DOI: 10.1289/EHP5165

Note to readers with disabilities: *EHP* strives to ensure that all journal content is accessible to all readers. However, some figures and Supplemental Material published in *EHP* articles may not conform to 508 standards due to the complexity of the information being presented. If you need assistance accessing journal content, please contact ehp508@niehs.nih.gov. Our staff will work with you to assess and meet your accessibility needs within 3 working days.

Supplemental Material

Prenatal Exposure to Phthalates and Neurodevelopment in the CHAMACOS Cohort

Carly Hyland, Ana M. Mora, Katherine Kogut, Antonia M. Calafat, Kim Harley, Julianna Deardorff, Nina Holland, Brenda Eskenazi, and Sharon K. Sagiv

Table of Contents

- **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).
- **Table S2.** Mean executive function, social cognition, behavior, and cognition T scores by age point, based on teacher report, maternal report, and child assessment.
- **Table S3.** Distribution of phthalate biomarker concentrations (uncorrected) measured in maternal urine samples collected at two time points during pregnancy, CHAMACOS (n = 327).
- **Table S4.** Spearman correlation coefficients for prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted and averaged during pregnancy), CHAMACOS (n = 327).
- **Table S5.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted) categorized in tertiles with **WCST executive function outcomes at 9, and/or 12 years** using GEE models for all children and stratified by child sex, CHAMACOS.
- **Table S6.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted) categorized in tertiles with **BRIEF** (parent-reported) and **NEPSY Tower executive function outcomes at 7, 9, and/or 12 years** using GEE models for all children and stratified by child sex, CHAMACOS.

- **Table S7.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted) categorized in tertiles with **WISC-IV cognitive outcomes at 7 and/or 10.5 years** using GEE models for all children and stratified by child sex, CHAMACOS.
- **Table S8.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted) categorized in tertiles **with social cognition outcomes at 7, 9, and 14 years** using linear regression models for all children and stratified by child sex, CHAMACOS.
- **Table S9.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted) categorized in tertiles with **CADS behavioral outcomes at 7, 9, and/or 12 years** using GEE models for all children and stratified by child sex, CHAMACOS.
- **Table S10.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted) categorized in tertiles with **BASC behavioral outcomes at 7 and/or 10.5 years** using GEE models for all children and stratified by child sex, CHAMACOS.
- **Table S11.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (specific gravity-adjusted) categorized in tertiles with **CPT-II behavioral outcomes at 9 and/or 12 years** using GEE models for all children and stratified by child sex, CHAMACOS.
- **Table S12.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years using GEE models stratified by sex, CHAMACOS.
- **Table S13.** Adjusted associations [β (95% CI)] of individual prenatal urinary phthalate biomarker concentrations (ng/mL; log₂-transformed and specific gravity-adjusted) with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years using GEE models, CHAMACOS.
- **Table S14.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with social cognition and behavior outcomes at 7, 9, 10.5, 12, 14, and/or 16 years using GEE models stratified by sex, CHAMACOS.
- **Table S15.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years using linear regression models stratified by sex, CHAMACOS.

- **Table S16.** Adjusted associations [β (95% CI)] of individual prenatal urinary phthalate biomarker concentrations (ng/mL; log₂-transformed and specific gravity-adjusted) with social cognition and behavior outcomes at 7, 9, 10.5, 12, 14, and/or 16 years using GEE models, CHAMACOS.
- **Table S17.** Adjusted associations [β (95% CI)] of individual prenatal urinary phthalate biomarker concentrations (ng/mL; log₂-transformed and specific gravity-adjusted) with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years using linear regression models, CHAMACOS.
- **Table S18.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S19.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S20.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S21.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S22.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S23.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including maternal PPVT score** using linear regression models, CHAMACOS.
- **Table S24.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with executive function and cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years **including breastfeeding** using GEE models, CHAMACOS.

- **Table S25.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with behavior and social cognition outcomes at 7, 9, 10.5, 12, 14, and/or 16 years **including breastfeeding** using GEE models, CHAMACOS.
- **Table S26.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including breastfeeding** using linear regression models, CHAMACOS.
- **Table S27.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S28.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S29.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including prenatal PBDE exposures** using linear regression models, CHAMACOS.
- **Table S30.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S31.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S32.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including prenatal OP pesticide exposures** using linear regression models, CHAMACOS.
- **Table S33.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.

- **Table S34.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S35.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 years **including prenatal OC exposures** using linear regression models, CHAMACOS.
- **Table S36.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S37.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) 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.
- **Table S38.** Adjusted associations [β (95% CI)] of prenatal urinary phthalate biomarker concentrations (nmol/mL; log₂-transformed and specific gravity-adjusted) with self-reported BASC-2 behavior outcomes at 10.5, 14, and 16 **years including prenatal Mn exposures** using linear regression models, CHAMACOS.
- **Figure S1.** Directed Acyclic Graph (DAG) for prenatal exposure to phthalates and neurodevelopment in the CHAMACOS cohort. Generated using daggity.net.