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### **Supplemental Material**

#### **Association of Prenatal Exposure to Organophosphate, Pyrethroid, and Neonicotinoid Insecticides with Child Neurodevelopment at 2 Years of Age: A Prospective Cohort Study**

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**Figure S1.** Spearman's rank correlation analysis was conducted to explore the correlation matrix of the urinary specific gravity (SG)-adjusted concentrations of mOPPs, mPYRs, and mNNIs. Correlation matrix of analytes based on the averaged concentrations over the three trimesters among participants from a birth cohort study in Wuhan, China, 2014–2017 ( $N = 1041$  participants,  $n = 3123$  samples).  $*p < 0.05$ ;  $**p < 0.01$ . The correlation coefficients  $\geq 0.8$  were considered to indicate strong correlation, 0.5–0.8 were moderate, 0.3–0.5 were weak, and  $< 0.3$  were with no correlation ([Rumsey, 2011](#)). Details of chemical abbreviations are provided in Table S3 and the numerical values are listed in Excel Table S2.

**Figure S2.** Spearman's rank correlation analysis was conducted to explore the correlation matrix of the urinary specific gravity (SG)-adjusted concentrations of mOPPs, mPYRs, and mNNIs. Correlation matrix of analytes based on the concentrations in the 1st trimester among the participants from a birth cohort study in Wuhan, China, 2014–2017 ( $N = 1041$  participants,  $n = 1041$  samples).  $*p < 0.05$ ;  $**p < 0.01$ . Details of chemical abbreviations are provided in Table S3 and the numerical values are listed in Excel Table S3.

**Figure S3.** Spearman's rank correlation analysis was conducted to explore the correlation matrix of the urinary specific gravity (SG)-adjusted concentrations of mOPPs, mPYRs, and mNNIs. Correlation matrix of analytes based on the concentrations in the 2nd trimester among the participants from a birth cohort study in Wuhan, China, 2014–2017 ( $N = 1041$  participants,  $n = 1041$  samples).  $*p < 0.05$ ;  $**p < 0.01$ . Details of chemical abbreviations are provided in Table S3 and the numerical values are listed in Excel Table S4.

**Figure S4.** Spearman's rank correlation analysis was conducted to explore the correlation matrix of the urinary specific gravity (SG)-adjusted concentrations of mOPPs, mPYRs, and mNNIs. Correlation matrix of analytes based on the concentrations in the 3rd trimester among the participants from a birth cohort study in Wuhan, China, 2014–2017 ( $N = 1041$  participants,  $n = 1041$  samples).  $*p < 0.05$ ;  $**p < 0.01$ . Details of chemical abbreviations are provided in Table S3 and the numerical values are listed in Excel Table S5.

**Table S1.** Differences on the demographic characteristics of mother-child pairs among the recruited population ( $N = 5112$ ), the population of their children completing the evaluation of Bayley scales at two years old ( $N = 2782$ ), and the study population ( $N = 1041$ ) from Wuhan, China, 2014–2017.

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**Table S3.** Related information for target analytes ([Li et al., 2022](#); [Mahai et al., 2022](#)).

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**Table S7.** Multivariate linear regression model evaluating associations between the average SG-adjusted maternal urinary analytes concentrations (ln-transformed, ng/mL) over three trimesters and children's MDI and PDI at two years of age in participants from a birth cohort study in Wuhan, China, 2014–2017 ( $N = 1041$  participants,  $n = 3123$  samples, data correspond to Figure 1).

**Table S8.** Generalized estimating equation model evaluating trimester-specific associations between SG-adjusted maternal urinary analytes concentrations (ln-transformed, ng/mL) with children's MDI and PDI scores at two years of age in participants from a birth cohort study in Wuhan, China, 2014–2017 ( $N = 1041$  participants,  $n = 1041$  samples for 1st trimester,  $n = 1041$  samples for 2nd trimester,  $n = 1041$  samples for 3rd trimester, data correspond to Figure 2).

**Table S9.** Weighted quantile sum regression (WQSR) analysis for the associations of weighted quantile sum regression index of pesticide biomarkers [based on the concentrations in the 1st trimester ( $N = 553$  participants,  $n = 553$  samples) and the averaged concentrations over the three trimesters ( $N = 553$  participants,  $n = 1659$  samples)] with boy's MDI scores estimated in the repeated holdout validation in participants from a birth cohort study in Wuhan, China, 2014–2017 (Data correspond to Figure 3).

**Table S10.** Weighted quantile sum regression (WQSR) analysis for the associations of weighted quantile sum regression index of pesticide biomarkers [based on the concentrations in the 1st trimester ( $N = 553$  participants,  $n = 553$  samples) and the averaged concentrations over the three trimesters ( $N = 553$  participants,  $n = 1659$  samples)] with boy's PDI scores ( $n = 553$ ) estimated in the repeated holdout validation in participants from a birth cohort study in Wuhan, China, 2014–2017.

**Table S11.** Comparison of the exposure levels and the associations of prenatal exposure to OPPs and PYRs (characterized by biomarkers) with child neurodevelopment observed in our study with other studies.

## References

**Additional File-** Excel Document