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Supplemental Material

Early-Life Environmental Exposures and Childhood Obesity: An Exposome-Wide Approach

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Additional File- Excel Document

Table S1: Exposure data sources for urban environment exposures.

Exposure	BiB	EDEN	INMA	KANC	MoBa	Rhea
Built environment						
Population density	EEA (2001)	EEA (2001)	INE (2011)	EEA (2001)	Statistics Norway (2005-2013)/Geodata	EEA (2001)
Building density	MasterMap (Ordinance Survey) (2013)	IGN (2014)	ICC (2011)	Open Street Maps (2014)	Open Street Maps (2014)	Greek Statistical Authority (2001)
Connectivity	Navteq	Navteq	Navteq	Navteq	Navteq	Navteq
Accessibility (bus stops and lines)	Bradford Metropolitan District Council (2014, 2015)	Grand Poitiers (2013)	Sabadell Municipality (2014)	Open Street Maps (2015)	Company "Ruter" (2015)	Open Street Maps (2015)
Facility richness and density	Navteq	Navteq	Navteq	Navteq	Navteq	Navteq
Land use	Urbanatlas (2006)	Urbanatlas (2006)	Urbanatlas (2006)	Urbanatlas (2006)	Kartverket (2014)	Urbanatlas (2006)
Surrounding natural space						
NDVI	Landsat 4–5 TM, Landsat 7 ETM+, and Landsat 8 OLI/TIRS					
Green and blue spaces	Urbanatlas (2006)	Urbanatlas (2006)	Urbanatlas (2006)	Urbanatlas (2006)	Kartverket (2014)	Urbanatlas (2006)
Meteorology						
Temperature, humidity, ^b pressure ^b	Keighley	Poitiers	Cerdanyola/Sabadell	Kaunas	Tryvannshogda	Iraklion
UV Radiation						
UV	TEMIS project	TEMIS project	TEMIS project	TEMIS project	TEMIS project	TEMIS project
Outdoor air pollution						
NO ₂	ESCAPE local LUR	Local dispersion model	ESCAPE local LUR	ESCAPE local LUR	ESCAPE local LUR	ESCAPE local LUR
PM _{2.5}	ESCAPE local LUR	ESCAPE European LUR	ESCAPE local LUR	ESCAPE local LUR	ESCAPE local LUR	ESCAPE local LUR
PM ₁₀	ESCAPE local LUR	Local dispersion model ^a	ESCAPE local LUR	ESCAPE local LUR	ESCAPE local LUR	ESCAPE local LUR
PM _{2.5abs}	ESCAPE local LUR	NA	ESCAPE local LUR	ESCAPE local LUR	ESCAPE local LUR	ESCAPE local LUR
Traffic						
Traffic	City of Bradford metropolitan district, Leeds City Council (2009, 2012)	Atmo Poitou Charentes (2005)	GENCAT (2007)	Kaunas Municipality (2010)	Municipality of Oslo, Norwegian Public Roads Administration (2006, 2011, 2014)	LUR model based on new fieldwork (2015) (Table S2)
Road traffic noise						
Noise	DEFRA GOV. UK (2006)	Mairie de Poitiers (2007-2009)	GENCAT, Barcelona municipalit y (2006, 2012)	Kaunas Municipality (2007)	Oslo Municipality (2006, 2011)	LUR model based on new fieldwork (2015) (Table S2)

Abbreviations: **DEFRA**, Department of Environment Food and Rural Affairs; **EEA**, European Environment Agency; **ESCAPE**, European Study of Cohorts for Air Pollution Effects; **ETM+**, Enhanced Thematic Mapper Plus; **GENCAT**, Generalitat of Catalonia; **ICC**, Institut Cartogràfic de Catalunya; **IGN**, Institut National de l'Information Géographique et Forestière (<http://professionnels.ign.fr>); **INE**, Instituto Nacional de Estadística; **LUR**, Land Use Regression; **NA**, not available; **Navteq**: ESRI Street Map for Mobile Navteq 2012; **NDVI**, Normalized Difference Vegetation Index; **NO₂**, nitrogen dioxide; **OLI**, Operational Land Imager; **PM_{2.5}**, particulate matter with an aerodynamic diameter of less than 2.5 µm; **PM₁₀**, particulate matter with an aerodynamic diameter of less than 10µm; **PM_{2.5abs}**, absorbance of PM_{2.5} filters; **TEMIS**: Tropospheric Emission Monitoring Internet Service (<http://www.temis.nl/uvradiation/archives>); **TIRS**, Thermo Infrared Sensor; **TM**, Thematic Mapper; **UV**, ultraviolet.

^a only for pregnancy period; ^b location of weather station (only for pregnancy period).

Table S2: Summary of the indoor air pollution prediction models. P-values of multivariate and bivariate models for variables included in the final prediction model.

Exposure	NO ₂		Benzene		TEX		PM _{2.5}		PM _{2.5abs}	
	multivariate	bivariate	multivariate	bivariate	multivariate	bivariate	multivariate	bivariate	multivariate	bivariate
Explained variability (R²)	57%		31%		31%		47%		50%	
Cohort	0.0003	<0.0001					0.031	0.027	0.007	<0.0001
Oven with natural gas	<0.0001	<0.0001								
Type of hob	<0.0001	<0.0001								
Type of boiler	0.008	<0.0001								
Butane in living room	0.005	0.036					0.043	0.061		
How many people live at home?	0.0006	0.007								
Garage connected to the house?			<0.0001	<0.0001	0.027	<0.0001				
PM _{2.5} outdoor			0.0001	0.003						
Does air pollution bother you?			0.014	0.012						
Does your family manage financially?			0.002	0.023						
Number of floors of the house			0.035	0.031						
How many cigarettes per week smoke (mother)?			0.040	0.085						
How often you use degreasing sprays?					0.008	0.0006				
Presence of central heating?					0.027	0.020				
How often use perfumed cleaning products?					0.005	0.023				
How many cigarettes smoke (mother's partner)?					0.001	0.150				
Calendar month					0.004	0.034				
NO ₂ outdoor					0.022	0.015			0.0004	<0.0001
How many cigarettes last week (mother)?							<0.0001	<0.0001	<0.0001	0.004
Family has a car?							0.004	<0.0001		
Stay at home parent?							0.002	0.012		
How often use glass cleaning sprays?							0.046	0.050		

Table S3: Biological matrices used for biomarker analysis of maternal and child samples

Chemicals	Cohort					
	BiB	EDEN	KANC	INMA	MoBa	RHEA
OCs and PBDEs						
Mother	serum/plasma	serum	-	serum	plasma	serum
Child	serum	serum	serum	serum	serum	serum
PFASs						
Mother	serum/plasma	serum	whole blood	plasma	plasma	serum
Child	plasma	plasma	plasma	plasma	plasma	plasma
Metals and elements						
Mother	whole blood	whole blood	whole blood	cord whole blood	whole blood	whole blood
Child	whole blood	whole blood	whole blood	whole blood	whole blood	whole blood
Phthalate metabolites, phenols, OP pesticide metabolites, cotinine						
Mother	urine	urine	-	urine	urine	urine
Child	urine	urine	urine	urine	urine	urine

Abbreviations: **OC**: organochlorine; **OP**: organophosphate pesticides; **PBDEs**: polybrominateddiphenyl ethers; **PFASs**: per- and polyfluoroalkyl substances.

Table S4: Number of maternal samples analysed as part of HELIX and in already existing data collections.

		BIB	EDEN	INMA	KANC	MoBa	RHEA
OCs and PBDEs	Analysed as part of HELIX	198	197	0	0	262	0
	Already existing data collection	0	0	223	0	0	198
	missing	7	1	0	204	10	1
PFASs	Analysed as part of HELIX	198	198	15	195	253	173
	Already existing data collection	0	0	208	0	0	0
	missing	7	0	0	9	19	26
Elements	Analysed as part of HELIX	126	53	0	198	259	197
	Already existing data collection	0	0	223 (Hg)	0	0	0
	missing	79	145	0	7	13	2
Phthalate metabolites	Analysed as part of HELIX	204	198	47	0	268	197
	Already existing data collection	0	0	175	0	0	0
	missing	1	0	1	204	4	2
Phenols	Analysed as part of HELIX	204	135	219	0	268	197
	Already existing data collection	0	62	0	0	0	0
	Missing	1	1	4	204	4	2
OP pesticide metabolites	Analysed as part of HELIX	204	198	219	0	268	197
	Already existing data collection	0	0	0	0	0	0
	missing	1	0	4	204	4	2
Cotinine	HELIX	204	198	13	0	271	197
	other	0	0	210	0	0	0
	missing	1	0	0	204	1	2

Table S5: Description of the study population by cohort.

	All (N=1301)	BIB (N=205)	EDEN (N=198)	INMA (N=223)	KANC (N=204)	MOBA (N=272)	RHEA (N=199)
Age, years (25 th ; 50 th ; 75 th percentiles)	6.5; 8.1; 8.9	6.5; 6.6; 6.8	10.4; 10.9; 11.2	8.4; 8.8; 9.2	6.1; 6.4; 6.8	8.2; 8.5; 8.8	6.4; 6.5; 6.6
N missing	0	0	0	0	0	0	0
Gender							
Female	590 (45.3)	92 (44.9)	85 (42.9)	103 (46.2)	92 (45.6)	129 (47.4)	88 (44.2)
Male	711 (54.7)	113 (55.1)	113 (57.1)	120 (53.8)	111 (54.4)	143 (52.6)	111 (55.8)
N missing	0	0	0	0	0	0	0
Birthweight (g) (25 th ; 50 th ; 75 th percentiles)	3050; 3380; 3714	2960; 3320; 3640	2985; 3325; 3590	3040; 3300; 3570	3268; 3600; 3900	3228; 3587; 3870	2900; 3220; 3495
N missing	14	0	0	0	5	8	1
Maternal age at delivery (25 th ; 50 th ; 75 th percentiles)	27.2; 31.0; 34.0	25.0; 28.0; 33.0	27.5; 30.0; 34.0	29.5; 32.0; 34.8	25.3; 28.6; 32.3	30.0; 32.5; 35.0	27.3; 31.0; 33.5
N missing	16	1	0	0	5	8	2
Maternal pre-pregnancy BMI, kg/m ² (25 th ; 50 th ; 75 th percentiles)	21.3; 23.9; 27.2	24.7; 27.5; 32.1	20.1; 22.4; 25.6	21.1; 23.0; 25.4	24.6; 26.8; 30.5	20.6; 22.2; 24.1	21.5; 23.2; 25.4
N missing	24	6	2	0	5	8	3
Maternal education level							
Low (primary school)	173 (13.8)	87 (48.1)	12 (6.1)	53 (23.9)	12 (6.0)	0 (0)	9 (4.6)
Middle (secondary school)	433 (34.4)	32 (17.7)	73 (37.3)	92 (41.4)	71 (35.7)	55 (21.0)	110 (55.8)
High (university or higher)	651 (51.8)	62 (34.2)	111 (56.6)	77 (34.7)	116 (58.3)	207 (79.0)	78 (39.6)
N missing	44	24	2	1	5	10	2
Parental country of origin							
No or one parent born in country of cohort	1068(84.0)	89 (44.5)	177 (90.8)	212 (95.1)	191 (96.0)	208 (81.2)	191 (96.5)
Both parents born in country of cohort (native)	203 (16.0)	111 (55.5)	18 (9.2)	11 (4.9)	8 (4.0)	48 (18.8)	7 (3.5)
N missing	30	5	3	0	5	16	1
Parity							
Nulliparous	583 (45.9)	84 (41.0)	93 (47.0)	120 (53.8)	86 (42.2)	126 (46.3)	74 (37.2)
Primiparous	460 (36.2)	53 (25.9)	71 (35.9)	92 (41.3)	59 (28.9)	101 (37.1)	84 (42.2)
Multiparous	227 (17.9)	56 (27.3)	34 (17.2)	10 (4.5)	54 (26.5)	37 (13.6)	36 (18.1)
N missing	31	12	0	1	5	8	5

Table S5 (continued).

	All (N=1301)	BIB (N=205)	EDEN (N=198)	INMA (N=223)	KANC (N=204)	MOBA N=272)	RHEA (N=199)
Breastfeeding duration (Weeks)							
<10.8	313 (33.0)	9 (60.0)	118 (59.9)	50 (26.9)	14 (14.9)	36 (13.9)	86 (43.9)
10.8-34.9	314 (33.1)	2 (13.3)	62 (31.5)	92 (49.4)	31 (33.0)	49 (18.8)	78 (39.8)
>34.9	321 (33.9)	4 (26.7)	17 (8.6)	44 (23.7)	49 (52.1)	175 (67.3)	32 (16.3)
N missing	353	190	1	37	110	12	3
Family Affluence Score							
Low	136 (10.5)	56 (27.5)	2 (1.0)	15 (6.8)	29 (14.4)	4 (1.5)	30 (15.1)
Middle	499 (38.6)	88 (43.1)	42 (21.3)	87 (39.5)	107 (53.2)	73 (26.8)	102 (51.2)
High	658 (50.9)	60 (29.4)	153 (77.7)	118 (53.7)	65 (32.4)	195 (71.7)	67 (33.7)
N missing	8	1	1	3	3	0	0
KidMed score	2.9 (0.09)	3.0 (0.07)	2.4 (0.07)	3.3 (0.15)	1.6 (0.14)	3.7 (0)	2.6 (0)
N missing	11	1	1	5	4	0	0
Moderate to vigorous Physical Activity (min/day)	39.2 (0.40)	48.9 (0.44)	17.7 (0.27)	31.2 (0.31)	48.8 (0.49)	44.2 (0.43)	49.9 (0.34)
N missing	265	52	15	24	81	67	26
Total hours of sleep (mean weekdays and night)	10.3 (0.09)	10.9 (0.07)	10.3 (0.07)	10.0 (0.12)	9.9 (0.14)	10.5 (0.09)	9.9 (0)
N missing	11	1	1	3	4	2	0
Child overweight/obese status							
Normal	927 (71.3)	158 (77.1)	146(73.7)	128 (57.4)	141 (69.1)	229 (84.2)	125 (62.8)
Overweight	245 (18.8)	31 (15.1)	41 (20.7)	53 (23.8)	43 (21.1)	36 (13.2)	41 (20.6)
Obese	129 (9.9)	16 (7.8)	11 (5.6)	42 (18.8)	20 (9.8)	7 (2.6)	33 (16.6)
N missing	0	0	0	0	0	0	0
zBMI (25 th ; 50 th ; 75 th percentiles)	-0.39; 0.28; 1.10	-0.46; 0.08; 0.91	-0.57; 0.11; 1.10	-0.14; 0.73; 1.70	-0.30; 0.40; 1.20	-0.46; 0; 0.59	-0.32; 0.57; 1.60
N missing	0	0	0	0	0	0	0
Waist circumference z-score (25 th ; 50 th ; 75 th percentiles)	-0.69; -0.25; 0.48	-0.79; -0.39; 0.14	-0.82; -0.25; 0.54	-0.61; -0.03; 0.82	-0.56; -0.08; 0.62	-0.74; -0.43; -0.04	-0.42; -0.02; 0.73
N missing	4	1	2	0	0	0	1
Skinfolds z-score (25 th ; 50 th ; 75 th percentiles)	-0.68; -0.32; 0.34	-0.65; -0.27; 0.34	-0.74; -0.30; 0.50	-0.57; -0.03; 0.79	-0.66; -0.29; 0.41	-0.72; -0.50; -0.26	-0.62; -0.19; 0.53
N missing	13	2	0	3	0	0	8
Fatmass percentage z-score (25 th ; 50 th ; 75 th percentiles)	-0.75; -0.15; 0.65	-0.52; 0.09; 0.72	-0.71; -0.18; 0.71	-0.41; 0.38; 1.00	-0.71; -0.14; 0.71	-1.00; -0.65; -0.08	-0.67; -0.06; 0.70
N missing	11	2	2	6	0	1	0

Table S6: Childhood exposure confounder-only model for zBMI and overweight/obesity (N=1301).

Adjustment factors in the model*	zBMI		Overweight/Obesity	
	zBMI change (95% CI)	p value	OR (95% CI)	p value
Cohort				
EDEN, France (vs. BIB)	0.27 (0.01 to 0.54)	0.04	2.30 (1.30 to 4.20)	0.01
INMA, Spain (vs. BIB)	0.83 (0.57 to 1.1)	<0.001	4.90 (2.80 to 8.50)	<0.001
KANC, Lithuania (vs. BIB)	0.21 (-0.04 to 0.46)	0.10	1.60 (0.93 to 2.80)	0.09
MOBA, Norway (vs. BIB)	0.20 (-0.05 to 0.46)	0.12	1.30 (0.72 to 2.40)	0.37
RHEA, Greece (vs. BIB)	0.71 (0.44 to 0.97)	<0.001	3.70 (2.10 to 6.70)	<0.001
Maternal education level				
Middle (vs. Low)	0.13 (-0.09 to 0.35)	0.24	1.10 (0.72 to 1.80)	0.59
High (vs. Low)	0.07 (-0.15 to 0.29)	0.52	0.98 (0.62 to 1.50)	0.93
Maternal pre-pregnancy BMI, per kg/ m ²)	0.44 (0.36 to 0.52)	<0.001	2.00 (1.70 to 2.40)	<0.001
Parental country of origin				
Both parents native (vs none or one native parent)	-0.05 (-0.24 to 0.14)	0.62	1.10 (0.68 to 1.60)	0.84
Maternal age at delivery	0.04 (-0.06 to 0.14)	0.41	1.10 (0.90 to 1.40)	0.32
Parity				
Primiparous (vs nulliparous)	-0.04 (-0.18 to 0.10)	0.56	0.84 (0.62 to 1.10)	0.25
Multiparous (vs nulliparous)	0.03 (-0.15 to 0.22)	0.74	1.30 (0.86 to 1.90)	0.24
Birth weight	0.21 (0.13 to 0.29)	<0.001	1.30 (1.10 to 1.50)	0.01
Sex of the child: male (vs female)	0.03 (-0.09 to 0.15)	0.67	1.00 (0.80 to 1.40)	0.76
Breastfeeding duration (weeks)				
10.8-34.9 (vs <10.8)	0.02 (-0.16 to 0.19)	0.86	1.10 (0.76 to 1.70)	0.57
>34.9 (vs <10.8)	-0.13 (-0.33 to 0.06)	0.18	0.87 (0.57 to 1.30)	0.54

^areference category as indicated inside brackets for the categorical variables.

Table S7. Analysis of the association between prenatal and childhood exposures, and child zBMI score (N=1301). Single exposure (ExWAS) model and multi-exposure (DSA) model. Shown are all exposure variables with uncorrected ExWAS p-value<0.05 or selected in 10% or more of DSA runs; variables are ordered by increasing p-value in the ExWAS. ExWAS results for all exposures are shown in Table S17.

Exposure variable ^a	Exposure group	Single exposure model		DSA Frequency of selection (%)	multi-exposure model	
		zBMI change ^a (95% CI)	p value		zBMI change ^a (95% CI)	p value
Prenatal^b						
Smoking in pregnancy	Tobacco smoking		0.01	16		0.01
Second-hand smoking (vs. none)		0.16 (-0.002 to 0.32)			0.16 (-0.002 to 0.32)	
Active smoking (vs. none)		0.28 (0.09 to 0.48)			0.28 (0.09 to 0.48)	
Cotinine (ug/L)	Tobacco smoking		0.04			
18.4-50 (vs. <18.4)		0.09 (-0.13 to 0.30)				
>50 (vs. <18.4)		0.25 (0.06 to 0.43)				
Childhood^c						
DDE (34.0 ng/g lipids)	OCs	-0.53 (-0.63 to -0.43)	<0.0001*	100	-0.20 (-0.30 to -0.09)	0.0001
DDT (1.4 ng/g lipids)	OCs	-0.26 (-0.36 to -0.16)	<0.0001*	ns		
HCB (5.1 ng/g lipids)	OCs	-0.60 (-0.69 to -0.52)	<0.0001*	100	-0.35 (-0.46 to -0.25)	<0.0001*
PCB118 (1.4 ng/g lipids)	OCs	-0.28 (-0.36 to -0.19)	<0.0001*			
PCB138 (5.3 ng/g lipids)	OCs	-0.64 (-0.75 to -0.53)	<0.0001*			
PCB153 (11.2 ng/g lipids)	OCs	-0.69 (-0.81 to -0.57)	<0.0001*			
PCB170 (2.2 ng/g lipids)	OCs	-0.84 (-0.96 to -0.71)	<0.0001*			
PCB180 (6.4 ng/g lipids)	OCs	-0.94 (-0.92 to -0.80)	<0.0001*			
Sum of PCBs (27.6 ng/g lipids)	OCs	-0.81 (-0.93 to -0.68)	<0.0001*	100	-0.30 (-0.46 to -0.15)	0.0004
PBDE153 (0.39 ng/g lipids)	PBDEs	-0.40 (-0.52 to -0.29)	<0.0001*	100	-0.23 (-0.34 to -0.13)	<0.0001*
PFNA (0.43 µg/L)	PFASs	-0.18 (-0.26 to -0.10)	<0.0001*	ns		
PFOA (0.78 µg/L)	PFASs	-0.22 (-0.31 to -0.14)	<0.0001*	ns		
PFUNDA (0.08 µg/L)	PFASs	-0.21 (-0.32 to -0.10)	0.0001*	ns		
Copper (186 µg/L)	Metals	0.18 (0.11 to 0.26)	<0.0001*	100	0.14 (0.07 to 0.21)	0.0001
Indoor PM _{2.5 abs} (0.49 µg/m ³)	Indoor air pollution	0.14 (0.07 to 0.21)	0.0002*	80	0.08 (0.01 to 0.15)	0.02
Indoor PM _{2.5} (6.5 µg/m ³)	Indoor air pollution	0.14 (0.06 to 0.21)	0.0002*	ns		
Cotinine detected (vs. not detected)	Tobacco smoking	0.31 (0.14 to 0.48)	0.0005*	74	0.20 (0.04 to 0.37)	0.01
PFOS (2.0 µg/L)	PFASs	-0.17 (-0.26 to -0.07)	0.0005*	ns		
Cesium (0.73 µg/L)	Metals and elements	0.18 (0.07 to 0.28)	0.001	76	0.15 (0.06 to 0.25)	0.002

Table S7 (continued).

Exposure variable ^a	Exposure group	Single exposure model		DSA	multi-exposure model	
		zBMI change ^a (95% CI)	p value	Frequency of selection (%)	zBMI change ^a (95% CI)	p value
Cobalt (0.09 µg/L)	Metals and elements	-0.10 (-0.16 to -0.04)	0.002	70	-0.08 (-0.13 to -0.02)	0.01
Molybdenum (0.43 µg/L)	Metals and elements	-0.08 (-0.13 to -0.03)	0.003	100	-0.08 (-0.13 to -0.04)	0.0004
Parental tobacco smoke	Tobacco smoking		0.01	ns		
One parent (vs. none)		0.15 (0.01 to 0.29)				
Both parents (vs. none)		0.31 (0.10 to 0.52)				
Outdoor NO ₂ (year) (18.7 µg/m ³)	Outdoor air pollution	0.23 (0.02 to 0.43)	0.03	ns		
Outdoor PM ₁₀ (year) (10.6 µg/m ³)	Outdoor air pollution	0.24 (0.02 to 0.46)	0.04	ns		
Second-hand smoke exposure yes (vs. no)	Tobacco smoking	0.15 (0.01 to 0.29)	0.04	ns		
DEP (4.0 µg/g)	OP Pesticides	-0.09 (-0.18 to -0.01)	0.04	ns		
Accessibility ^d (home) (17.8 bus stops/km)	Built environment	-0.20 (-0.39 to -0.01)	0.04	ns		
Indoor NO ₂ (92.8 µg/m ³)	Indoor air pollution	0.11 (-0.04 to 0.26)	0.15	26	0.15 (0.01 to 0.28)	0.03
Facility density (school) (38.9 facilities/km ²)	Built environment	-0.04 (-0.13 to 0.05)	0.37	74	-0.21 (-0.33 to -0.08)	0.001
Population density (home) (6160 people/km ²)	Built environment	0.02 (-0.07 to 0.11)	0.65	74	0.16 (0.07 to 0.25)	0.001

ns: not selected in the DSA model

IQR: interquartile range

^{*}Significant after p-value correction based on the number of effective tests (i.e., p-value correction for multiple testing). Threshold for effective number of test=0.001 for prenatal exposures, and 0.0009 for childhood exposures.

^a reference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity and parental country of origin

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding and birth weight

Table S8. Analysis of the association between prenatal and childhood exposures, and overweight/obesity status (vs normal weight. N overweight/obesity=374, N normal weight=927). Single exposure (ExWAS) model and multi-exposure (DSA) model. Shown are all exposure variables with uncorrected ExWAS p-value<0.05 or selected in 10% or more of DSA runs; variables are ordered by increasing p-value in the ExWAS.

Exposure variable ^a	Exposure group	Single exposure model		DSA	multi-exposure model	
		Overweight/obesity OR ^a (95% CI)	p value	Frequency (%) of selection	Overweight/obesity OR ^a (95% CI)	p value
Prenatal^b	none selected					
Childhood^c						
DDE (34.0 ng/g lipids)	OCs	0.43 (0.33 to 0.56)	<0.0001*	ns		
HCB (5.1 ng/g lipids)	OCs	0.24 (0.18 to 0.32)	<0.0001*	100	0.36 (0.25 to 0.51)	<0.0001
PCB118 (1.4 ng/g lipids)	OCs	0.55 (0.44 to 0.69)	<0.0001*	-		
PCB138 (5.3 ng/g lipids)	OCs	0.27 (0.19 to 0.37)	<0.0001*	-		
PCB153 (11.2 ng/g lipids)	OCs	0.22 (0.16 to 0.31)	<0.0001*	-		
PCB170 (2.2 ng/g lipids)	OCs	0.16 (0.11 to 0.24)	<0.0001*	-		
PCB180 (6.5 ng/g lipids)	OCs	0.11 (0.07 to 0.18)	<0.0001*	-		
Sum of PCBs (27.6 ng/g lipids)	OCs	0.16 (0.10 to 0.23)	<0.0001*	100	0.36 (0.22 to 0.60)	<0.0001
PBDE153 (0.39 ng/g lipids)	PBDEs	0.46 (0.36 to 0.60)	<0.0001*	98	0.63 (0.47 to 0.85)	0.002
Copper (186 µg/L)	Metals and elements	1.42 (1.19 to 1.69)	<0.0001*	100	1.37 (1.13 to 1.66)	0.001
Cesium (0.73 µg/L)	Metals and elements	1.51 (1.21 to 1.89)	<0.0001*	78	1.57 (1.21 to 2.04)	0.001
PFOA (0.78 µg/L)	PFASs	0.72 (0.60 to 0.87)	0.001	ns		
Indoor PM _{2.5} (6.5 µg/m ³)	Indoor air pollution	1.24 (1.08 to 1.43)	0.003	ns		
Cobalt (0.09 µg/L)	Metals and elements	0.79 (0.68 to 0.93)	0.004	94	0.75 (0.63 to 0.90)	0.002
Cotinine detected (vs. not detected)	Tobacco smoking	1.62 (1.14 to 2.29)	0.01	98	1.93 (1.28 to 2.90)	0.002
DDT (1.4 ng/g lipids)	OCs	0.74 (0.59 to 0.93)	0.01	ns		
DEP (4.0 µg/g)	OP Pesticides	0.77 (0.63 to 0.94)	0.01	24	0.74 (0.59 to 0.92)	0.01
Parental tobacco smoking	Tobacco smoking		0.02	ns		
One parent (vs. none)		1.37 (1.01 to 1.87)				
Both parents (vs. none)		1.73 (1.14 to 2.64)				
Social participation	Social and economic capital		0.02	40		0.01
1 organization (vs. none)		0.70 (0.51 to 0.97)			0.82 (0.57 to 1.20)	
>1 organizations (vs. none)		1.27 (0.85 to 1.91)			1.74 (1.10 to 2.74)	
Indoor PM _{2.5 abs} (0.49 µg/m ³)	Indoor air pollution	1.20 (1.03 to 1.39)	0.02	ns		
Outdoor PM _{2.5 abs} (year) (0.41 µg/m ³)	Outdoor air pollution	1.28 (1.02 to 1.60)	0.03	50	1.31 (0.97 to 1.76)	0.08
MBzP (5.5 µg/g)	Phthalates	0.85 (0.72 to 0.99)	0.04	ns		

Table S8 (continued).

Exposure variable ^a	Exposure group	Single exposure model		DSA Frequency (%) of selection	multi-exposure model	
		Overweight/obesity OR ^a (95% CI)	p value		Overweight/obesity OR ^a (95% CI)	p value
Childhood^c						
Manganese (3.4 µg/L)	Metals and elements	1.20 (1.00 to 1.40)	0.05	ns		
Outdoor NO ₂ (year) (18.8µg/m ³)	Outdoor air pollution	1.55 (1.01 to 2.38)	0.05	ns		
Road traffic load (1138814 vehicles/day)	Traffic	1.26 (0.99 to 1.61)	0.13	10	1.39 (1.02 to 1.89)	0.04
Facility density (school) (38.9 facilities/km ²)	Built environment	0.85 (0.66 to 1.10)	0.18	16	0.57 (0.40 to 0.81)	0.002
Population density (home)(6160 people/km ²)	Built environment	1.12 (0.93 to 1.33)	0.27	16	1.34 (1.04 to 1.72)	0.02

ns: not selected in the DSA model

IQR: interquartile range

*Significant after p-value correction based on the number of effective tests (i.e., p-value correction for multiple testing). Threshold for effective number of test=0.001 for prenatal exposures, and 0.0009 for childhood exposures.

^a reference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity and parental country of origin

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding and birth weight

Table S9. Analysis of the association between prenatal and childhood exposures, and waist circumference z-score (N=1297). Single exposure (ExWAS) model and multi-exposure (DSA) model. Shown are all exposure variables with uncorrected ExWAS p-value<0.05 or selected in 10% or more of DSA runs; variables are ordered by increasing p-value in the ExWAS.

Exposure variable ^a	Exposure group	Single exposure model		DSA Frequency (%) of selection	Multi-exposure model	
		zWC change ^a (95% CI)	p value		zWC change ^a (95% CI)	p value
Prenatal^b						
Smoking in pregnancy	Tobacco smoking		0.02	24		0.02
Second-hand smoking (vs. no exposure)		0.13 (-0.003 to 0.26)			0.13 (-0.003 to 0.26)	
Active smoking (vs. no exposure)		0.21 (0.05 to 0.37)			0.21 (0.05 to 0.37)	
Childhood^c						
DDE (34.0 ng/g lipids)	OCs	-0.41 (-0.49 to -0.32)	<0.0001*	100	-0.18 (-0.27 to -0.09)	<0.0001
DDT (1.4 ng/g lipids)	OCs	-0.23 (-0.31 to -0.14)	<0.0001*	ns		
HCB (5.1 ng/g lipids)	OCs	-0.41 (-0.48 to -0.33)	<0.0001*	100	-0.22 (-0.31 to -0.13)	<0.0001
PCB118 (1.4 ng/g lipids)	OCs	-0.24 (-0.31 to -0.17)	<0.0001*	-		
PCB138 (5.3 ng/g lipids)	OCs	-0.44 (-0.53 to -0.35)	<0.0001*	-		
PCB153 (11.2 ng/g lipids)	OCs	-0.47 (-0.57 to -0.38)	<0.0001*	-		
PCB170 (2.2 ng/g lipids)	OCs	-0.59 (-0.70 to -0.49)	<0.0001*	-		
PCB180 (6.4 ng/g lipids)	OCs	-0.67 (-0.79 to -0.55)	<0.0001*	-		
Sum of PCBs (27.6 ng/g lipids)	OCs	-0.56 (-0.66 to -0.46)	<0.0001*	72	-0.19 (-0.32 to -0.06)	0.005
PBDE153 (0.39 ng/g lipids)	PBDEs	-0.28 (-0.37 to -0.19)	<0.0001*	100	-0.16 (-0.25 to -0.07)	0.001
PFOA (0.78 µg/L)	PFASs	-0.20 (-0.27 to -0.14)	<0.0001*	100	-0.11 (-0.17 to -0.04)	0.002
PFNA (0.43 µg/L)	PFASs	-0.17 (-0.23 to -0.10)	<0.0001*	ns		
PFOS (2.0 µg/L)	PFASs	-0.16 (-0.23 to -0.08)	<0.0001*	ns		
Manganese (3.4 µg/L)	Metals and elements	0.14 (0.07 to 0.20)	<0.0001*	88	0.10 (0.04 to 0.17)	0.001
Copper (186 µg/L)	Metals and elements	0.14 (0.08 to 0.21)	<0.0001*	100	0.08 (0.02 to 0.14)	0.01
PFUNDA (0.08 µg/L)	PFASs	-0.14 (-0.23 to -0.05)	0.003	ns		
Cesium (0.73 µg/L)	Metals and elements	0.13 (0.04 to 0.21)	0.004	22	0.10 (0.02 to 0.18)	0.02
Indoor PM _{2.5} (6.5 µg/m ³)	Indoor air pollution	0.08 (0.03 to 0.14)	0.01	ns		
PFHXS (0.42 µg/L)	PFASs	-0.12 (-0.21 to -0.02)	0.01	ns		
Cobalt (0.09 µg/L)	Metals and elements	-0.06(-0.12 to -0.01)	0.02	36	-0.07 (-0.12 to -0.02)	0.01
Cotinine detected (vs. not detected)	Tobacco smoking	0.18 (0.04 to 0.32)	0.02	10	0.14 (0.01 to 0.27)	0.04
Indoor NO ₂ (92.8 µg/m ³)	Indoor air pollution	0.14 (0.02 to 0.27)	0.03	98	0.15 (0.03 to 0.26)	0.01

Table S9. (continued).

Exposure variable ^a	Exposure group	Single exposure model		DSA Frequency (%) of selection	Multi-exposure model	
		zWC change ^a (95% CI)	p value		zWC change ^a (95% CI)	p value
Childhood^c						
Parental tobacco smoking	Tobacco smoking		0.04	ns		
	One parent (vs. none)	0.08 (-0.04 to 0.20)				
	Both parents (vs. none)	0.21 (0.04 to 0.39)				
Connectivity (167.3 intersections/km ²)	Built environment	-0.09 (-0.2 to 0.02)	0.09	14	-0.13 (-0.23 to -0.02)	0.02
Social participation	Social and economic capital		0.18	10		0.08
	1 organization (vs. none)	-0.06 (-0.18 to 0.06)			0.00 (-0.11 to 0.11)	
	>1 organizations (vs. none)	0.09 (-0.07 to 0.24)			0.15 (0.01 to 0.30)	
Population density (home) (6160 people/km ²)	Built environment	0.04 (-0.03 to 0.11)	0.25	14	0.09 (0.02 to 0.16)	0.01

ns: not selected in the DSA model

IQR: interquartile range

*Significant after p-value correction based on the number of effective tests (i.e., p-value correction for multiple testing). Threshold for effective number of test=0.001 for prenatal exposures, and 0.0009 for childhood exposures.

^a reference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity and parental country of origin

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding and birth weight

Table S10: Analysis of the association between prenatal and childhood exposures, and skinfolds z-score (N=1288). Single exposure (ExWAS) model and multi-exposure (DSA) model. Shown are all exposure variables with uncorrected ExWAS p-value<0.05 or selected in 10% or more of DSA runs; variables are ordered by increasing p-value in the ExWAS.

Exposure variable ^a	Exposure group	Single exposure model		DSA Frequency (%) of selection	Multi-exposure model	
		zSkinfolds change ^a (95% CI)	p value		zSkinfolds change ^a (95% CI)	p value
Prenatal^b	None selected					
Childhood^c						
DDE (34.0 ng/g lipids)	OCs	-0.38 (-0.46 to -0.29)	<0.0001*	36	-0.11 (-0.20 to -0.02)	0.02
DDT (1.4 ng/g lipids)	OCs	-0.22 (-0.31 to -0.13)	<0.0001*	ns		
HCB (5.1 ng/g lipids)	OCs	-0.45 (-0.52 to -0.37)	<0.0001*	100	-0.28 (-0.37 to -0.19)	<0.0001*
PCB118 (1.4 ng/g lipids)	OCs	-0.18 (-0.25 to -0.11)	<0.0001*	-		
PCB138 (5.3 ng/g lipids)	OCs	-0.46 (-0.51 to -0.34)	<0.0001*	-		
PCB153 (11.2 ng/g lipids)	OCs	-0.50 (-0.60 to -0.40)	<0.0001*	-		
PCB170 (2.2 ng/g lipids)	OCs	-0.68 (-0.78 to -0.57)	<0.0001*	-		
PCB180 (6.4 ng/g lipids)	OCs	-0.74 (-0.86 to -0.62)	<0.0001*	-		
Sum of PCBs (27.6 ng/g lipids)	OCs	-0.59 (-0.70 to -0.49)	<0.0001*	100	-0.21 (-0.35 to -0.08)	0.001
PBDE153 (0.39 ng/g lipids)	PBDEs	-0.34 (-0.43 to -0.24)	<0.0001*	100	-0.22 (-0.31 to -0.13)	<0.0001*
PFNA (0.43 µg/L)	PFASs	-0.16 (-0.23 to -0.09)	<0.0001*	ns		
PFOS (2.0 µg/L)	PFASs	-0.15 (-0.22 to -0.07)	<0.0001*	ns		
PFOA (0.78 µg/L)	PFASs	-0.16 (-0.23 to -0.08)	<0.0001*	ns		
Copper (186 µg/L)	Metals and elements	0.20 (0.14 to 0.27)	<0.0001*	100	0.17 (0.11 to 0.23)	<0.0001*
Manganese (3.4 µg/L)	Metals and elements	0.11 (0.04 to 0.18)	0.001	52	0.08 (0.02 to 0.15)	0.01
Indoor PM _{2.5} (6.5 µg/m ³)	Indoor air pollution	0.10 (0.04 to 0.16)	0.002	ns		
Cotinine detected (vs. not detected)	Tabacco smoking	0.23 (0.08 to 0.38)	0.002	86	0.20 (0.07 to 0.33)	0.01
Cobalt (0.09 µg/L)	Metals and elements	-0.08 (-0.14 to -0.03)	0.002	84	-0.07 (-0.12 to -0.03)	0.003
PFUNDA (0.08 µg/L)	PFASs	-0.14 (-0.23 to -0.04)	0.004	ns		
Outdoor PM _{2.5} abs (year) (0.41 µg/m ³)	Outdoor air pollution	0.13 (0.04 to 0.23)	0.01	82	0.16 (0.07 to 0.26)	0.001
Indoor benzene (0.99 µg/m ³)	Indoor air pollution	0.09 (0.02 to 0.17)	0.02	ns		
Indoor PM _{2.5} abs (0.49 µg/m ³)	Indoor air pollution	0.07 (0.01 to 0.14)	0.02	ns		
OXBE (6.1 µg/g)	Phenols	0.08 (0.01 to 0.15)	0.02	ns		
Indoor NO ₂ (92.8 µg/m ³)	Indoor air pollution	0.14 (0.02 to 0.27)	0.03	66	0.15 (0.04 to 0.27)	0.01
Outdoor PM ₁₀ (year) (10.6 µg/m ³)	Outdoor air pollution	0.21 (0.01 to 0.41)	0.04	ns		
Outdoor NO ₂ (year) (60 µg/m ³)	Outdoor air pollution	0.17 (0.004 to 0.34)	0.05	ns		
Facility density (school) (38.9 facilities/km ²)	Built environment	-0.10 (-0.20 to -0.00)	0.05	78	-0.16 (-0.26 to -0.06)	0.001
Molybdenum (0.31 µg/L)	Metals and elements	-0.04 (-0.09 to 0.02)	0.18	20	-0.04 (-0.08 to 0)	0.04

ns: not selected in the DSA model

IQR: interquartile range

*Significant after p-value correction based on the number of effective tests (i.e., p-value correction for multiple testing). Threshold for effective number of test=0.001 for prenatal exposures, and 0.0009 for childhood exposures.

^a reference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity and parental country of origin

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity , parental country of origin, breastfeeding and birth weight

Table S11: Analysis of the association between prenatal and childhood exposures, and percentage fatmass z-score (N=1290). Single exposure (ExWAS) model and multi-exposure (DSA) model. Shown are all exposure variables with uncorrected ExWAS p-value<0.05 or selected in 10% or more of DSA runs; variables are ordered by increasing p-value in the ExWAS.

Exposure variable ^a	Exposure group	Single exposure model		DSA Frequency (%) of selection	Multi-exposure model	
		zFatmass change ^a (95% CI)	p value		zFatmass change ^a (95% CI)	p value
Prenatal^b						
Cadmium (0.19 µg/L)	Metals	0.07 (0.01 to 0.13)	0.03	ns		
Sum of PCBs (46.5 ng/g lipids)	OCs	-0.13 (-0.25 to -0.001)	0.05	ns		
Childhood^c						
DDE (34.0 ng/g lipids)	OCs	-0.36 (-0.44 to -0.28)	<0.0001*	44	-0.10 (-0.19 to -0.01)	0.02
HCB (5.1 ng/g lipids)	OCs	-0.38 (-0.45 to -0.3)	<0.0001*	100	-0.18 (-0.27 to -0.09)	<0.0001
PCB118 (1.4 ng/g lipids)	OCs	-0.18 (-0.25 to -0.11)	<0.0001*	-		
PCB138 (5.3 ng/g lipids)	OCs	-0.44 (-0.53 to -0.34)	<0.0001*	-		
PCB153 (11.2 ng/g lipids)	OCs	-0.5 (-0.60 to -0.41)	<0.0001*	-		
PCB170 (2.2 ng/g lipids)	OCs	-0.62 (-0.72 to -0.51)	<0.0001*	-		
PCB180 (6.4 ng/g lipids)	OCs	-0.70 (-0.82 to -0.59)	<0.0001*	-		
Sum of PCBs (27.6 ng/g lipids)	OCs	-0.59 (-0.69 to -0.49)	<0.0001*	100	-0.33 (-0.45 to -0.20)	<0.0001
PBDE153 (0.39 ng/g lipids)	PBDEs	-0.29 (-0.39 to -0.20)	<0.0001*	98	-0.15 (-0.24 to -0.06)	0.001
PFNA (0.43 µg/L)	PFASs	-0.13 (-0.2 to -0.07)	<0.0001*	ns		
Copper (186 µg/L)	Metals and elements	0.26 (0.20 to 0.32)	<0.0001*	100	0.23 (0.17 to 0.29)	<0.0001
DDT (1.4 ng/g lipids)	OCs	-0.16 (-0.24 to -0.07)	0.0002*	ns		
PFOA (0.78 µg/L)	PFASs	-0.14 (-0.21 to -0.07)	0.0002*	ns		
Cotinine detected (vs. not detected)	Tobacco smoking	0.25 (0.11 to 0.39)	0.0005*	100	0.26 (0.13 to 0.38)	<0.0001
Manganese (3.4 µg/L)	Metals and elements	0.12 (0.05 to 0.18)	0.001	76	0.08 (0.02 to 0.15)	0.01
Cobalt (0.09 µg/L)	Metals and elements	-0.09 (-0.14 to -0.04)	0.001	98	-0.09 (-0.14 to -0.04)	0.001
PFUNDA (0.08 µg/L)	PFASs	-0.14 (-0.22 to -0.05)	0.003	ns		
DMDTP detected (vs. not detected)	OP Pesticides	-0.17 (-0.30 to -0.04)	0.01	92	-0.15 (-0.26 to -0.03)	0.01
NDVI (home) (0.26)	Natural Spaces	-0.15 (-0.26 to -0.03)	0.01	ns		
Indoor PM _{2.5} (6.5 µg/m ³)	Indoor air pollution	0.07 (0.01 to 0.13)	0.02	ns		
NO ₂ (18.8 µg/m ³)	Outdoor air pollution	0.19 (0.02 to 0.36)	0.02	ns		
Population density (49.5 people / km ²)	Built environment	0.09 (0.02 to 0.16)	0.03	94	0.09 (0.02 to 0.15)	0.01
Indoor NO ₂ (92.8 µg/m ³)	Indoor air pollution	0.15 (0.03 to 0.28)	0.03	62	0.14 (0.02 to 0.25)	0.02
PFOS (2.0 µg/L)	PFASs	-0.09 (-0.16 to -0.01)	0.03	ns		
Parental Tobacco Smoke	Tobacco smoking		0.04	ns		
One (vs. none)		0.09 (-0.03 to 0.21)				
Both (vs. none)		0.21 (0.04 to 0.38)				

Table S11 (continued).

Exposure variable ^a	Exposure group	Single exposure model		DSA Frequency (%) of selection	Multi-exposure model	
		zFatmass change ^a (95% CI)	p value		zFatmass change ^a (95% CI)	p value
OXBE (6.1 µg/g)	Phenols	0.07 (0.01 to 0.14)	0.04	ns		
Indoor PM _{2.5 abs} (0.49 µg/m ³)	Indoor air pollution	0.06 (0.003 to 0.12)	0.05	ns		
Contact with family and friends	Social and economic capital		0.27	86		0.02
Once a week (vs. Less than once a week)		0.16 (-0.08 to 0.40)			0.26 (0.05 to 0.48)	
Almost daily (vs. Less than once a week)		0.19 (-0.04 to 0.42)			0.30 (0.09 to 0.51)	
Lead (5.91 µg/L)	Metals and elements	-0.03 (-0.09 to 0.03)	0.28	26	-0.06 (-0.12 to 0)	0.04

ns: not selected in the DSA model

*Significant after p-value correction based on the number of effective tests (i.e., p-value correction for multiple testing). Threshold for effective number of test=0.001 for prenatal exposures, and 0.0009 for childhood exposures.

^a reference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity and parental country of origin

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity , parental country of origin, breastfeeding and birth weight

^d : Bus public transport stops inside each 300m buffer, divided by the buffer area in km² at home (n / sq km)

Table S12. Sensitivity analysis - sex stratification. Association between prenatal and childhood exposures and zBMI score stratified by girls and boys; DSA multi-exposure model.

Exposure variable ^a	Exposure group	MALE (N=711)	FEMALE (N=590)	P value for interaction
		zBMI change ^a (95% CI)	zBMI change ^a (95% CI)	
Prenatal^b				
Smoking in pregnancy	Tobacco smoking			0.81
Second-hand smoking (vs. none)		0.05 (-0.17 to 0.28)	0.36 (0.12 to 0.60)	
Active smoking (vs. none)		0.21 (-0.06 to 0.48)	0.40 (0.12 to 0.68)	
Childhood^c				
Facility density (school) (38.9 facilities/km ²)	Built environment	-0.21 (-0.39 to -0.02)	-0.20 (-0.37 to -0.03)	0.26
Population density (home) (6160 people/km ²)	Built environment	0.23 (0.10 to 0.37)	0.09 (-0.03 to 0.22)	0.13
Indoor PM _{2.5} abs (0.49 µg/m ³)	Indoor air pollution	0.09 (-0.02 to 0.19)	0.08 (-0.01 to 0.17)	0.85
Indoor NO ₂ (92.8 µg / m ³)	Indoor air pollution	0.07 (-0.13 to 0.27)	0.24 (0.06 to 0.42)	0.91
Cotinine detected (vs. not detected)	Tobacco smoking	0.13 (-0.10 to 0.36)	0.30 (0.07 to 0.53)	0.77
DDE (34.0 ng/g lipids)	OCs	-0.25 (-0.41 to -0.09)	-0.15 (-0.29 to -0.01)	0.86
HCB (5.1 ng/g lipids)	OCs	-0.32 (-0.47 to -0.17)	-0.41 (-0.57 to -0.25)	0.54
Sum of PCBs (27.6 ng/g lipids)	OCs	-0.33 (-0.53 to -0.12)	-0.25 (-0.49 to -0.01)	0.41
PBDE153 (0.39 ng/g lipids)	PBDEs	-0.25 (-0.41 to -0.10)	-0.22 (-0.37 to -0.07)	0.15
Copper (186 µg/L)	Metals and elements	0.17 (0.05 to 0.28)	0.11 (0.01 to 0.20)	0.21
Cesium (0.73 µg/L)	Metals and elements	0.14 (-0.01 to 0.29)	0.13 (0.00 to 0.26)	0.68
Cobalt (0.09 µg/L)	Metals and elements	-0.07 (-0.15 to 0.00)	-0.09 (-0.18 to 0.00)	0.78
Molybdenum (0.43 µg/L)	Metals and elements	-0.11 (-0.17 to -0.05)	-0.05 (-0.12 to 0.02)	0.13

^a reference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity and parental country of origin

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding and birth weight

Table S13: Sensitivity analysis – Maternal education stratification. Association between prenatal and childhood exposures and zBMI score stratified by maternal educational category; DSA multi-exposure model.

Exposure variable ^a	Exposure group	Low and medium education (primary, secondary school)	High education (university and higher)	P value for interaction
		zBMI change ^a (95% CI)	zBMI change ^a (95% CI)	
Prenatal^b				
Smoking in pregnancy	Tobacco smoking			0.55
Second-hand smoking (vs. none)		0.17 (-0.07 to 0.42)	0.15 (-0.07 to 0.37)	
Active smoking (vs none)		0.28 (0.03 to 0.54)	0.20 (-0.13 to 0.53)	
Childhood^c				
Facility density (school) (38.9 facilities/km ²)	Built environment	-0.13 (-0.32 to 0.06)	-0.22 (-0.39 to -0.05)	0.61
Population density (home) (6160 people/km ²)	Built environment	0.18 (0.05 to 0.30)	0.13 (-0.01 to 0.26)	0.84
Indoor PM _{2.5} abs (0.49 10 ⁻⁵ m ⁻¹)	Indoor air pollution	0.06 (-0.03 to 0.15)	0.07 (-0.05 to 0.19)	0.64
Indoor NO ₂ (92.8 µg / m ³)	Indoor air pollution	0.07 (-0.12 to 0.26)	0.22 (0.03 to 0.42)	0.18
Cotinine detected (vs. not detected)	Tobacco smoking	0.25 (0.05 to 0.45)	-0.02 (-0.32 to 0.28)	0.15
DDE (34.0 ng/g lipids)	OCs	-0.31 (-0.48 to -0.14)	-0.11 (-0.25 to 0.02)	0.06
HCB (5.1 ng/g lipids)	OCs	-0.53 (-0.70 to -0.35)	-0.24 (-0.38 to -0.11)	0.003
Sum of PCBs (27.6 ng/g lipids)	OCs	-0.20 (-0.47 to 0.08)	-0.38 (-0.56 to -0.19)	0.48
PBDE153 (0.39 ng/g lipids)	PBDEs	-0.21 (-0.37 to -0.05)	-0.23 (-0.38 to -0.09)	0.61
Copper (186 µg/L)	Metals and elements	0.08 (-0.02 to 0.17)	0.23 (0.12 to 0.34)	0.08
Cesium (0.73 µg/L)	Metals and elements	0.11 (-0.04 to 0.26)	0.17 (0.05 to 0.30)	0.58
Cobalt (0.09 µg/L)	Metals and elements	-0.06 (-0.15 to 0.02)	-0.07 (-0.15 to 0.01)	0.82
Molybdenum (0.43 µg/L)	Metals and elements	-0.07 (-0.14 to 0.00)	-0.09 (-0.15 to -0.02)	0.81

^areference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^badjusted for cohort, sex, maternal BMI, maternal age at conception, parity and parental country of origin.

^cadjusted for cohort, sex, maternal BMI, maternal age at conception, parity, parental country of origin, breastfeeding and birth weight.

Table S14 – Sensitivity analysis – adjusting for additional maternal lifestyle factors. Association between maternal smoking during pregnancy and zBMI score.

Exposure variable ^a	Exposure group	Main analysis ^b	Adjusted for fast food ^c	Adjusted for fruits ^d	Adjusted for vegetables ^e	Adjusted for moderate physical activity ^f	Adjusted for vigorous physical activity ^g
		zBMI change (95%CI)	zBMI change (95%CI)	zBMI change (95%CI)	zBMI change (95%CI)	zBMI change (95%CI)	zBMI change (95%CI)
Prenatal^b							
Smoking in pregnancy	Tobacco smoking						
	Second-hand smoking (vs. none)	0.16 (-0.002 to 0.32)	0.16 (-0.002 to 0.32)	0.16 (-0.002 to 0.32)	0.16 (-0.003 to 0.32)	0.16 (-0.002 to 0.32)	0.16 (-0.003 to 0.32)
	Active smoking (vs. none)	0.28 (0.09 to 0.48)	0.28 (0.09 to 0.48)	0.29 (0.09 to 0.48)	0.28 (0.09 to 0.48)	0.29 (0.09 to 0.48)	0.28 (0.09 to 0.48)

^a reference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, and fast food intake during pregnancy (tertiles: T1:<0.25; T2: 0.25-0.83; T3: >0.83 times/week)

^d adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, and fruit consumption during pregnancy (tertiles: T1: <9.6; T2: 9.6-18.2; T3: >18.2 times/week)

^e adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, and vegetable consumption during pregnancy (tertiles: T1: <8.8; T2: 8.8-16.5; T3: >16.5 times/week)

^f adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, and moderate physical activity (mins/day)

^g adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, and vigorous physical activity (mins/day)

Table S15: Sensitivity analysis – adjusting for additional childhood social and lifestyle factors. Association between *childhood* exposures and zBMI score; DSA multi-exposure model.

Exposure variable ^a	Exposure group	Main analysis ^b	Adjusted for FAS ^c	Adjusted for KidMed ^d	Adjusted for physical activity ^e	Adjusted for sleep ^f
		zBMI change (95%CI)	zBMI change (95%CI)	zBMI change (95%CI)	zBMI change (95%CI)	zBMI change (95%CI)
Childhood						
Facility density (school) (38.9 facilities/km ²)	Built environment	-0.21 (-0.33 to -0.08)	-0.20 (-0.32 to -0.07)	-0.21 (-0.33 to -0.08)	-0.21 (-0.33 to -0.08)	-0.21 (-0.33 to -0.08)
Population density (home) (6160 people/km ²)	Built environment	0.16 (0.07 to 0.25)	0.16 (0.07 to 0.26)	0.16 (0.07 to 0.25)	0.16 (0.07 to 0.26)	0.17 (0.07 to 0.26)
Indoor PM _{2.5} abs (0.49 µg/m ³)	Indoor air pollution	0.08 (0.01 to 0.15)	0.08 (0.01 to 0.15)	0.08 (0.01 to 0.15)	0.08 (0.01 to 0.15)	0.08 (0.01 to 0.15)
Indoor NO ₂ (92.8 µg/m ³)	Indoor air pollution	0.15 (0.01 to 0.28)	0.16 (0.03 to 0.30)	0.16 (0.02 to 0.29)	0.15 (0.01 to 0.28)	0.14 (0 to 0.27)
Cotinine detected (vs. not detected)	Tobacco smoking	0.20 (0.04 to 0.37)	0.21 (0.05 to 0.37)	0.21 (0.05 to 0.37)	0.20 (0.04 to 0.36)	0.21 (0.05 to 0.37)
DDE (34.0 ng/g lipids)	OCs	-0.20 (-0.30 to -0.09)	-0.20 (-0.30 to -0.09)	-0.20 (-0.3 to -0.1)	-0.20 (-0.3 to -0.09)	-0.20 (-0.3 to -0.09)
HCB (5.1 ng/g lipids)	OCs	-0.35 (-0.46 to -0.25)	-0.37 (-0.48 to -0.26)	-0.37 (-0.47 to -0.26)	-0.37 (-0.47 to -0.26)	-0.36 (-0.47 to -0.25)
Sum of PCBs (27.6 ng/g lipids)	OCs	-0.30 (-0.46 to -0.15)	-0.30 (-0.45 to -0.14)	-0.31 (-0.47 to -0.15)	-0.31 (-0.46 to -0.15)	-0.30 (-0.46 to -0.15)
PBDE153 (0.39 ng/g lipids)	PBDEs	-0.23 (-0.34 to -0.13)	-0.23 (-0.34 to -0.13)	-0.23 (-0.34 to -0.13)	-0.23 (-0.34 to -0.13)	-0.23 (-0.34 to -0.13)
Copper (186 µg/L)	Metals and elements	0.14 (0.07 to 0.21)	0.14 (0.07 to 0.21)	0.14 (0.07 to 0.21)	0.14 (0.07 to 0.21)	0.14 (0.07 to 0.21)
Cesium (0.73 µg/L)	Metals and elements	0.15 (0.06 to 0.25)	0.15 (0.05 to 0.25)	0.15 (0.05 to 0.24)	0.15 (0.06 to 0.25)	0.15 (0.06 to 0.25)
Cobalt (0.09 µg/L)	Metals and elements	-0.08 (-0.13 to -0.02)	-0.08 (-0.13 to -0.02)	-0.07 (-0.13 to -0.02)	-0.08 (-0.14 to -0.02)	-0.08 (-0.14 to -0.02)
Molybdenum (0.43 µg/L)	Metals and elements	-0.08 (-0.13 to -0.04)	-0.08 (-0.13 to -0.04)	-0.08 (-0.13 to -0.04)	-0.08 (-0.13 to -0.04)	-0.08 (-0.13 to -0.04)

^a reference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding, and birth weight

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding, birth weight, and family affluence score

^d adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding, birth weight, and KidMed score

^e adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding, birth weight, and moderate to vigorous physical activity (mins/day)

^f adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding, birth weight, and total hours of sleep (mean weekdays and night)

Table S16: Sensitivity analysis – Association between childhood exposures and zBMI score adjusted for maternal smoking during pregnancy; final multi-exposure model. DSA multi-exposure model.

Exposure variable ^a	Exposure group	Main analysis ^b	Adj for maternal smoking ^c
		zBMI change (95% CI)	zBMI change (95% CI)
Childhood			
Facility density (school) (38.9 n/km ²)	Built environment	-0.21 (-0.33 to -0.08)	-0.20 (-0.33 to -0.08)
Population density (home) (6160 people/km ²)	Built environment	0.16 (0.07 to 0.25)	0.16 (0.07 to 0.25)
Indoor PM _{2.5} abs (0.49 µg/m ³)	Indoor air pollution	0.08 (0.01 to 0.15)	0.08 (0.01 to 0.16)
Indoor NO ₂ (92.8 µg/m ³)	Indoor air pollution	0.15 (0.01 to 0.28)	0.15 (0.01 to 0.28)
Cotinine detected (vs. not detected)	Tobacco smoking	0.20 (0.04 to 0.37)	0.21 (0.04 to 0.38)
DDE (34.0 ng/g lipids)	OCs	-0.20 (-0.30 to -0.09)	-0.20 (-0.30 to -0.09)
HCB (5.1 ng/g lipids)	OCs	-0.35 (-0.46 to -0.25)	-0.37 (-0.47 to -0.26)
Sum of PCBs (27.6 ng/g lipids)	OCs	-0.30 (-0.46 to -0.15)	-0.30 (-0.46 to -0.15)
PBDE153 (0.39 ng/g lipids)	PBDEs	-0.23 (-0.34 to -0.13)	-0.23 (-0.34 to -0.13)
Copper (186 µg/L)	Metals and elements	0.14 (0.07 to 0.21)	0.14 (0.06 to 0.21)
Cesium (0.73 µg/L)	Metals and elements	0.15 (0.06 to 0.25)	0.15 (0.06 to 0.25)
Cobalt (0.09 µg/L)	Metals and elements	-0.08 (-0.13 to -0.02)	-0.08 (-0.14 to -0.02)
Molybdenum (0.43 µg/L)	Metals and elements	-0.08 (-0.13 to -0.04)	-0.08 (-0.13 to -0.04)

^a reference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding, and birth weight

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding, birth weight, and maternal smoking during pregnancy

Table S17: All associations between pregnancy and childhood exposures, and child zBMI score (N=1301). Single exposure (ExWAS) model. Variables ordered by exposure group.

A) Prenatal Exposome			
Exposure variable^a	Exposure group	zBMI change^a (95% CI)	p value
Population density (6869.7 people/km ²)	Built environment	0.03 (-0.05 to 0.11)	0.48
Building density (149016.8 m ² built /km ²)	Built environment	-0.02 (-0.12 to 0.07)	0.66
Connectivity (167.3 number of intersections/km ²)	Built environment	0.02 (-0.1 to 0.13)	0.78
Accessibility (bus lines) 1 or more (vs. none)	Built environment	-0.06 (-0.25 to 0.12)	0.49
Accessibility (bus stops) (14.2 bus stops/ km ²)	Built environment	-0.06 (-0.2 to 0.08)	0.40
Facility richness (0.12)	Built environment	-0.06 (-0.16 to 0.04)	0.26
Facility density (49.5 n / km ²)	Built environment	-0.09 (-0.2 to 0.01)	0.09
Land use (0.18)	Built environment	0.02 (-0.07 to 0.1)	0.70
Walkability Index (0.13)	Built environment	-0.02 (-0.14 to 0.1)	0.72
NDVI (0.27)	Surrounding natural spaces	0.01 (-0.18 to 0.19)	0.96
Green spaces Yes (vs. No)	Surrounding natural spaces	0.01 (-0.14 to 0.16)	0.92
Blue spaces Yes (vs. No)	Surrounding natural spaces	-0.07 (-0.3 to 0.16)	0.55
Temperature (5.8 °C)	Meteorology	0.02 (-0.14 to 0.18)	0.81
Humidity (15.1 %)	Meteorology	-0.05 (-0.36 to 0.25)	0.73
Pressure (21.2 bar)	Meteorology	-0.03 (-0.33 to 0.26)	0.82
Outdoor NO ₂ (11.2 µg/m ³)	Outdoor air pollution	-0.01 (-0.14 to 0.12)	0.83
Outdoor PM _{2.5} (3.8 µg/m ³)	Outdoor air pollution	-0.05 (-0.17 to 0.07)	0.40
Outdoor PM ₁₀ (11.1 µg/m ³)	Outdoor air pollution	0.12 (-0.1 to 0.33)	0.29
Outdoor PM _{2.5 abs} (1.0 10 ⁻⁵ m ⁻¹)	Outdoor air pollution	-0.07 (-0.26 to 0.12)	0.48
Road traffic load (1655702 vehicles/day m)	Traffic	0.06 (-0.07 to 0.19)	0.36
Traffic density on nearest road (3598 vehicles/ day)	Traffic	-0.01 (-0.09 to 0.06)	0.70
Inverse distance to nearest road (0.08 m ⁻¹)	Traffic	-0.02 (-0.11 to 0.07)	0.65
Traffic noise (24h) (dBA)	Road traffic noise		0.91
55-59.9 (vs. < 55)		0 (-0.21 to 0.2)	
60-64.9 (vs. < 55)		0.02 (-0.2 to 0.24)	
>=65 (vs. < 55)		-0.07 (-0.31 to 0.17)	
Cotinine (ug/L)	Tobacco smoking		0.04
18.4-50 (vs. <18.4)		0.09 (-0.13 to 0.30)	
>50 (vs. <18.4)		0.25 (0.06 to 0.43)	
Smoking in pregnancy	Tobacco smoking		0.01
Second-hand smoking (vs. none)		0.16 (-0.02 to 0.32)	
Active smoking (vs. none)		0.28 (0.09 to 0.48)	
Cigarettes (0 cig/day)	Tobacco smoking	0.03 (0 to 0.05)	0.08
DDE (90.5 ng/g lipids)	OCs	-0.04 (-0.15 to 0.08)	0.54
DDT (2.3 ng/g lipids)	OCs	0.01 (-0.08 to 0.1)	0.85
HCB (6.5 ng/g lipids)	OCs	0.02 (-0.08 to 0.12)	0.69
PCB 118 (2.8 ng/g lipids)	OCs	-0.08 (-0.23 to 0.08)	0.33
PCB 138 (10.3 ng/g lipids)	OCs	-0.04 (-0.18 to 0.1)	0.60
PCB 153 (19 ng/g lipids)	OCs	-0.03 (-0.19 to 0.14)	0.75
PCB 170 (5.5 ng/g lipids)	OCs	-0.03 (-0.17 to 0.12)	0.73
PCB 180 (12.1 ng/g lipids)	OCs	-0.03 (-0.19 to 0.13)	0.71
Sum of PCBs (46.5 ng/g lipids)	OCs	-0.05 (-0.21 to 0.1)	0.51
PBDE 47 (0.93 ng/g lipids)	PBDEs	-0.03 (-0.14 to 0.09)	0.66
PBDE 153 (0.55 ng/g lipids)	PBDEs	-0.04 (-0.1 to 0.02)	0.20
PFOA (2.0 µg/L)	PFASs	-0.04 (-0.15 to 0.06)	0.44
PFNA (0.66 µg/L)	PFASs	0 (-0.11 to 0.11)	0.97

B) Childhood Exposome

Exposure variable ^a	Exposure group	zBMI change ^a (95% CI)	p value
Population density (home) (6160 people/km ²)	Built environment	0.08 (-0.01 to 0.16)	0.09
Population density (school) (5700.3 people/km ²)	Built environment	0.02 (-0.07 to 0.11)	0.65
Building density (home) (137132.4 m ² built/km ²)	Built environment	0 (-0.10 to 0.09)	0.96
Building density (school) (112740.6 m ² built/km ²)	Built environment	0.04 (-0.04 to 0.11)	0.35
Connectivity density (home) (149.5 number of intersections/km ²)	Built environment	-0.04 (-0.17 to 0.09)	0.57
Connectivity density (school) (131.7 number of intersections/km ²)	Built environment	-0.02 (-0.13 to 0.08)	0.66
Accessibility (bus lines - home) 1 or more (vs. none)	Built environment	-0.04 (-0.22 to 0.13)	0.63
Accessibility (bus lines - school) 1 or more (vs. none)	Built environment	0.01 (-0.19 to 0.22)	0.90
Accessibility (bus stops - home) (17.8 bus stops/km ²)	Built environment	-0.20 (-0.39 to -0.01)	0.04
Accessibility (bus stops - school) (14.2 bus stops/km ²)	Built environment	0 (-0.13 to 0.13)	0.98
Facility density (home) (35.4 facilities/ km ²)	Built environment	-0.1 (-0.22 to 0.02)	0.10
Facility density (school) (38.9 facilities/ km ²)	Built environment	-0.04 (-0.13 to 0.05)	0.37
Land use (home) (0.18)	Built environment	0 (-0.10 to 0.09)	0.96
Land use (school) (0.19)	Built environment	-0.04 (-0.15 to 0.06)	0.43
Walkability Index (0.12)	Built environment	-0.04 (-0.13 to 0.05)	0.41
NDVI (home) (0.26)	Surrounding natural spaces	-0.07 (-0.21 to 0.07)	0.33
NDVI (school) (0.21)	Surrounding natural spaces	-0.01 (-0.15 to 0.13)	0.90
Green spaces (home) Yes (vs. No)	Surrounding natural spaces	0.01 (-0.14 to 0.17)	0.85
Green spaces (school) Yes (vs. No)	Surrounding natural spaces	-0.02 (-0.17 to 0.13)	0.78
Blue spaces (home) Yes (vs. No)	Surrounding natural spaces	-0.01 (-0.24 to 0.23)	0.97
Blue spaces (school) Yes (vs. No)	Surrounding natural spaces	0.13 (-0.12 to 0.37)	0.32
Temperature (home) (month) (9.4 °C)	Meteorology	-0.05 (-0.15 to 0.06)	0.38
Humidity (month) (15.9 %)	Meteorology	0.05 (-0.08 to 0.18)	0.49
UV - Vit.D (month) (2.0 kJ/km ²)	UV	-0.05 (-0.16 to 0.05)	0.32
Outdoor NO ₂ (year) (18.8 µg/m ³)	Outdoor air pollution	0.23 (0.02 to 0.43)	0.03
Outdoor PM _{2.5} (year) (3.13 µg/m ³)	Outdoor air pollution	0.07 (-0.05 to 0.19)	0.23
Outdoor PM ₁₀ (year) (10.6 µg/m ³)	Outdoor air pollution	0.24 (0.02 to 0.46)	0.04
Outdoor PM _{2.5 abs} (year) (0.41 10 ⁻⁵ m ⁻¹)	Outdoor air pollution	0.10 (-0.01 to 0.21)	0.07
Road traffic load (1750541 vehicles/day)	Traffic	0.08 (-0.04 to 0.19)	0.20
Traffic load of major roads (home) Major road (vs. no major road)	Traffic	0.07 (-0.11 to 0.25)	0.45
Traffic load of major roads (school) Major road (vs. no major road)	Traffic	0.09 (-0.09 to 0.28)	0.31
Traffic density on nearest road (10200 vehicles/day)	Traffic	0.12 (-0.01 to 0.25)	0.07
Inverse distance to nearest road (0.05 m ⁻¹)	Traffic	0.05 (-0.05 to 0.14)	0.32
Traffic noise (24h) dB(A)	Road traffic noise		0.61
Traffic noise (24h) 55-59.9 (vs. <55)		-0.06 (-0.26 to 0.15)	
Traffic noise (24h) 60-64.9 (vs. <55)		0.08 (-0.16 to 0.31)	
Traffic noise (24h) >=65 (vs. <55)		0.12 (-0.16 to 0.40)	

Table S17B (continued).

Exposure variable ^a	Exposure group	zBMI change ^a (95% CI)	p value
Traffic noise (night) dB(A)	Road traffic noise		0.59
Traffic noise (night) 55-59.9 (vs. <55)		0.13 (-0.15 to 0.41)	
Traffic noise (night) 60-64.9 (vs. <55)		-0.09 (-0.46 to 0.27)	
Traffic noise (night) ≥65 (vs. <55)		0.16 (-0.22 to 0.55)	
Indoor NO ₂ (92.8 µg/m ³)	Indoor air pollution	0.11 (-0.04 to 0.26)	0.15
Indoor TEX (15.3 µg/m ³)	Indoor air pollution	-0.03 (-0.14 to 0.08)	0.64
Indoor benzene (0.99 µg/m ³)	Indoor air pollution	0.09 (0.00 to 0.18)	0.06
Indoor PM _{2.5} (6.5 µg/m ³)	Indoor air pollution	0.14 (0.06 to 0.21)	0.0002*
Indoor PM _{2.5abs} (0.50 10 ⁻⁵ m ⁻¹)	Indoor air pollution	0.14 (0.07 to 0.21)	0.0002*
Cotinine detected (vs not)	Tobacco smoking	0.31 (0.14 to 0.48)	0.0005*
Second-hand smoke exposure yes (vs no)	Tobacco smoking	0.15 (0.01 to 0.29)	0.04
Parental tobacco smoke	Tobacco smoking		0.01
One parent (vs. none)		0.15 (0.01 to 0.29)	
Both parents (vs. none)		0.31 (0.10 to 0.52)	
DDE (34.0 ng/g lipids)	OCs	-0.53 (-0.63 to -0.43)	<0.0001*
DDT (1.4 ng/g lipids)	OCs	-0.26 (-0.36 to -0.16)	<0.0001*
HCB (5.1 ng/g lipids)	OCs	-0.60 (-0.69 to -0.52)	<0.0001*
PCB118 (1.4 ng/g lipids)	OCs	-0.28 (-0.36 to -0.19)	<0.0001*
PCB138 (5.3 ng/g lipids)	OCs	-0.64 (-0.75 to -0.53)	<0.0001*
PCB153 (11.2 ng/g lipids)	OCs	-0.69 (-0.81 to -0.57)	<0.0001*
PCB170 (2.2 ng/g lipids)	OCs	-0.84 (-0.96 to -0.71)	<0.0001*
PCB180 (6.4 ng/g lipids)	OCs	-0.94 (-0.92 to -0.80)	<0.0001*
Sum of PCBs (27.6 ng/g lipids)	OCs	-0.81 (-0.93 to -0.68)	<0.0001*
PBDE47 (0.21 ng/g lipids)	PBDEs	0.01 (-0.05 to 0.06)	0.86
PBDE153 (0.39 ng/g lipids)	PBDEs	-0.40 (-0.52 to -0.29)	<0.0001*
PFOA (0.78 µg/L)	PFASs	-0.22 (-0.31 to -0.14)	<0.0001*
PFNA (0.43 µg/L)	PFASs	-0.18 (-0.26 to -0.10)	<0.0001*
PFUNDA (0.08 µg/L)	PFASs	-0.21 (-0.32 to -0.10)	0.0001*
PFHXS (0.42 µg/L)	PFASs	-0.09 (-0.21 to 0.02)	0.11
PFOS (2.0 µg/L)	PFASs	-0.17 (-0.26 to -0.07)	0.0005*
Arsenic (2.1 µg/L)	Metals and elements	-0.04 (-0.15 to 0.07)	0.47
Cadmium (0.06 µg/L)	Metals and elements	-0.04 (-0.11 to 0.03)	0.32
Cobalt (0.09 µg/L)	Metals and elements	-0.10 (-0.16 to -0.04)	0.002
Cesium (0.73 µg/L)	Metals and elements	0.18 (0.07 to 0.28)	0.001
Copper (186 µg/L)	Metals and elements	0.18 (0.11 to 0.26)	<0.0001*
Mercury (1.3 µg/L)	Metals and elements	-0.05 (-0.16 to 0.05)	0.30
Manganese (3.4 µg/L)	Metals and elements	0.08 (-0.01 to 0.16)	0.07
Molybdenum (0.43 µg/L)	Metals and elements	-0.08 (-0.13 to -0.03)	0.003
Lead (4.7 µg/L)	Metals and elements	-0.05 (-0.12 to 0.03)	0.24
Thallium Detected (vs. not detected)	Metals and elements	-0.01 (-0.25 to 0.22)	0.93
MEP (59.8 µg/g)	Phthalate metabolites	-0.02 (-0.11 to 0.08)	0.72
MiBP (47.3 µg/g)	Phthalate metabolites	-0.06 (-0.16 to 0.03)	0.20
MnBP (23.0 µg/g)	Phthalate metabolites	-0.07 (-0.15 to 0.02)	0.13
MBzP (5.5 µg/g)	Phthalate metabolites	-0.03 (-0.1 to 0.04)	0.42
MEHP (3.4 µg/g)	Phthalate metabolites	-0.07 (-0.15 to 0.01)	0.08
MEHHP (21.0 µg/g)	Phthalate metabolites	-0.03 (-0.12 to 0.05)	0.48
MEOHP (13.2 µg/g)	Phthalate metabolites	-0.07 (-0.15 to 0.02)	0.13
MECPP (37.9 µg/g)	Phthalate metabolites	-0.04 (-0.13 to 0.05)	0.41
OHMiNP (5.8 µg/g)	Phthalate metabolites	-0.02 (-0.1 to 0.05)	0.52
OXOMiNP (3.0 µg/g)	Phthalate metabolites	0 (-0.07 to 0.07)	0.99

Table S17B (continued).

Exposure variable^a	Exposure group	zBMI change^a (95% CI)	p value
DEHP (sum of metabolites) (75.3 µg/g)	Phthalate metabolites	-0.04 (-0.13 to 0.04)	0.32
MEPA (22.9 µg/g)	Phenols	0 (-0.07 to 0.07)	0.99
ETPA (0.79 µg/g)	Phenols	0 (-0.04 to 0.04)	0.82
BPA (4.7 µg/g)	Phenols	-0.04 (-0.11 to 0.02)	0.19
PRPA (1.6 µg/g)	Phenols	0.02 (-0.07 to 0.12)	0.65
BUPA (0.11 µg/g)	Phenols	-0.03 (-0.09 to 0.03)	0.29
OXBE (6.1 µg/g)	Phenols	0.07 (-0.01 to 0.15)	0.10
TRCS (1.2 µg/g)	Phenols	-0.02 (-0.09 to 0.06)	0.66
DMP (4.5 µg/g)	OP pesticide metabolites	-0.08 (-0.19 to 0.02)	0.13
DMTP (5.2 µg/g)	OP pesticide metabolites	-0.04 (-0.12 to 0.04)	0.31
DMDTP Detected (vs. not detected)	OP pesticide metabolites	-0.15 (-0.31 to 0.01)	0.06
DMDTP Detected (vs. not detected)	OP pesticide metabolites	-0.15 (-0.31 to 0.01)	0.06
DEP (4.04 µg/g)	OP pesticide metabolites	-0.09 (-0.18 to -0.01)	0.04
DETP (1.6 µg/g)	OP pesticide metabolites	-0.04 (-0.14 to 0.06)	0.40
Family affluence score	Social and economic capital		0.58
Middle (vs. Low)		0.06 (-0.16 to 0.29)	0.57
High (vs. Low)		0.11 (-0.12 to 0.34)	0.33
Contact with family and friends	Social and economic capital		0.61
Once a week (vs. Less than once a week)		-0.06 (-0.36 to 0.24)	0.70
Almost daily (vs. Less than once a week)		-0.11 (-0.4 to 0.18)	0.44
Social participation	Social and economic capital		0.09
1 organisation (vs. none)		-0.13 (-0.27 to 0.02)	0.08
>1 organisation (vs. none)		0.07 (-0.12 to 0.26)	0.48

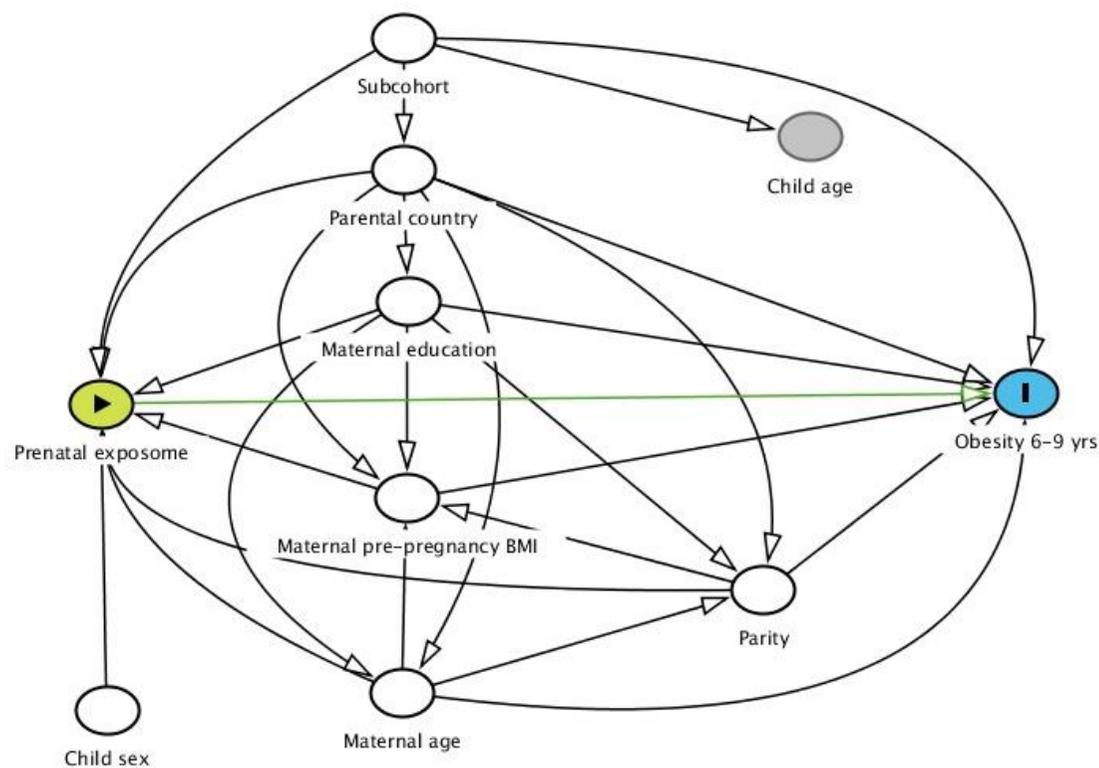
*Significant after p-value correction based on the number of effective tests (i.e., p-value correction for multiple testing). Threshold for effective number of test=0.001 for prenatal exposures, and 0.0009 for childhood exposures.

^areference category as indicated inside brackets for the categorical variables. For continuous variables, estimates are calculated per IQR increase in exposure, as indicated inside brackets; IQRs calculated on the first imputed dataset after back transforming the variables.

^b adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin

^c adjusted for cohort, sex, maternal BMI, maternal education, maternal age at conception, parity, parental country of origin, breastfeeding, and birth weight

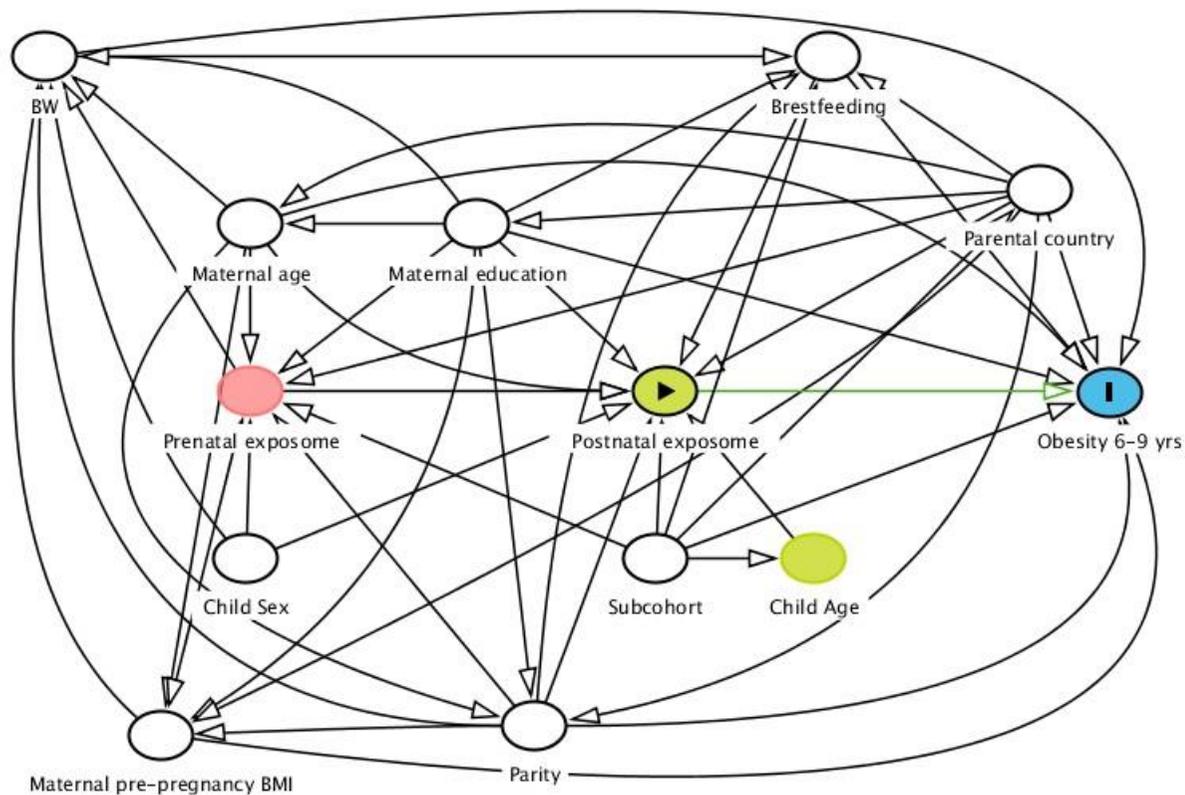
Figure S1: Direct Acyclic Graph design to identify potential confounders in the association between the prenatal exposome and child obesity outcomes.



Note: No arrow was drawn between child age and child sex and the obesity outcome because all outcomes were age- and sex- standardized.

Drawn using DAGitty 3.0 online tool <http://www.dagitty.net/> (Textor J. et al. Int J Epidemiol 45(6):1887-1894, 2016).

Figure S2: Direct Acyclic Graph design to identify potential confounders in the association between the childhood exposome and child obesity outcomes.



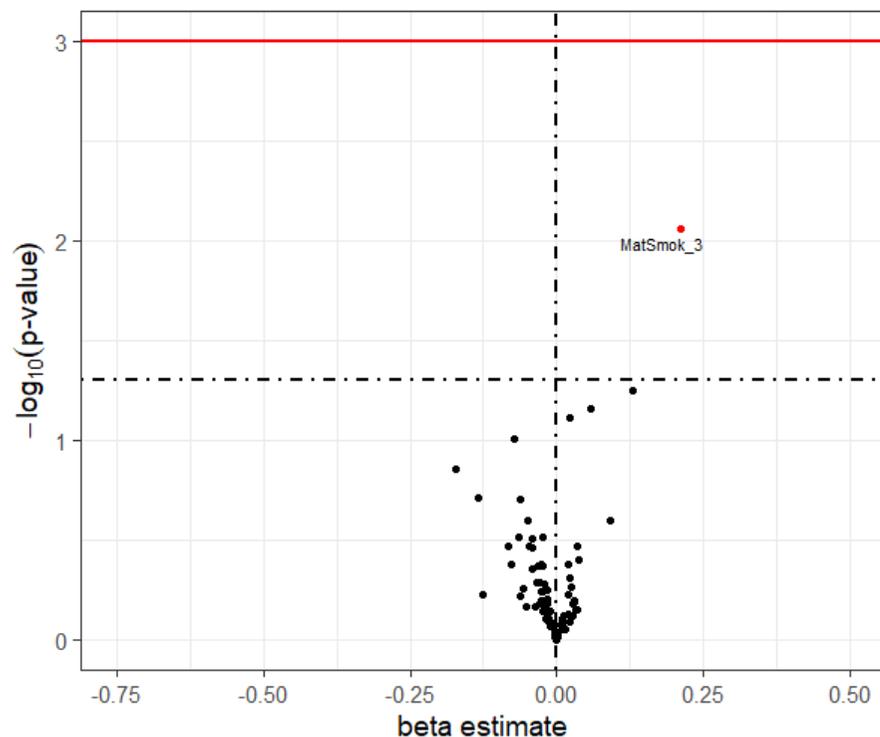
Note: No arrow was drawn between child age and child sex and the obesity outcome because all outcomes were age- and sex- standardized.

Drawn using DAGitty 3.0 online tool <http://www.dagitty.net/> (Textor J. et al. Int J Epidemiol 45(6):1887-1894, 2016).

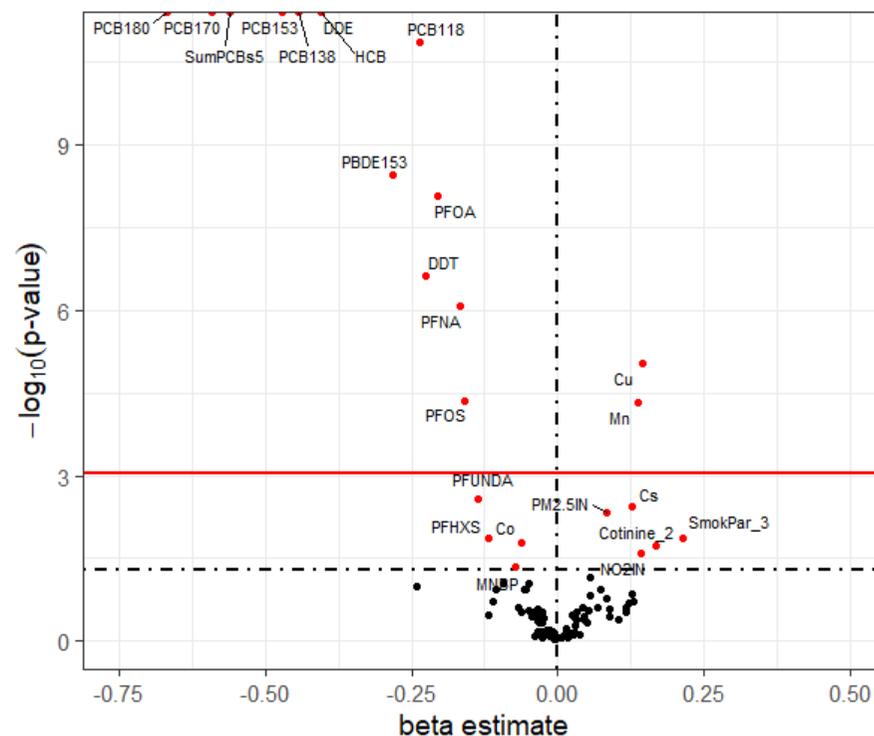
Figure S3: Association between prenatal and childhood exposures and waist circumference z-score in single-exposure ExWAS model - Volcano plot showing significance (p-value) against beta coefficient^a.

Black dashed horizontal line at p values of 0.05, red solid horizontal line at TEF^b of 0.001 (prenatal) and 0.0009 (childhood).

A: Prenatal exposures



B: Childhood exposures



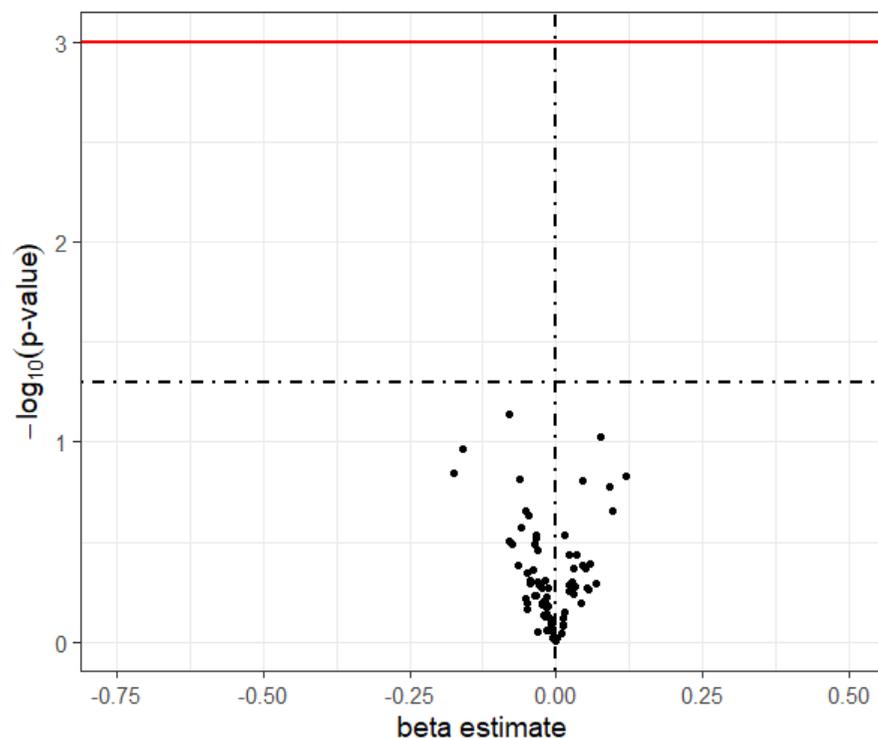
^aBeta coefficient for change in z waist circumference compared to reference category for the categorical variables. For continuous variables, beta estimates are calculated per IQR increase in exposure.

^bTEF stands for Threshold for effective number of test (i.e., p-value correction for multiple testing).

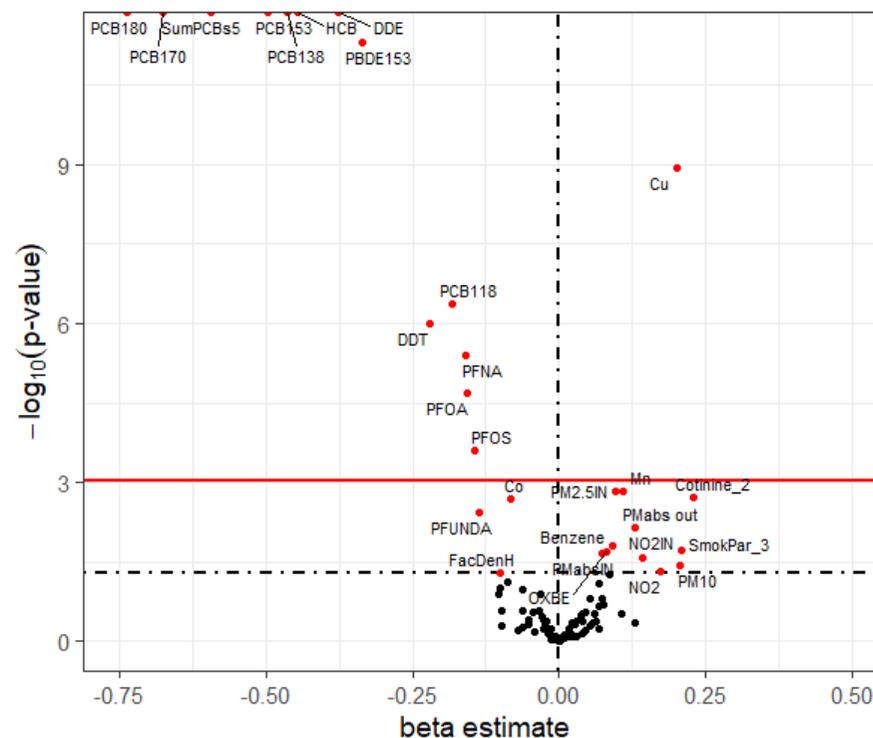
Figure S4: Association between prenatal and childhood exposures and skinfold z-score in single-exposure ExWAS model - Volcano plot showing significance (p-value) against beta coefficient^a.

Black dashed horizontal line at p values of 0.05, red solid horizontal line at TEF^b of 0.001 (prenatal) and 0.0009 (childhood).

A: Prenatal exposures



B: Childhood exposures



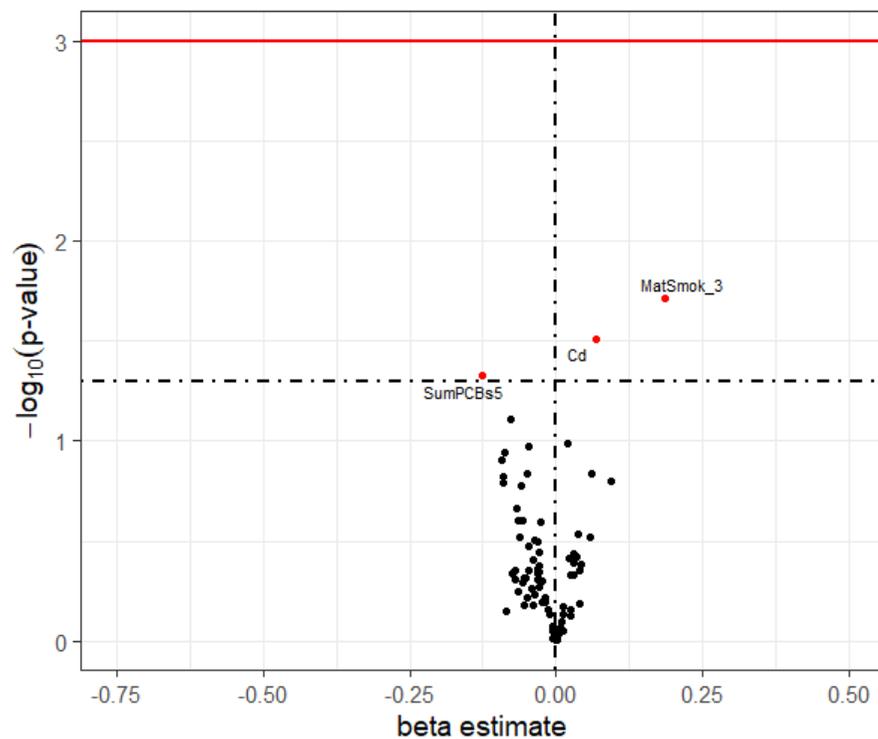
^aBeta coefficient for change in z skinfolds compared to reference category for the categorical variables. For continuous variables, beta estimates are calculated per IQR increase in exposure.

^bTEF stands for Threshold for effective number of test (i.e., p-value correction for multiple testing).

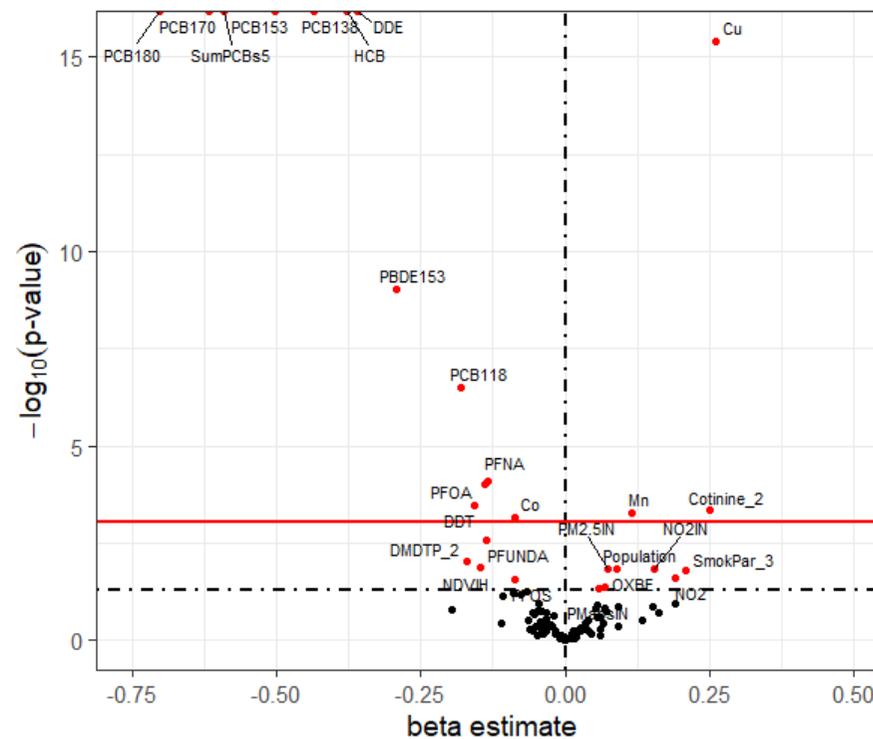
Figure S5: Association between prenatal and childhood exposures and percentage fatmass z-score in single-exposure ExWAS model - Volcano plot showing significance (p-value) against beta coefficient^a.

Black dashed horizontal line at p values of 0.05, red solid horizontal line at TEF^b of 0.001 (prenatal) and 0.0009 (childhood).

A: Prenatal exposures



B: Childhood exposures

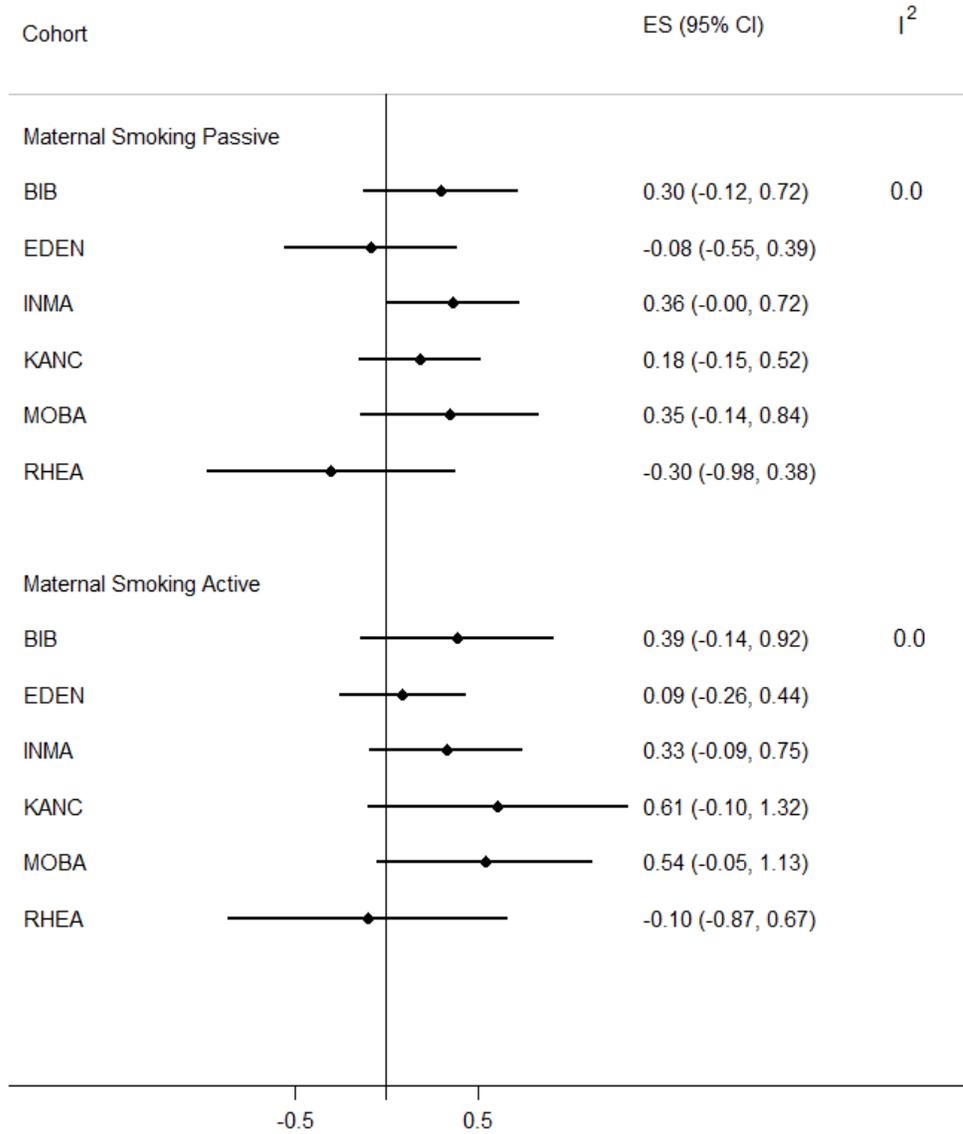


^aBeta coefficient for change in z skinfolds compared to reference category for the categorical variables. For continuous variables, beta estimates are calculated per IQR increase in exposure.

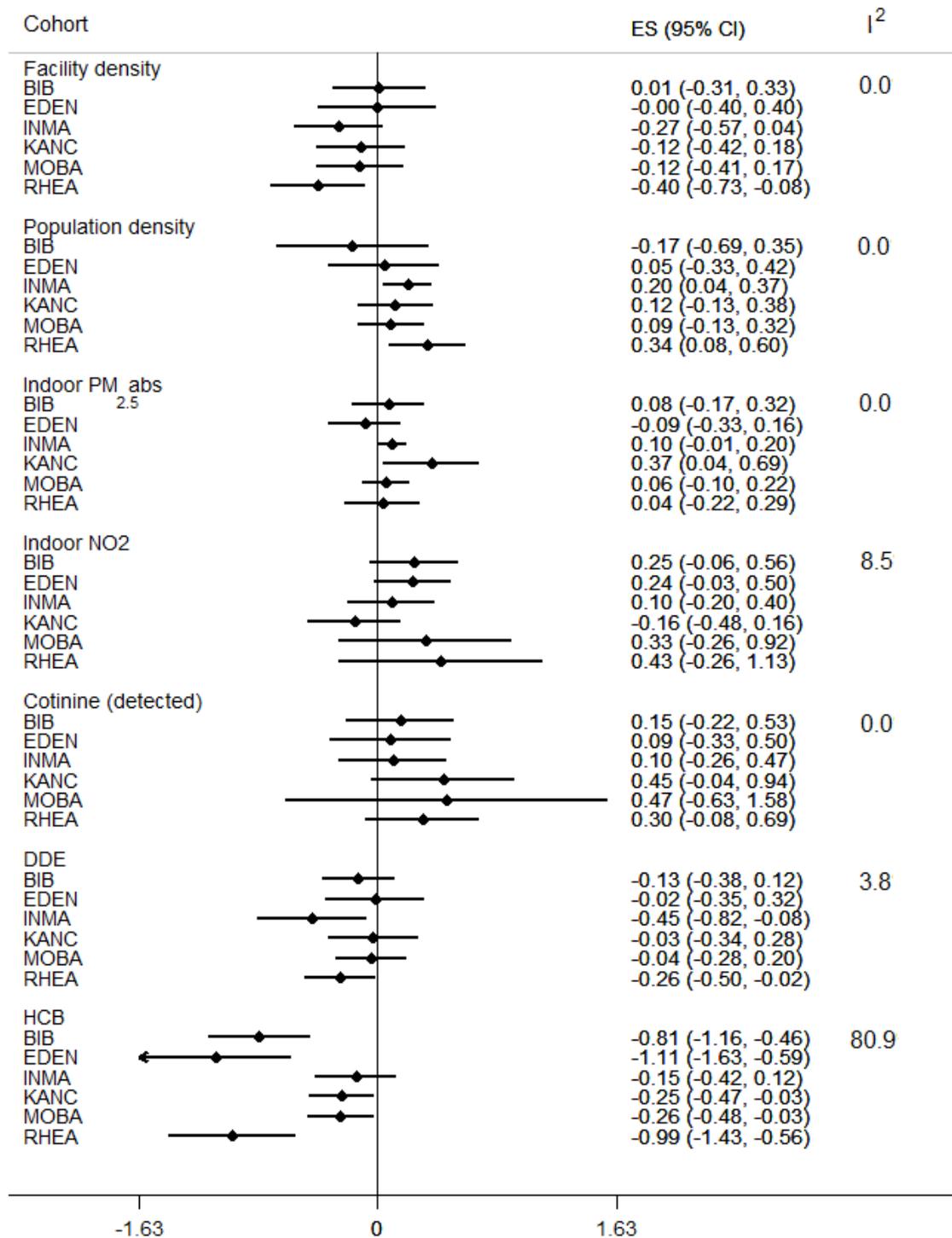
^bTEF stands for Threshold for effective number of test (i.e., p-value correction for multiple testing).

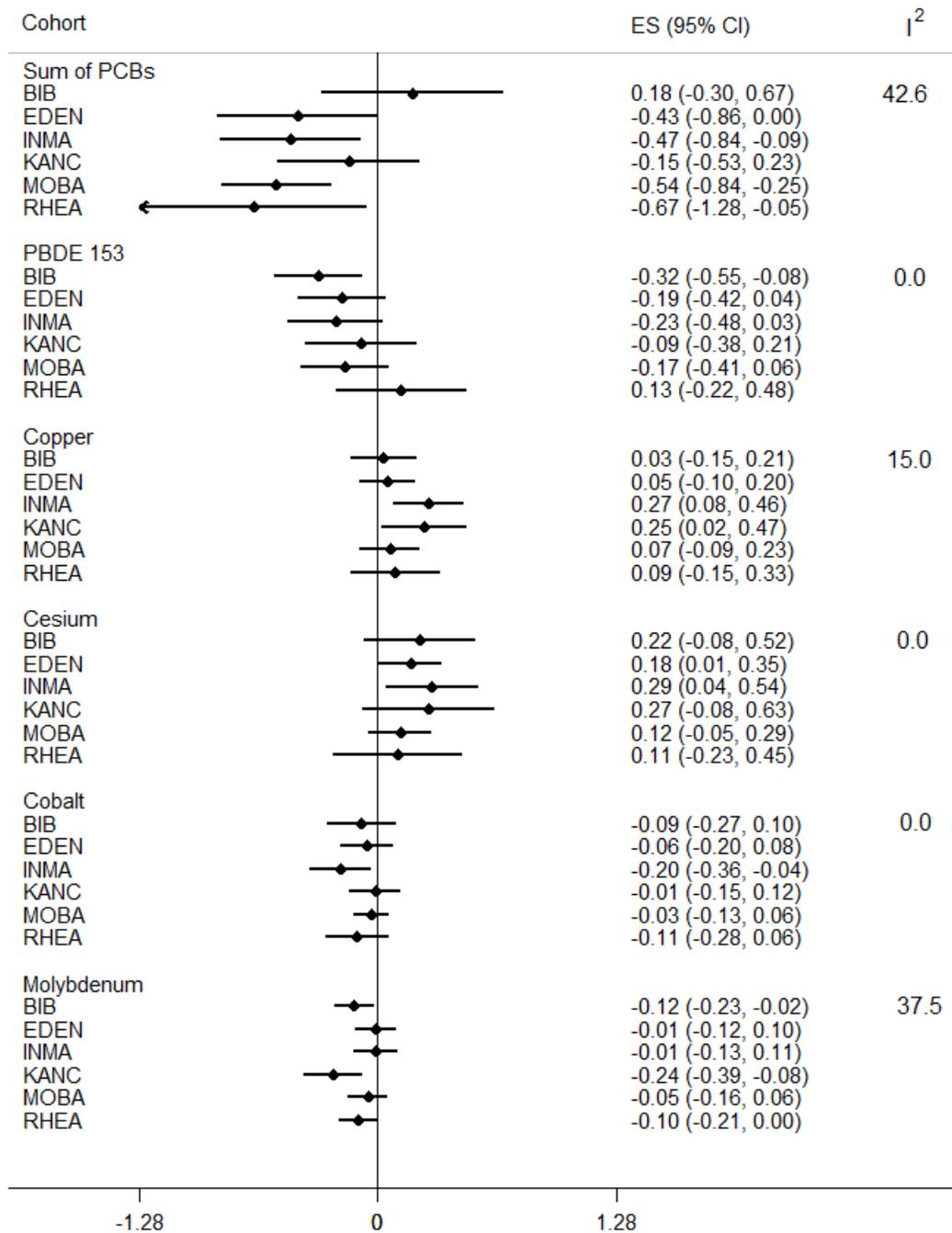
Figure S6: Forest plots for association between prenatal and childhood exposures and zBMI score in multi-exposure model – country specific estimates^a and I² statistic^b.
 (Figure A: prenatal exposome, and Figure B: childhood exposome).

A) Prenatal



B) Childhood





^a ES: Beta coefficient for change in z BMI compared to reference category for the categorical variables. For continuous variables, beta estimates are calculated per IQR increase in exposure.

^b I²: statistic that describes the percentage of variance across cohorts that it is due to heterogeneity rather than chance.