 1.6)	0.2 (-1.5, 1.9)	0.0 (-1.6, 1.6)
Working memory IQ	(-)	388	211	-0.6 (-1.5, 0.4)	-0.7 (-2.1, 0.7)	-0.7 (-2.0, 0.6)
Processing speed IQ	(-)	388	211	0.4 (-0.5, 1.3)	0.6 (-0.8, 2.0)	0.7 (-0.6, 2.0)

Abbreviations: *n*, number of observations from all time points; *k*, number of children with data for at least one time point WCST, Wisconsin Card Sort Task-64: Computer Version 2 – Research Edition; BRIEF, Behavior Rating Inventory Executive Function; WISC-IV, Wechsler Intelligence Scale for Children 4th edition; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites. Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and prenatal pesticide exposure. WCST models were also adjusted for children’s video game usage.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Table S37. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with behavior and social cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years including prenatal Mn exposures using GEE models, CHAMACOS.

Outcomes	Orientation ^b	<i>n</i>	<i>k</i>	ΣLMW	ΣHMW	ΣDEHP
<i>Social Cognition</i> ^c						
SRS Total Score	(+)	153	153	0.4 (-0.3, 1.0)	-0.4 (-1.4, 0.5)	-0.4 (-1.2, 0.5)
ENI	(-)	206	206	0.0 (-0.1, 0.1)	0.1 (0.0, 0.3)	0.1 (0.0, 0.3)
NEPSY-II Affect Recognition	(-)	203	203	-0.1 (-0.3, 0.2)	-0.2 (-0.8, 0.3)	-0.1 (-0.7, 0.4)
<i>Behavior</i>						
BASC-2 – maternal report (T-scores)						
Internalizing problems	(+)	406	212	0.5 (-0.2, 1.2)	0.5 (-0.7, 1.7)	0.4 (-0.7, 1.5)
Depression scale	(+)	210	210	0.7 (-0.1, 1.4)	0.6 (-0.5, 1.6)	0.4 (-0.6, 1.4)
Anxiety scale	(+)	204	204	0.3 (-0.6, 1.2)	0.5 (-1.0, 2.0)	0.4 (-1.1, 1.8)
Externalizing problems	(+)	401	212	0.1 (-0.4, 0.7)	-0.1 (-1.0, 0.8)	-0.2 (-1.0, 0.7)
Hyperactivity	(+)	406	212	0.0 (-0.5, 0.5)	-0.2 (-1.0, 0.5)	-0.3 (-1.0, 0.4)
Attention problems	(+)	406	212	-0.2 (-0.9, 0.5)	-0.2 (-1.4, 0.9)	-0.2 (-1.2, 0.9)
BASC-2 – teacher-report (T-score) ^c						
Internalizing problems	(+)	181	181	-0.9 (-2.0, 0.3)	-0.9 (-2.4, 0.5)	-0.8 (-2.2, 0.5)
Depression scale	(+)	181	181	-0.7 (-1.6, 0.2)	-1.2 (-2.2, -0.1)	-1.1 (-2.1, -0.1)
Anxiety scale	(+)	181	181	-1.0 (-2.2, 0.2)	-1.0 (-2.5, 0.5)	-0.9 (-2.3, 0.5)
Externalizing problems	(+)	181	181	0.0 (-0.9, 0.9)	-0.2 (-1.5, 1.1)	-0.1 (-1.2, 1.0)
Hyperactivity scale	(+)	181	181	0.2 (-0.8, 1.2)	-0.4 (-1.7, 1.0)	-0.3 (-1.5, 0.9)
Attention problems scale	(+)	181	181	-0.2 (-1.0, 0.5)	-0.6 (-1.8, 0.6)	-0.4 (-1.5, 0.7)
CADS – maternal report (T-scores)						
ADHD Index	(+)	602	215	-0.3 (-0.8, 0.2)	-0.4 (-1.4, 0.7)	-0.3 (-1.2, 0.6)
DSM-IV Total Scale	(+)	601	215	-0.1 (-0.7, 0.4)	-0.3 (-1.4, 0.8)	-0.3 (-1.2, 0.7)
Inattentive Scale	(+)	601	215	-0.3 (-0.8, 0.2)	-0.4 (-1.3, 0.6)	-0.3 (-1.2, 0.5)
Hyperactive/impulsive scale	(+)	601	215	0.0 (-0.5, 0.6)	-0.2 (-1.3, 0.9)	-0.2 (-1.2, 0.7)
CADS – teacher-report (T-score) ^c						
ADHD Index	(+)	178	178	-0.4 (-1.5, 0.8)	-1.0 (-2.6, 0.7)	-0.8 (-2.3, 0.7)
DSM-IV Total Scale	(+)	171	171	-0.1 (-1.1, 1.0)	-0.4 (-1.8, 1.0)	-0.3 (-1.7, 1.0)
Inattentive Scale	(+)	181	181	-0.2 (-1.1, 0.8)	-0.2 (-1.5, 1.1)	-0.2 (-1.4, 1.0)
Hyperactive/impulsive scale	(+)	181	181	0.3 (-0.7, 1.3)	-0.2 (-1.6, 1.1)	-0.2 (-1.4, 1.1)

CPT-II (T-scores)								
Errors of omission	(+)		390	206	0.7 (-0.3, 1.6)		-0.3 (-1.5, 1.0)	-0.3 (-1.5, 0.9)
Errors of commission	(+)		390	206	0.3 (-0.4, 1.0)		0.1 (-0.9, 1.2)	0.1 (-0.9, 1.0)
ADHD confidence index	(+)		390	206	0.9 (-0.6, 2.3)		-0.7 (-2.7, 1.3)	-0.7 (-2.6, 1.1)
<p><i>Abbreviations:</i> <i>n</i>, number of observations from all time points; <i>k</i>, number of children with data for at least one time point; SRS, Social Responsiveness Scale, Version 2; ENI, Evaluación Neuropsicológica del Niño; BASC-2, Behavior Assessment System for Children, 2nd edition; CADS, Conners' ADHD/DSM-IV Scales; ADHD, Attention Deficit Hyperactivity Disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; CPT-II, Continuous Performance Test, 2nd edition; ΣLMW, sum of metabolites of low-molecular weight phthalates; ΣHMW, sum of metabolites of high-molecular weight phthalates; ΣDEHP, sum of di(2-ethylhexyl) phthalate metabolites. Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, household income at time of assessment, and prenatal pesticide exposure. CPT-II models were also adjusted for children's video game usage at time of assessment.</p> <p>^a Separate models created for each sum of metabolites (ΣDEHP, ΣHMW, ΣLMW).</p> <p>^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.</p> <p>^c Outcomes measured at one time point and modeled using linear regression.</p>								

Table S38. Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted)^a with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including prenatal Mn exposures** using linear regression models, CHAMACOS.

Outcome	Orientation ^b	<i>n</i>	Σ LMW	Σ HMW	Σ DEHP
10.5-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	188	1.0 (0.1, 1.8)	1.1 (-0.4, 2.6)	0.8 (-0.6, 2.3)
Anxiety scale	(+)	193	0.5 (-0.3, 1.3)	0.6 (-0.8, 2.0)	0.5 (-0.9, 1.8)
Externalizing problems					
Hyperactivity scale	(+)	199	0.4 (-0.4, 1.2)	0.4 (-0.9, 1.7)	0.1 (-1.2, 1.3)
Attention problems scale	(+)	194	0.4 (-0.4, 1.2)	-0.1 (-1.4, 1.2)	-0.3 (-1.5, 0.9)
14-year assessment					
Internalizing problems	(+)	-	-	-	-
Depression scale	(+)	197	0.6 (-0.1, 1.4)	0.2 (-1.0, 1.3)	0.1 (-1.0, 1.1)
Anxiety scale	(+)	196	0.7 (-0.2, 1.5)	-0.4 (-1.7, 0.8)	-0.5 (-1.7, 0.7)
Externalizing problems					
Hyperactivity scale	(+)	-	-	-	-
Attention problems scale	(+)	-	-	-	-
16-year assessment					
Internalizing problems	(+)	184	0.9 (-0.2, 2.0)	0.4 (-0.9, 1.6)	0.4 (-0.7, 1.5)
Depression scale	(+)	186	0.5 (-0.7, 1.6)	0.4 (-1.0, 1.7)	0.4 (-0.8, 1.7)
Anxiety scale	(+)	186	0.8 (-0.5, 2.1)	1.3 (-0.1, 2.7)	1.2 (-0.1, 2.5)
Externalizing problems					
Hyperactivity scale	(+)	185	0.6 (-0.2, 1.5)	-0.1 (-1.6, 1.2)	-0.4 (-1.7, 0.9)
Attention problems scale	(+)	186	1.3 (0.3, 2.3)	-0.2 (-1.4, 1.1)	-0.3 (-1.5, 0.8)

Abbreviations: BASC-2, Behavior Assessment System for Children, 2nd edition; *n*, number of observations; *k*, number of children; Σ LMW, sum of metabolites of low-molecular weight phthalates; Σ HMW, sum of metabolites of high-molecular weight phthalates; Σ DEHP, sum of di(2-ethylhexyl) phthalate metabolites.

Models were adjusted for maternal age at enrollment, education, country of birth, years in the U.S., depression at time of assessment; child sex, child age at time of assessment, language of assessment, HOME score, and household income at time of assessment.

^a Separate models created for each sum of metabolites (Σ DEHP, Σ HMW, Σ LMW).

^b (+) Higher scores indicate poorer performance/more symptomatic behavior; (-) Lower scores indicate poorer performance/more symptomatic behavior.

Figure S1. Directed Acyclic Graph (DAG) for prenatal exposure to phthalates and neurodevelopment in the CHAMACOS cohort. Generated using dagitty.net

