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Supplemental Material

Association between Early Life Exposure to Air Pollution and Working Memory and Attention

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Figure S1. Association between yearly PM_{2.5} levels estimated at home address for the pregnancy period (year 0) and the first years of life and working memory at school age (7-10 years old) further adjusted for hit reaction time standard error (HRT-SE), a measure of attentiveness. An independent linear mixed effect model for each year was performed. **Legend:** Lower *d'* and higher HRT-SE and conflict scores indicate impairment. Models were adjusted for age, sex, maternal education, residential neighborhood socioeconomic status, and HRT-SE; school and individual as nested random effects. Solid lines show the difference in the outcomes for an IQR increase in PM_{2.5} (IQR exposure contrasts are reported in Table S4). Dashed lines indicate 95% CIs. n = number of children.

Figure S2. Results from the 100 simulations when assuming the true effect of air pollution to be -10 units in working memory in each of the visits.

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Figure S4. Associations between yearly PM_{2.5} levels estimated at home address over the pregnancy period (year 0) and the first 7 years of life and different cognitive outcomes (working memory; attentiveness, and conflict network at school age (7-10 years old)) from the DLM models (sensitivity analysis). **Legend:** Lower *d'* and higher HRT-SE and conflict scores indicate impairment. The associations are presented for all the population and stratified by sex. Models were adjusted for age, sex (only in the model including all population), maternal education, and residential neighborhood socioeconomic status; school and individual included as nested random effects. Solid lines show the predicted difference in the outcomes associated with an increase of 10 µg/m³ of PM_{2.5}. Grey areas indicate 95% CIs. n = number of children.

Figure S5. ADHD stratified associations between yearly PM_{2.5} levels estimated at home address for the pregnancy period (corresponds to year 0) and the first 7 years of life and different cognitive outcomes: working memory, attentiveness, and conflict network at school age (7-10 years old). An independent linear mixed effect model for each year was performed. **Legend:** Lower *d'* and higher HRT-SE and conflict scores indicate impairment. Models were adjusted for age, sex, maternal education, and residential neighborhood socioeconomic status; with school and individual included as nested random effects. Solid black lines show the predicted difference in the outcomes associated with an IQR increase in PM_{2.5} (IQR exposure contrasts are reported in Table S4). Dashed lines indicate 95% CIs. n = number of children.

Figure S6. Sensitivity analysis including only children with no residential mobility and for recent PM_{2.5} exposure (adjusting the model by PM_{2.5} concentrations estimated at home address on the previous day of the test). The graphs show the associations between yearly PM_{2.5} levels estimated at home address for the pregnancy period (corresponds to year 0) and the first 7 years of life and different cognitive outcomes: working memory, attentiveness, and conflict network at school age (7-10 years old). An independent linear mixed effect model for each year was performed. **Legend:** Lower *d'* and higher HRT-SE and conflict scores indicate impairment. Models were adjusted for age, sex (only in the model including all population), maternal education, and residential neighborhood socioeconomic status; with school and individual included as nested random effects. Solid black lines show the difference in the outcomes associated with an IQR increase in PM_{2.5} (IQR exposure contrasts are reported in Table S4). Dashed lines indicate 95% CIs. n = number of children.