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Supplemental Material

Perinatal Exposure to Traffic-Related Air Pollution and Autism Spectrum Disorders

Tong Gong, Christina Dalman, Susanne Wicks, Henrik Dal, Cecilia Magnusson, Cecilia Lundholm, Catarina Almqvist, and Göran Pershagen

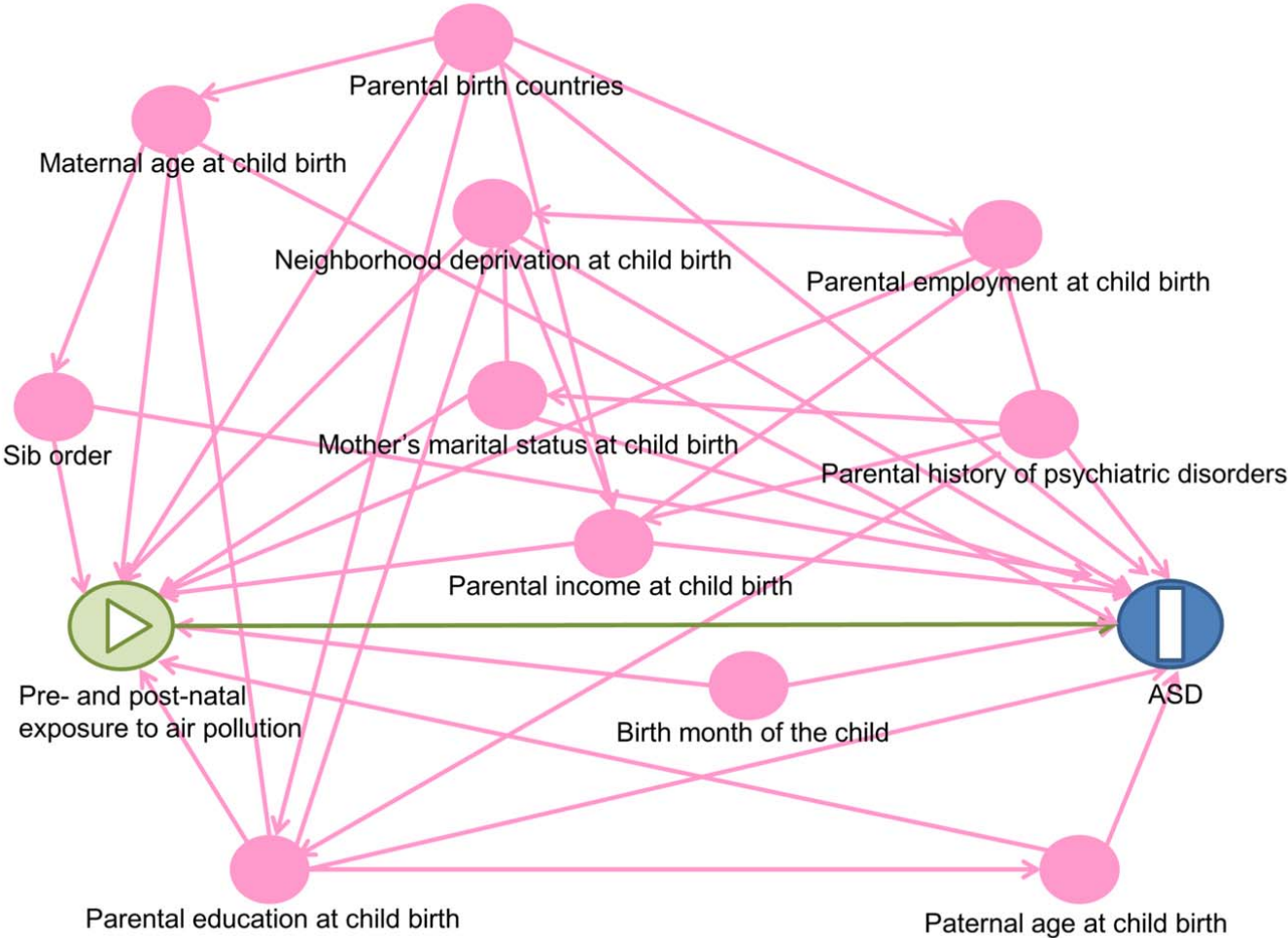
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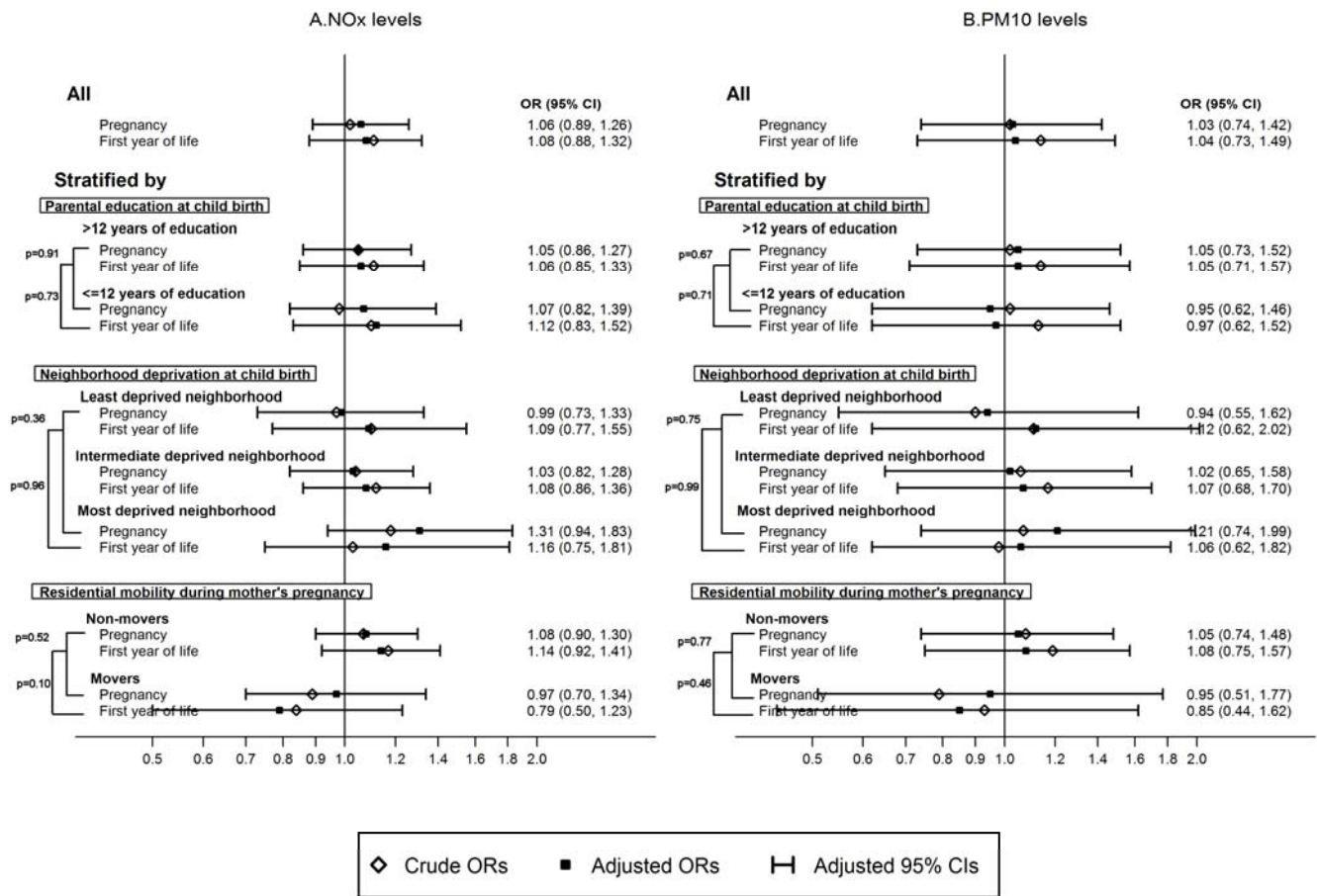
Figure S1. Directed acyclic graph to determine potential confounders of the investigated associations



Note: We conditioned on calendar year and municipality of birth for all analyses. Therefore, they was not shown in the directed acyclic graph.

Minimal sufficient adjustment sets for estimating the total effect of pre- and post-natal exposure to air pollution on ASD: birth month of the child, maternal age at child birth, mother's marital status at child birth, neighborhood deprivation at child birth, parental birth countries, parental education at child birth, parental employment at child birth, parental income at child birth, paternal age at child birth, and sib order.

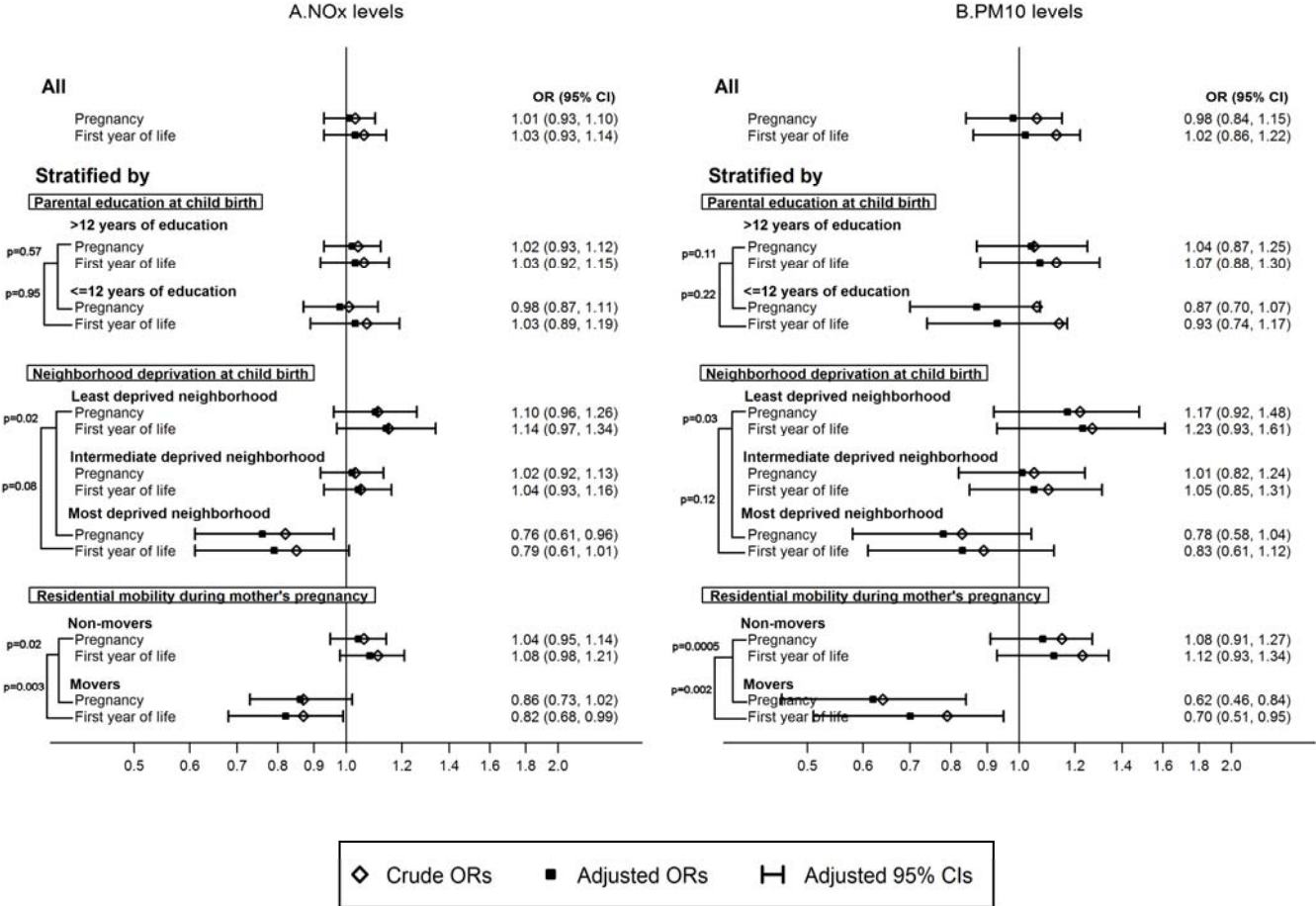
Figure S2. Odds ratios and 95% confidence intervals for ASD with ID by residential address-based NO_x (per 10 µg/m³ increase) and PM₁₀ (per 20 µg/m³ increase) levels during mother's pregnancy and child's first year of life.



Note: The p-value was presented based on the Wald test for the indicated interaction term.

Models conditioned on calendar year and municipality of birth as well as adjusted for gender, birth month, sib order, maternal age, paternal age, mother's marital status, parents' birth countries, mother's education, father's education, mother's employment, father's employment, disposable income within household, and neighborhood deprivation.

Figure S3. Odds ratios and 95% confidence intervals for ASD without ID by residential address-based NO_x (per 10 µg/m³ increase) and PM₁₀ (per 20 µg/m³ increase) levels during mother's pregnancy and child's first year of life.



Note: The p-value was presented based on the Wald test for the indicated interaction term.

Models conditioned on calendar year and municipality of birth as well as adjusted for gender, birth month, sib order, maternal age, paternal age, mother's marital status, parents' birth countries, mother's education, father's education, mother's employment, father's employment, disposable income within household, and neighborhood deprivation.

Table S1. All relevant diagnostic codes used in this project from the International Classification of Diseases (ICD) and the Diagnostic and Statistical Manual of Mental Disorders (DSM).

| Disorders | DSM-IV | ICD-10 (1997-) | ICD-9 (1987-1996) | ICD-8 (1969-1986) | ICD-7 (1957-1968) |
|--|---------------|------------------------|---------------------------------------|---|--------------------------|
| Any psychiatric disorders | - | F | 290-315 | 290-319 | 300-326 |
| Autism spectrum disorders (ASD) | 299 | F84 | 299 | N/A | N/A |
| Bipolar disorders | - | F30-F31 | 296A, C-E | 29610-29630 | N/A |
| Congenital malformations | - | Q | 740-759 | N/A | N/A |
| Intellectual disability | 317-319 | F70-F79 | 317-319 | N/A | N/A |
| Non-affective psychosis | - | F20-29 | 295, 297, 298 (excl 298A and 298B) | 295, 297, 298 (excl 29800 and 29810), 29999 | N/A |
| Schizophrenia | - | F20 | 295 without a letter, 295A-E, G, W, X | 295 excluding 29550 and 29570 | N/A |
| Pre-eclampsia | | O14-15 | 642E-G | N/A | N/A |
| Pre-gestational and gestational diabetes | | E10-14, O240-243, O244 | 250, 648A, 648W | N/A | N/A |
| Premature rupture of the membranes | | O42 | 658B | N/A | N/A |
| Placental abruption | | O45 | 641C | N/A | N/A |

Note: N/A= Children born/mothers delivering during 1993-2007 were not in this ICD-system.

Table S2. The municipality division of Stockholm County

| Stockholm County (including 26 municipalities) | |
|---|------------------------------------|
| Stockholm municipality | The other 25 municipalities |
| Kista+Spånga+Rinkeby+Tensta | Botkyrka |
| Bromma | Danderyd |
| Hässelby+Vällingby | Ekerö |
| Kungsholmen+Norrmalm+Östermalm | Haninge |
| Södermalm | Huddinge |
| Skarpnäck | Järfälla |
| Farsta | Lidingö |
| Liljeholmen+Hägersten+Älvsjö+Enskede+Årsta+Vantör | Nacka |
| Skärholmen | Norrtälje |
| | Nykvarn |
| | Nynäshamn |
| | Salem |
| | Sigtuna |
| | Sollentuna |
| | Solna |
| | Sundbyberg |
| | Södertälje |
| | Tyresö |
| | Täby |
| | Upplands-Bro |
| | Upplands Väsby |
| | Vallentuna |
| | Vaxholm |
| | Värmdö |
| | Österåker |

Table S3. Descriptive statistics and correlation between pollutants

| Time | Pollutants' descriptive statistics | | | | | | Pearson correlations | | | |
|------------------------|------------------------------------|-------|-------|--------|------|------------------|----------------------|------------------|------------------------|------------------|
| | Pollutant | Mean | SD | Median | IQR | Missing n (%) | Entire pregnancy | | First year after birth | |
| | | | | | | | NO _x | PM ₁₀ | NO _x | PM ₁₀ |
| Entire pregnancy | NO _x | 11.04 | 11.39 | 7.79 | 9.91 | 69 (0.3) | 1.00 | | | |
| | PM ₁₀ | 4.38 | 3.22 | 3.65 | 3.99 | | 0.83 | 1.00 | | |
| First year after birth | NO _x | 9.83 | 10.33 | 6.93 | 8.68 | 27 (0.1) | 0.89 | 0.74 | 1.00 | |
| | PM ₁₀ | 4.21 | 3.14 | 3.48 | 3.05 | | 0.74 | 0.89 | 0.83 | 1.00 |

Table S4. Risk of ASD (overall, with and without ID) based on continuous pollutants' levels during different time windows

| Time windows and pollutants | Models A [†] OR (95% CI) | Models B [‡] OR (95% CI) | Models C OR (95% CI) |
|---|--------------------------------------|--------------------------------------|---------------------------------------|
| ASD overall (nr of cases/controls=5,136/18,237) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.02 (0.95, 1.11) | 1.02 (0.94, 1.10) | 1.02 (0.94, 1.10) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.05 (0.91, 1.21) | 1.01 (0.87, 1.17) | 1.00 (0.86, 1.15) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.07 (0.97, 1.17) | 1.05 (0.95, 1.15) | 1.04 (0.95, 1.14) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.13 (0.96, 1.33) | 1.06 (0.90, 1.25) | 1.03 (0.87, 1.21) |
| ASD with ID (nr of cases/controls=913/118) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.02 (0.86, 1.22) | 1.06 (0.89, 1.26) | 1.06 (0.89, 1.26) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.02 (0.75, 1.39) | 1.05 (0.76, 1.45) | 1.03 (0.74, 1.42) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.11 (0.91, 1.35) | 1.09 (0.89, 1.34) | 1.08 (0.88, 1.32) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.14 (0.81, 1.60) | 1.08 (0.76, 1.54) | 1.04 (0.73, 1.49) |
| ASD without ID (nr of cases/controls=4,223/18,119) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.03 (0.95, 1.12) | 1.01 (0.93, 1.10) | 1.01 (0.93, 1.10) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.06 (0.90, 1.23) | 1.00 (0.85, 1.17) | 0.98 (0.84, 1.15) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.06 (0.96, 1.17) | 1.04 (0.94, 1.15) | 1.03 (0.93, 1.14) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.13 (0.95, 1.34) | 1.05 (0.88, 1.26) | 1.02 (0.86, 1.22) |

[†] Models conditioned on calendar year and municipality of birth, as well as adjusted for gender and birth month.

‡ Models conditioned on calendar year and municipality of birth, as well as adjusted for gender, birth month, sib order, parents' birth countries, mother's marital status, mother's education, father's education, mother's employment, father's employment, and disposable income within household.

|| Models conditioned on calendar year and municipality of birth, as well as adjusted for gender, birth month, sib order, parents' birth countries, mother's marital status, mother's education, father's education, mother's employment, father's employment, disposable income within household, and neighborhood deprivation.

Table S5. Parental SES characteristics and psychiatric diagnoses among movers and non-movers

| | Non-movers (n=18,727) | Movers (n=4,646) | p |
|---|-----------------------|------------------|---------|
| Disposable income within household at child birth (quintiles) | | | |
| Lowest | 1,956 (10.5) | 487 (10.5) | 0.85 |
| Lower middle | 3,728 (20.0) | 959 (20.6) | |
| Middle | 4,401 (23.6) | 1,081 (23.3) | |
| Upper middle | 4,253 (22.8) | 1,063 (22.9) | |
| Highest | 4,333 (23.2) | 1,056 (22.7) | |
| Neighborhood deprivation (tertiles) | | | |
| Least deprivation | 6,269 (33.6) | 1,425 (30.7) | <0.0001 |
| Intermediate deprivation | 6,377 (34.1) | 1,541 (33.2) | |
| Most deprivation | 6,025 (32.3) | 1,680 (36.2) | |
| Mother's education at child birth | | | |
| Low (≤ 9 years) | 2,322 (12.5) | 711 (15.3) | <0.0001 |
| Medium (10-12 years) | 8,077 (43.4) | 2,162 (46.6) | |
| High (> 12 years) | 8,216 (44.1) | 1,764 (38.0) | |
| Father's education at child birth | | | |
| Low (≤ 9 years) | 2,565 (13.9) | 766 (16.7) | <0.0001 |
| Medium (10-12 years) | 8,037 (43.6) | 2,033 (44.3) | |
| High (> 12 years) | 7,853 (42.5) | 1,787 (39.0) | |
| Mother's employment during pregnancy | | | |
| Employed | 13,991 (74.9) | 3,369 (72.5) | 0.0001 |
| Unemployed with tasks | 1,647 (8.8) | 499 (10.8) | |
| Unemployed without tasks | 3,032 (16.2) | 776 (16.7) | |
| Father's employment during pregnancy | | | |
| Employed | 16,057 (87.3) | 3,848 (84.4) | <0.0001 |
| Unemployed with tasks | 1,085 (5.9) | 321 (7.0) | |
| Unemployed without tasks | 1,257 (6.8) | 390 (8.6) | |
| Mother's marital status at child birth | | | |
| Married/Cohabiting | 16,373 (87.9) | 3,945 (85.1) | <0.0001 |
| Single/Other situations | 2,259 (12.1) | 688 (14.9) | |
| Parental psychiatric history (F-diagnoses) | | | |
| Father diagnosed | 1,963 (10.6) | 531 (11.5) | <0.0001 |
| Mother diagnosed | 4,618 (24.9) | 1,252 (27.2) | |
| Both parents diagnosed | 1,806 (9.7) | 606 (13.2) | |

Table S6. Sensitivity analysis: Risk of ASD (overall, with and without ID) based on continuous pollutants' levels during different time windows including multiple births

| Time windows and pollutants | Models A [†] OR (95% CI) | Models B [‡] OR (95% CI) | Models C OR (95% CI) |
|---|--------------------------------------|--------------------------------------|---------------------------------------|
| ASD overall (nr of cases/controls=5,298/18,822) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.02 (0.95, 1.10) | 1.02 (0.94, 1.10) | 1.02 (0.94, 1.10) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.05 (0.91, 1.21) | 1.02 (0.88, 1.17) | 1.00 (0.87, 1.16) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.07 (0.98, 1.18) | 1.06 (0.96, 1.16) | 1.05 (0.96, 1.15) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.15 (0.98, 1.34) | 1.08 (0.92, 1.27) | 1.05 (0.89, 1.23) |
| ASD with ID (nr of cases/controls=954/18,822) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.02 (0.86, 1.21) | 1.05 (0.89, 1.25) | 1.05 (0.89, 1.25) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.04 (0.76, 1.41) | 1.07 (0.78, 1.47) | 1.05 (0.76, 1.45) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.10 (0.91, 1.34) | 1.09 (0.89, 1.33) | 1.08 (0.88, 1.32) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.16 (0.83, 1.62) | 1.11 (0.78, 1.57) | 1.07 (0.75, 1.52) |
| ASD without ID (nr of cases/controls=4,344/18,822) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.03 (0.95, 1.11) | 1.01 (0.93, 1.10) | 1.01 (0.93, 1.10) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.05 (0.91, 1.23) | 1.00 (0.85, 1.17) | 0.99 (0.84, 1.15) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.07 (0.97, 1.18) | 1.05 (0.95, 1.16) | 1.04 (0.94, 1.15) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.15 (0.97, 1.36) | 1.07 (0.90, 1.28) | 1.04 (0.87, 1.24) |

[†] Models conditioned on calendar year and municipality of birth as well as adjusted for gender and birth month.

‡ Models conditioned on calendar year and municipality of birth as well as adjusted for gender, birth month, sib order, parents' birth countries, mother's marital status, mother's education, father's education, mother's employment, father's employment, and disposable income within household.

|| Models conditioned on calendar year and municipality of birth as well as adjusted for gender, birth month, sib order, parents' birth countries, mother's marital status, mother's education, father's education, mother's employment, father's employment, disposable income within household, and neighborhood deprivation.

Table S7. Sensitivity analyses: Association between pollutants' levels during mother's pregnancy and child's first year of life and risk of childhood ASD overall by excluding children with certain conditions related to ASD.

| | OR (95% CI) | | |
|---|-----------------------|-----------------------|------------------------|
| | Models A [†] | Models B [‡] | Models C |
| Excluding children with ASD diagnoses before 2 years of age (no. of cases/controls=4,984/18,237) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.03 (0.95, 1.11) | 1.02 (0.94, 1.10) | 1.02 (0.94, 1.10) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.07 (0.92, 1.23) | 1.02 (0.88, 1.18) | 1.01 (0.87, 1.17) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.06 (0.97, 1.17) | 1.04 (0.95, 1.15) | 1.04 (0.94, 1.14) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.14 (0.97, 1.34) | 1.07 (0.91, 1.26) | 1.03 (0.88, 1.22) |
| Excluding children born before 2003 (no. of cases/controls=1,210/7,172) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 0.87 (0.69, 1.09) | 0.88 (0.70, 1.11) | 0.88 (0.70, 1.11) |
| PM ₁₀ (per 10µg/m ³ increase) | 0.99 (0.76, 1.30) | 0.97 (0.74, 1.28) | 0.96 (0.73, 1.26) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 0.89 (0.67, 1.18) | 0.87 (0.65, 1.17) | 0.86 (0.64, 1.15) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.13 (0.84, 1.53) | 1.05 (0.77, 1.43) | 1.01 (0.74, 1.38) |
| Excluding children with congenital malformation (no. of cases/controls=4,862/17,707) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.03 (0.95, 1.11) | 1.02 (0.94, 1.11) | 1.02 (0.94, 1.11) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.06 (0.91, 1.23) | 1.02 (0.88, 1.18) | 1.00 (0.86, 1.17) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.06 (0.97, 1.17) | 1.04 (0.95, 1.15) | 1.03 (0.94, 1.14) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.13 (0.96, 1.33) | 1.06 (0.90, 1.26) | 1.03 (0.87, 1.22) |
| Excluding children of either parent having any psychiatric disorders (no. of cases/controls= 2,018/10,379) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.08 (0.96, 1.21) | 1.08 (0.96, 1.21) | 1.08 (0.96, 1.21) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.26 (1.01, 1.55) | 1.24 (0.99, 1.54) | 1.22 (0.98, 1.52) |

| | | | |
|--|-------------------|-------------------|-------------------|
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.08 (0.95, 1.24) | 1.08 (0.94, 1.24) | 1.07 (0.94, 1.23) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.22 (0.96, 1.55) | 1.18 (0.93, 1.51) | 1.15 (0.90, 1.48) |
| Excluding children of mothers without pre-eclampsia (no. of cases/controls=4,776/17,421) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 0.87 (0.69, 1.09) | 0.88 (0.70, 1.11) | 0.88 (0.70, 1.11) |
| PM ₁₀ (per 10µg/m ³ increase) | 0.99 (0.76, 1.30) | 0.97 (0.74, 1.28) | 0.96 (0.73, 1.26) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 0.89 (0.67, 1.18) | 0.87 (0.65, 1.17) | 0.86 (0.64, 1.15) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.13 (0.84, 1.53) | 1.05 (0.77, 1.43) | 1.01 (0.74, 1.38) |
| Excluding children of mothers without pre-gestational and gestational diabetes (no. of cases/controls=5,037/18,072) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.02 (0.95, 1.11) | 1.02 (0.94, 1.10) | 1.02 (0.94, 1.10) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.04 (0.90, 1.21) | 1.01 (0.87, 1.17) | 0.99 (0.85, 1.15) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.06 (0.97, 1.17) | 1.05 (0.95, 1.15) | 1.04 (0.94, 1.14) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.12 (0.96, 1.32) | 1.06 (0.90, 1.25) | 1.02 (0.87, 1.20) |
| Excluding children of mothers without placental abruption (no. of cases/controls=5,107/18,172) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.02 (0.95, 1.11) | 1.02 (0.94, 1.10) | 1.02 (0.94, 1.10) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.04 (0.90, 1.21) | 1.01 (0.87, 1.17) | 0.99 (0.85, 1.15) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.06 (0.97, 1.17) | 1.05 (0.95, 1.15) | 1.04 (0.94, 1.14) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.12 (0.96, 1.32) | 1.06 (0.90, 1.25) | 1.02 (0.87, 1.20) |
| Excluding children of mothers without premature rupture of the membranes (no. of cases/controls=5,033/18,009) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.02 (0.95, 1.11) | 1.02 (0.94, 1.10) | 1.02 (0.94, 1.10) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.04 (0.90, 1.21) | 1.01 (0.87, 1.17) | 0.99 (0.85, 1.15) |
| First year of life | | | |

| | | | |
|---|-------------------|-------------------|-------------------|
| NO _x (per 20µg/m ³ increase) | 1.06 (0.97, 1.17) | 1.05 (0.95, 1.15) | 1.04 (0.94, 1.14) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.12 (0.96, 1.32) | 1.06 (0.90, 1.25) | 1.02 (0.87, 1.20) |
| Excluding children of foreign-born parents[†] (no. of cases/controls=3,512/12,796) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.02 (0.94, 1.10) | 1.01 (0.93, 1.10) | 1.01 (0.93, 1.10) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.03 (0.88, 1.20) | 0.99 (0.84, 1.15) | 0.97 (0.83, 1.13) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.08 (0.98, 1.18) | 1.06 (0.96, 1.16) | 1.05 (0.95, 1.15) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.15 (0.97, 1.36) | 1.07 (0.90, 1.26) | 1.02 (0.86, 1.22) |
| Excluding children with less than 37 weeks of gestation (no. of cases/controls=4,776/17,421) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.02 (0.94, 1.10) | 1.01 (0.93, 1.09) | 1.01 (0.93, 1.09) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.06 (0.91, 1.22) | 1.02 (0.87, 1.18) | 1.00 (0.86, 1.17) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.06 (0.96, 1.16) | 1.04 (0.94, 1.14) | 1.03 (0.94, 1.14) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.12 (0.95, 1.33) | 1.06 (0.90, 1.26) | 1.03 (0.87, 1.21) |
| Excluding children with less than 2,500 g of birth weight (no. of cases/controls=4,840/17,671) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 1.03 (0.95, 1.12) | 1.03 (0.95, 1.11) | 1.03 (0.95, 1.11) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.07 (0.92, 1.24) | 1.03 (0.89, 1.20) | 1.02 (0.88, 1.19) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 1.05 (0.96, 1.16) | 1.04 (0.94, 1.14) | 1.03 (0.93, 1.13) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.12 (0.95, 1.32) | 1.05 (0.89, 1.25) | 1.02 (0.86, 1.21) |

[†] Models conditioned on calendar year and municipality of birth as well as adjusted for gender and birth month.

[‡] Models conditioned on calendar year and municipality of birth as well as adjusted for gender, birth month, sib order, parents' birth countries, mother's marital status, mother's education, father's education, mother's employment, father's employment, and disposable income within household.

^{||} Models conditioned on calendar year and municipality of birth as well as adjusted for gender, birth month, sib order, parents' birth countries, mother's marital status, mother's education, father's education, mother's employment, father's employment, disposable income within household, and neighborhood deprivation.

¹ We did not adjust for parents' birth countries in the analyses of this subpopulation.

Table S8. Risk of ASD (overall, with and without ID) based on continuous pollutants' levels during different time windows without conditioning on municipality of birth

| Time windows and pollutants | Models A [†] OR (95% CI) | Models B [‡] OR (95% CI) | Models C OR (95% CI) |
|---|--------------------------------------|--------------------------------------|---------------------------------------|
| ASD overall (nr of cases/controls=5,136/18,237) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 0.92 (0.87, 0.98) | 0.92 (0.87, 0.98) | 0.92 (0.87, 0.98) |
| PM ₁₀ (per 10µg/m ³ increase) | 0.89 (0.81, 0.99) | 0.87 (0.79, 0.97) | 0.87 (0.78, 0.97) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 0.93 (0.87, 0.99) | 0.91 (0.86, 0.98) | 0.91 (0.85, 0.98) |
| PM ₁₀ (per 10µg/m ³ increase) | 0.91 (0.82, 1.01) | 0.88 (0.79, 0.98) | 0.86 (0.77, 0.96) |
| ASD with ID (nr of cases/controls=913/118) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 0.92 (0.82, 1.05) | 1.01 (0.89, 1.15) | 1.02 (0.90, 1.16) |
| PM ₁₀ (per 10µg/m ³ increase) | 0.96 (0.78, 1.19) | 1.08 (0.86, 1.36) | 1.07 (0.85, 1.35) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 0.95 (0.83, 1.08) | 1.02 (0.89, 1.17) | 1.02 (0.89, 1.17) |
| PM ₁₀ (per 10µg/m ³ increase) | 1.02 (0.82, 1.26) | 1.09 (0.87, 1.38) | 1.08 (0.85, 1.37) |
| ASD without ID (nr of cases/controls=4,223/18,119) | | | |
| Entire pregnancy | | | |
| NO _x (per 20µg/m ³ increase) | 0.92 (0.87, 0.98) | 0.90 (0.84, 0.96) | 0.90 (0.85, 0.96) |
| PM ₁₀ (per 10µg/m ³ increase) | 0.88 (0.79, 0.98) | 0.83 (0.74, 0.94) | 0.83 (0.73, 0.93) |
| First year of life | | | |
| NO _x (per 20µg/m ³ increase) | 0.92 (0.86, 0.99) | 0.89 (0.83, 0.96) | 0.89 (0.83, 0.96) |
| PM ₁₀ (per 10µg/m ³ increase) | 0.89 (0.79, 1.00) | 0.84 (0.74, 0.94) | 0.82 (0.73, 0.93) |

[†] Models conditioned on calendar year of birth, as well as adjusted for gender and birth month.

‡ Models conditioned on calendar year of birth, as well as adjusted for gender, birth month, sib order, parents' birth countries, mother's marital status, mother's education, father's education, mother's employment, father's employment, and disposable income within household.

|| Models conditioned on calendar year of birth, as well as adjusted for gender, birth month, sib order, parents' birth countries, mother's marital status, mother's education, father's education, mother's employment, father's employment, disposable income within household, and neighborhood deprivation.