Supplemental Online Content

Maternal consumption of ultra-processed foods and subsequent risk of offspring overweight or obesity: results from three prospective cohort studies

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Table of Contents

Supplementary Fig 1. Maternal ultra-processed food consumption from 1991 to 2015.

Supplementary Fig 2. Association between maternal consumption of individual types of ultra-processed foods during peri-pregnancy and the risk of overweight or obesity in offspring.

Supplementary Fig 3. Association between maternal consumption of ultra-processed foods during peripregnancy and the risk of overweight or obesity in offspring by risk factors.

Supplementary Table 1. Maternal (NHS2) and offspring (GUTS2) characteristics according to maternal consumption of ultra-processed foods during peri-pregnancy.

Supplementary Table 2. Association between maternal consumption of ultra-processed foods during the child-rearing period and offspring body weight measures.

Supplementary Table 3. Relative risk (95% confidence interval) of overweight in offspring according to maternal consumption of ultra-processed foods during the child-rearing period, with multiple imputation for missing offspring body mass index.

Supplementary Table 4. Relative risk (95% confidence interval) of overweight or obesity in offspring according to maternal consumption of ultra-processed foods during the child-rearing period, after excluding participants with missing covariates (N=15,025).

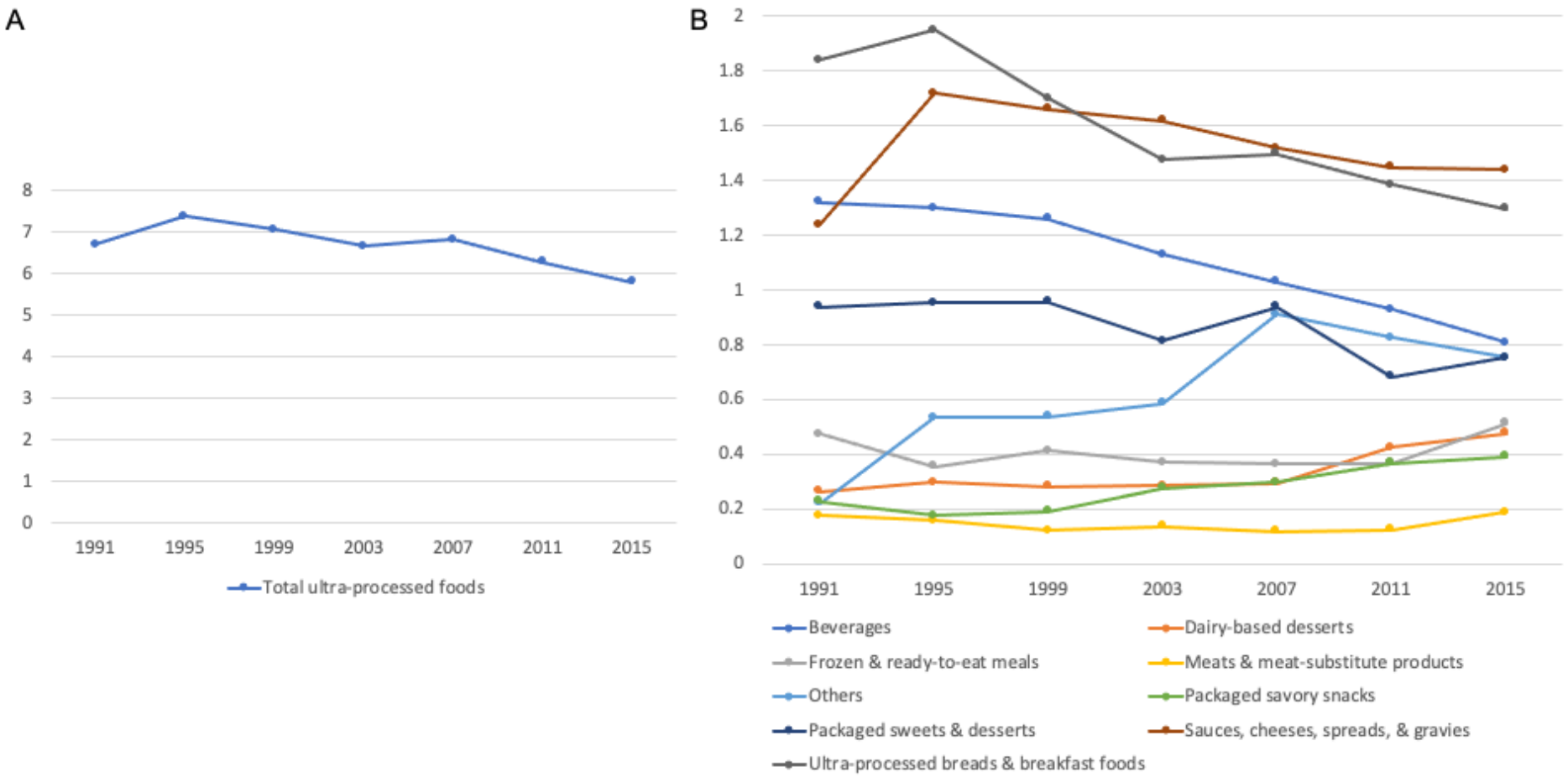
Supplementary Table 5. Relative risk (95% confidence interval) of overweight or obesity in offspring according to maternal consumption of ultra-processed foods during peri-pregnancy.

Supplementary Table 6. Association between maternal ultra-processed food consumption during peri-pregnancy and other offspring's measures of weight status.

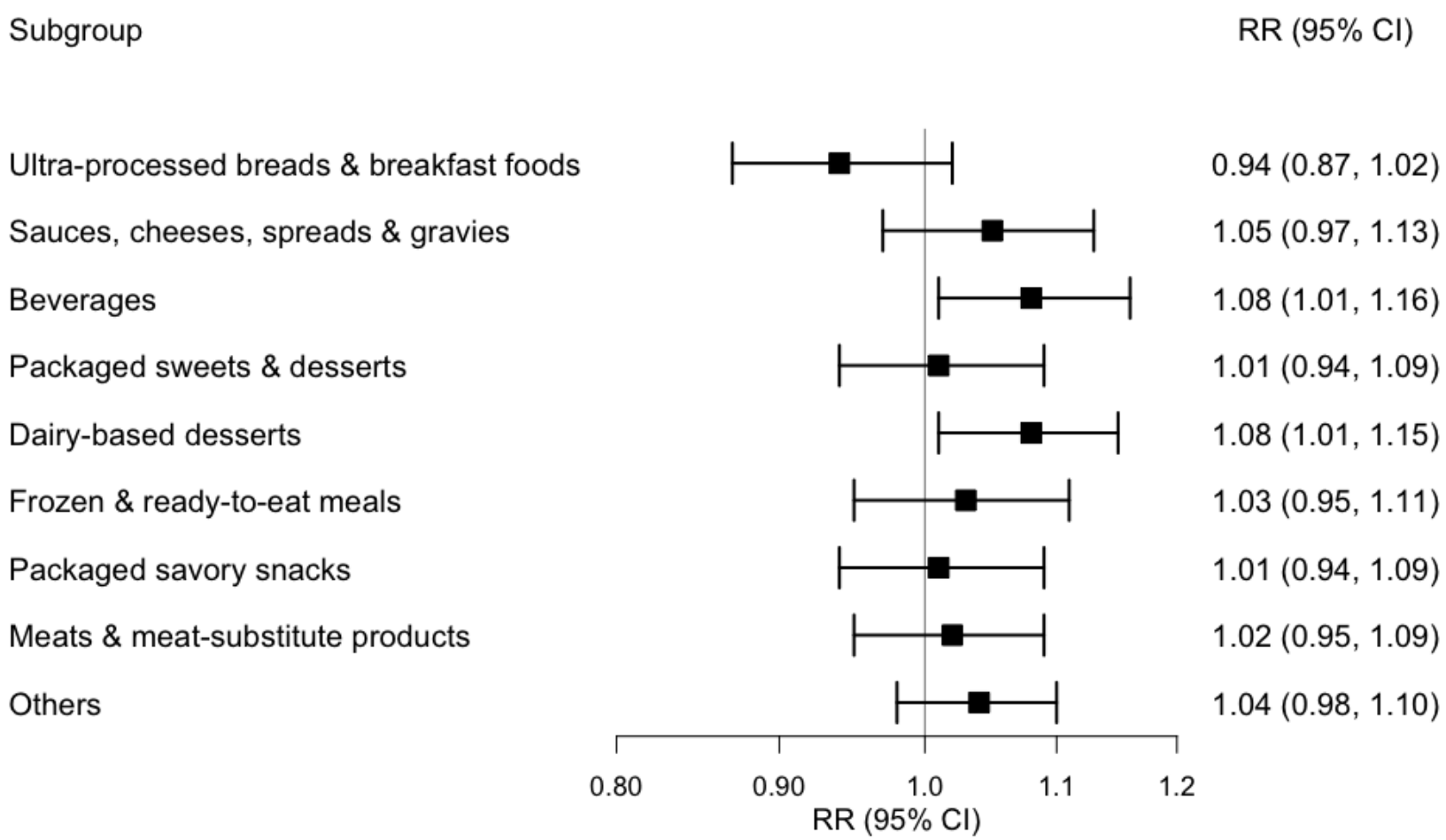
Supplementary Table 7. Sensitivity analysis for the relative risk (95% confidence interval) of overweight in offspring with multiple imputation of missing body mass index according to maternal consumption of ultra-processed foods during peri-pregnancy.

Supplementary Table 8. Relative risk (95% confidence interval) of overweight in offspring according to change in maternal consumption of ultra-processed foods from peri-pregnancy to child-rearing period.

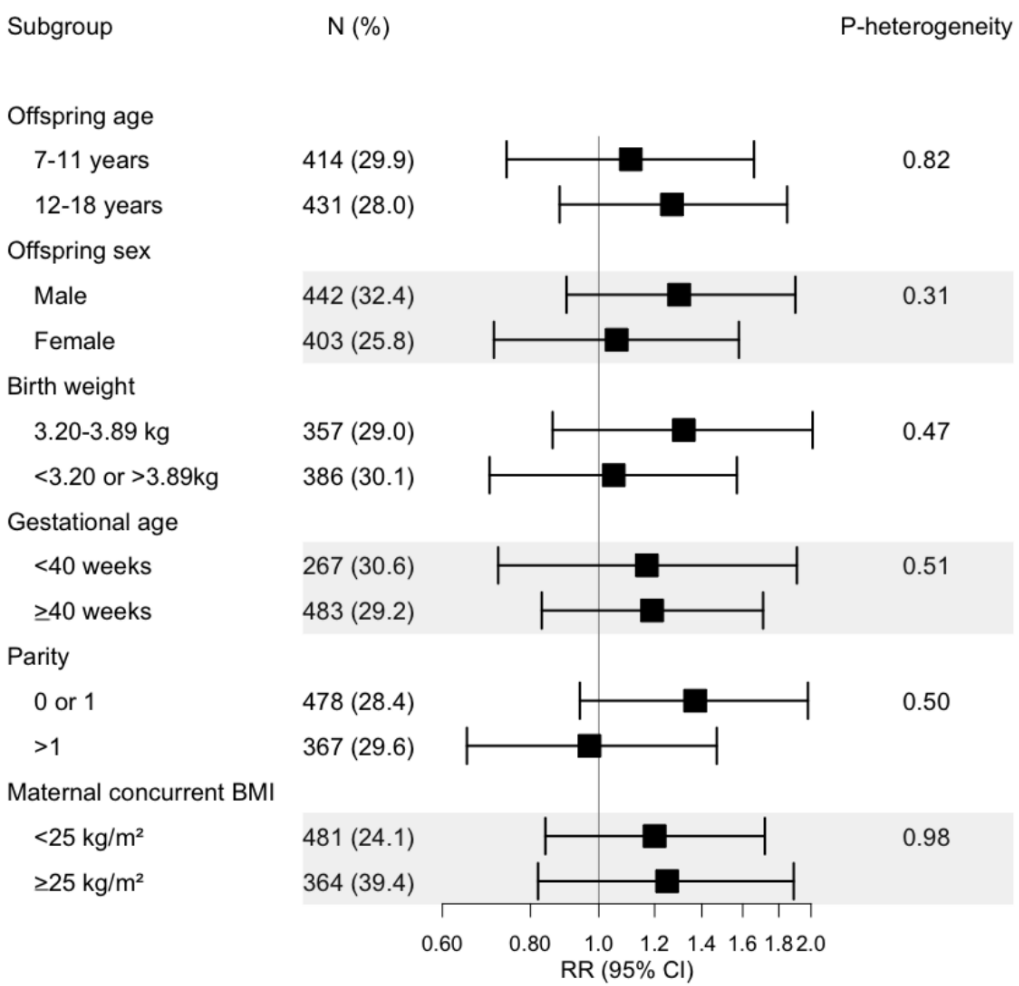
Supplementary Table 9. Relative risk (95% confidence interval) of overweight in offspring according to per 1 standard deviation increase in maternal consumption of ultra-processed foods during peri-pregnancy and child-rearing period (mutually adjusted).



Supplementary Fig 1. Maternal ultra-processed food consumption from 1991 to 2015. Trends in mean consumption (servings/day) of **(A)** total ultra-processed foods and **(B)** subgroups of ultra-processed foods among 14,553 mothers. Linear trend was tested by modeling the 7 questionnaire cycles as an ordinal independent variable. All *P*-trend ≤0.05.



Supplementary Fig 2. Association between maternal consumption of individual types of ultra-processed foods during peri-pregnancy and the risk of overweight or obesity in offspring. Relative risks (RR) and 95% confidence intervals (CI) were estimated for each 1 standard deviation increase in ultra-processed food intake. Generalized estimating equation was adjusted for maternal age at pregnancy, race, maternal total energy intake, maternal risk factors before pregnancy (BMI, physical activity, smoking, parity), household income, spouse's education, and offspring's risk factors (sex, gestational age, consumption of ultra-processed foods). Individual types of ultra-processed foods were mutually adjusted.



Supplementary Fig 3. Association between maternal consumption of ultra-processed foods during peri-pregnancy and the risk of overweight or obesity in offspring by risk factors. Relative risks (RR) and 95% confidence intervals (CI) for the highest quintile of ultra-processed food intake compared to the lowest quintile was estimated using generalized estimating equation adjusted for maternal age at pregnancy, race, total energy intake, pre-pregnancy BMI, offspring sex, and offspring consumption of ultra-processed food, physical activity. P-heterogeneity was calculated using Cochran's Q test.

Supplementary Table 1. Maternal (NHS2) and offspring (GUTS2) characteristics according to maternal consumption of ultra-processed foods during peri-pregnancy.

	Quintiles of maternal ultra-processed food consumption during peri-pregnancy				
	Q1	**Q2**	**Q3**	**Q4**	**Q5**
Maternal characteristics					
N	564	565	563	556	542
Dietary consumption during peri-pregnancy					
Ultra-processed foods (servings/day)[1]	3.3 (0.7)	4.9 (0.4)	6.4 (0.4)	8.2 (0.6)	11.7 (2.1)
Unprocessed or minimally processed foods (servings/day)	13.4 (4.9)	14.2 (4.4)	15.2 (4.8)	15.4 (5.1)	15.8 (4.8)
Processed culinary ingredients (servings/day)	0.9 (1)	1 (1.2)	1.2 (1.3)	1.2 (1.3)	1.5 (1.6)
Processed foods (servings/day)	1.4 (0.8)	1.6 (0.8)	1.9 (0.9)	2 (1)	2.3 (1)
2010 Alternative Healthy Eating Index score	50.2 (10.2)	47.6 (10.3)	45.8 (10.2)	45 (9.9)	43.2 (10.3)
Total energy intake (kcal/d)	1485 (388)	1746 (382)	1976 (409)	2159 (466)	2497 (490)
Cumulative average consumption of ultra-processed foods during child-rearing period (servings/day)[2]	5 (2.3)	6.1 (2.4)	6.7 (2.6)	7.5 (2.8)	8.9 (3.4)
Age at delivery (year)	33.2 (3.8)	32.9 (3.5)	32.9 (3.7)	33 (3.5)	32.8 (3.5)
White race, N (%)	530 (94.0)	550 (97.3)	557 (98.9)	540 (97.1)	528 (97.4)
BMI before pregnancy (kg/m^2)	22.4 (3.1)	22.5 (3.6)	22.6 (3.7)	22.6 (3.5)	23.1 (3.7)
Chronic disease before pregnancy, N (%)[3]	1.8 (10)	1.1 (6)	0.9 (5)	1.6 (9)	1.5 (8)
Physical activity before pregnancy (METs-h/wk)	27.1 (38.9)	24.6 (30.3)	25.5 (34)	21.7 (25.1)	23.7 (29.4)
Smoking status before pregnancy, N (%)					
Current	24 (4.3)	49 (8.7)	42 (7.5)	29 (5.2)	33 (6.1)
Past	96 (17.0)	120 (21.2)	117 (20.8)	110 (19.8)	95 (17.5)
Never	405 (71.8)	360 (63.7)	371 (65.9)	383 (68.9)	372 (68.6)
Parity, N (%)					
0	107 (19.0)	125 (22.1)	112 (19.9)	71 (12.8)	83 (15.3)
1	156 (27.7)	161 (28.5)	147 (26.1)	164 (29.5)	134 (24.7)
2	121 (21.5)	116 (20.5)	120 (21.3)	131 (23.6)	116 (21.4)

≥3	98 (17.4)	92 (16.3)	103 (18.3)	125 (22.5)	145 (26.8)
Pregnancy complications, N (%)					
Gestational diabetes	33 (5.9)	32 (5.7)	27 (4.8)	33 (5.9)	25 (4.6)
Pre-eclampsia	11 (2.0)	18 (3.2)	16 (2.8)	19 (3.4)	19 (3.5)
Pregnancy induced hypertension	20 (3.5)	26 (4.6)	24 (4.3)	24 (4.3)	28 (5.2)
Cesarean delivery	125 (22.2)	105 (18.6)	125 (22.2)	118 (21.2)	113 (20.8)
Missing data	68 (12.1)	59 (10.4)	60 (10.7)	52 (9.4)	52 (9.6)
Offspring characteristics					
N	583	583	591	583	585
Male sex, N (%)	290 (49.7)	264 (45.3)	254 (43.0)	284 (48.7)	271 (46.3)
Dietary consumption during follow-up					
Ultra-processed foods (servings/day)	5.4 (2.5)	5.6 (2.3)	5.9 (2.4)	6.2 (2.8)	6.6 (2.9)
AHEI-10 score	39 (7.3)	38 (7.4)	37.9 (7.2)	37.5 (7)	36.9 (7.2)
Total energy intake (kcal/d)	1948 (628)	2005 (638)	2108 (651)	2152 (662)	2174 (682)
Birth weight, N (%)					
<2.30 kg	6 (1.0)	14 (2.4)	7 (1.2)	10 (1.7)	17 (2.9)
2.30-3.19 kg	97 (16.6)	105 (18.0)	74 (12.5)	109 (18.7)	85 (14.5)
3.20-3.89 kg	246 (42.2)	237 (40.7)	256 (43.3)	241 (41.3)	253 (43.2)
3.90-4.49 kg	132 (22.6)	133 (22.8)	147 (24.9)	136 (23.3)	142 (24.3)
≥4.50 kg	13 (2.2)	14 (2.4)	14 (2.4)	12 (2.1)	15 (2.6)
Missing data	89 (15.3)	80 (13.7)	93 (15.7)	75 (12.9)	73 (12.5)
Gestational age at delivery, N (%)					
<37 week	33 (5.7)	50 (8.6)	34 (5.8)	28 (4.8)	37 (6.3)
37-39 week	142 (24.4)	141 (24.2)	131 (22.2)	142 (24.4)	136 (23.2)
40-42 week	298 (51.1)	295 (50.6)	312 (52.8)	320 (54.9)	311 (53.2)
≥43 week	24 (4.1)	22 (3.8)	24 (4.1)	22 (3.8)	29 (5.0)
Missing data	86 (14.8)	75 (12.9)	90 (15.2)	71 (12.2)	72 (12.3)

Values are shown in mean (standard deviation) unless indicated otherwise.
[1]Interquartile range of consumption (servings/day) by each quintile (Q1-Q5): 2.8-3.8, 4.6-5.3, 6.0-6.8, 7.7-8.7, 10.1-12.8.
[2]Interquartile range of consumption (servings/day) by each quintile (Q1-Q5): 3.5-6.3, 4.5-7.3, 4.9-8.3, 5.5-9.1, 6.6-10.8.

[3]Includes diabetes, hypertension, cardiovascular disease, and cancer.
AHEI, Alternative Healthy Eating Index; BMI, body mass index.

Supplementary Table 2. Association between maternal consumption of ultra-processed foods during the child-rearing period and offspring body weight measures.

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	P-trend[d]
Relative risk (95% CI) of overweight or obesity						
N (%)	458 (11.5)	438 (11.0)	501 (12.6)	480 (12.0)	594 (14.9)	NA
Model 1[a]	1 (reference)	1.00 (0.87, 1.14)	1.16 (1.01, 1.33)	1.14 (0.99, 1.32)	1.45 (1.25, 1.68)	<0.001
Model 2[b]	1 (reference)	0.98 (0.86, 1.12)	1.1 (0.96, 1.26)	1.05 (0.91, 1.21)	1.25 (1.07, 1.45)	<0.001
Model 3[c]	1 (reference)	0.98 (0.86, 1.12)	1.1 (0.96, 1.26)	1.06 (0.92, 1.22)	1.26 (1.09, 1.47)	<0.001
Relative risk (95% CI) of obesity						
N (%)	164 (3.4)	181 (3.8)	171 (3.6)	210 (4.4)	272 (5.7)	NA
Model 1[a]	1 (reference)	1.16 (0.93, 1.44)	1.13 (0.9, 1.42)	1.41 (1.12, 1.78)	1.87 (1.48, 2.36)	<0.001
Model 2[b]	1 (reference)	1.1 (0.89, 1.37)	1.1 (0.89, 1.37)	1.1 (0.89, 1.37)	1.1 (0.89, 1.37)	<0.001
Model 3[c]	1 (reference)	1.1 (0.89, 1.37)	1.03 (0.81, 1.29)	1.17 (0.93, 1.47)	1.4 (1.10, 1.77)	<0.001
Mean difference (95% CI) in BMI percentile						
Mean (SD)	53.6 (27.9)	54.5 (28.1)	55.4 (28.0)	56.3 (28.1)	58.5 (28.0)	NA
Model 1[a]	1 (reference)	1.15 (0.60, 1.71)	1.95 (1.30, 2.60)	2.57 (1.86, 3.29)	3.66 (2.86, 4.47)	<.0001
Model 2[b]	1 (reference)	0.86 (0.31, 1.41)	1.34 (0.69, 1.98)	1.54 (0.84, 2.25)	2.06 (1.26, 2.85)	<.0001
Model 3[c]	1 (reference)	0.88 (0.33, 1.43)	1.37 (0.72, 2.01)	1.58 (0.88, 2.29)	2.10 (1.30, 2.89)	<.0001

[a]Model adjusted for maternal risk factors (baseline age, race, total energy intake) and offspring sex. Relative risk and 95% confidence interval (CI) of obesity was assessed using generalized estimating equation and mean differences in BMI percentile were assessed using linear mixed model.
[b]Additionally adjusted for other maternal BMI, physical activity, smoking, personal history of chronic disease, living status, household income, and spouse's education.
[c]Additionally adjusted for offspring's consumption of ultra-processed foods.
[d]Linear trend was tested using standardized maternal ultra-processed food consumption as a continuous variable.

Supplementary Table 3. Relative risk (95% confidence interval) of overweight or obesity in offspring according to maternal consumption of ultra-processed foods during the child-rearing period, with multiple imputation for missing offspring body mass index.

	Q1	Q2	Q3	Q4	Q5	P-trend[e]
N (%)	769 (19.3)	729 (18.3)	775 (19.4)	780 (19.6)	917 (23.0)	NA
Model 1[a]	1 (reference)	0.99 (0.89, 1.10)	1.09 (0.97, 1.23)	1.11 (0.98, 1.25)	1.35 (1.19, 1.52)	0.005
Model 2[b]	1 (reference)	0.98 (0.88, 1.09)	1.05 (0.93, 1.18)	1.04 (0.92, 1.17)	1.19 (1.05, 1.35)	0.03
Model 3[c]	1 (reference)	1.10 (1.02, 1.18)	1.11 (1.02, 1.20)	1.17 (1.08, 1.27)	1.24 (1.14, 1.35)	0.01
Model 4[d]	1 (reference)	1.11 (1.03, 1.19)	1.12 (1.04, 1.22)	1.19 (1.10, 1.29)	1.26 (1.15, 1.37)	0.01

[a]Generalized estimating equation adjusted for maternal risk factors (baseline age, race, total energy intake) and offspring sex.
[b]Additionally adjusted for other maternal BMI, physical activity, smoking, personal history of chronic disease, living status, household income, and spouse's education.
[c]Additionally adjusted for offspring's consumption of ultra-processed foods.
[d]Additionally adjusted for maternal 2010 Alternative Healthy Eating Index score, offspring's physical activity, and sedentary time.
[e]Linear trend was tested using standardized maternal ultra-processed food consumption as a continuous variable.

Supplementary Table 4. Relative risk (95% confidence interval) of overweight or obesity in offspring according to maternal consumption of ultra-processed foods during the child-rearing period, after excluding participants with missing covariates (N=15,025).

	Q1	Q2	Q3	Q4	Q5	P-trend[e]
N (%)	334 (11.4)	332 (11.0)	371 (12.2)	365 (12.1)	440 (14.7)	NA
Model 1[a]	1 (reference)	1.00 (0.85, 1.17)	1.13 (0.96, 1.32)	1.15 (0.97, 1.36)	1.44 (1.21, 1.79)	<0.001
Model 2[b]	1 (reference)	0.98 (0.84, 1.15)	1.06 (0.90, 1.24)	1.05 (0.89, 1.25)	1.23 (1.03, 1.46)	0.001
Model 3[c]	1 (reference)	0.98 (0.84, 1.15)	1.07 (0.91, 1.25)	1.07 (0.90, 1.27)	1.25 (1.05, 1.49)	<0.001
Model 4[d]	1 (reference)	1.01 (0.86, 1.18)	1.08 (0.92, 1.27)	1.08 (0.91, 1.28)	1.24 (1.04, 1.48)	0.001

[a]Generalized estimating equation adjusted for maternal risk factors (baseline age, race, total energy intake) and offspring sex.
[b]Additionally adjusted for other maternal BMI, physical activity, smoking, personal history of chronic disease, living status, household income, and spouse's education.
[c]Additionally adjusted for offspring's consumption of ultra-processed foods.
[d]Additionally adjusted for maternal 2010 Alternative Healthy Eating Index score, offspring's physical activity, and sedentary time.
[e]Linear trend was tested using standardized maternal ultra-processed food consumption as a continuous variable.

Supplementary Table 5. Relative risk (95% confidence interval) of overweight or obesity in offspring according to maternal consumption of ultra-processed foods during peri-pregnancy.

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	P-trend[e]
N (%)	167 (28.6)	163 (28.0)	173 (29.3)	170 (29.2)	172 (29.4)	NA
Model 1[a]	1 (reference)	1.05 (0.87, 1.27)	1.17 (0.96, 1.43)	1.19 (0.97, 1.45)	1.27 (1.02, 1.58)	0.001
Model 2[b]	1 (reference)	1.00 (0.80, 1.26)	1.14 (0.90, 1.44)	1.15 (0.90, 1.47)	1.19 (0.91, 1.56)	0.03
Model 3[c]	1 (reference)	1.02 (0.81, 1.27)	1.15 (0.91, 1.46)	1.16 (0.91, 1.48)	1.20 (0.91, 1.57)	0.04
Model 4[d]	1 (reference)	1.03 (0.82, 1.29)	1.16 (0.92, 1.48)	1.15 (0.90, 1.47)	1.17 (0.89, 1.53)	0.07

[a]Generalized estimating equation adjusted for maternal risk factors (age at delivery, race, total energy intake) and offspring sex.
[b]Adjusted for Model 1 covariates and other maternal risk factors before pregnancy (BMI, physical activity, smoking, parity), household income, spouse's education, and gestational age.
[c]Adjusted for Model 2 covariates and offspring consumption of ultra-processed foods.
[d]Adjusted for Model 3 covariates and maternal 2010 Alternative Healthy Eating Index score, offspring's birth weight, physical activity, and sedentary time.
[e]Linear trend was tested using standardized maternal ultra-processed food consumption as a continuous variable.

Supplementary Table 6. Association between maternal ultra-processed food consumption during peri-pregnancy and other offspring's measures of weight status.

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	P-trend[f]
Relative risk (95% CI) of obesity						
N (%)	52 (8.9)	43 (7.4)	37 (6.3)	37 (6.4)	37 (6.3)	NA
Model 1[a]	1 (reference)	0.92 (0.61, 1.38)	0.80 (0.50, 1.28)	0.84 (0.53, 1.32)	0.87 (0.52, 1.45)	0.91
Model 2[b]	1 (reference)	0.86 (0.56, 1.33)	0.80 (0.50, 1.29)	0.78 (0.48, 1.28)	0.73 (0.42, 1.26)	0.67
Model 3[c]	1 (reference)	0.87 (0.56, 1.33)	0.80 (0.50, 1.29)	0.79 (0.48, 1.30)	0.74 (0.42, 1.28)	0.69
Model 4[d]	1 (reference)	0.88 (0.57, 1.35)	0.84 (0.52, 1.36)	0.74 (0.45, 1.23)	0.69 (0.39, 1.21)	0.45
Mean difference (95% CI) in BMI percentile						
Mean (SD)	56.1 (28.2)	55.5 (28.2)	56.9 (27.5)	56.0 (27.6)	57.3 (28.0)	NA
Model 1[a]	1 (reference)	0.26 (-2.83, 3.34)	2.07 (-1.13, 5.27)	2.69 (-0.64, 6.01)	4.84 (1.21, 8.48)	0.004
Model 2[b]	1 (reference)	-0.43 (-3.39, 2.54)	1.16 (-1.92, 4.23)	1.49 (-1.71, 4.69)	2.66 (-0.84, 6.16)	0.11
Model 3[c]	1 (reference)	-0.56 (-3.52, 2.4)	1.13 (-1.95, 4.2)	1.44 (-1.75, 4.64)	2.63 (-0.87, 6.13)	0.11
Model 4[d]	1 (reference)	-0.5 (-3.45, 2.46)	1.28 (-1.8, 4.36)	1.79 (-1.43, 5)	3.04 (-0.49, 6.56)	0.07
Mean difference (95% CI) in birth weight (gram)						
Mean (SD)	3473 (592)	3437 (653)	3513 (646)	3469 (651)	3459 (703)	NA
Model 1[a]	1 (reference)	-43 (-128, 42)	25 (-65, 115)	-26 (-119, 67)	-22 (-124, 79)	0.87
Model 2[b]	1 (reference)	-6 (-85, 73)	24 (-60, 108)	-42 (-129, 45)	-35 (-130, 60)	0.39
Model 3[e]	1 (reference)	-5 (-85, 74)	20 (-64, 105)	-48 (-136, 39)	-44 (-140, 53)	0.28
Relative risk (95% CI) of larger than normal somatotype at age 5						
N (%)	83 (16.7)	84 (16.4)	74 (14.8)	79 (15.5)	67 (13.2)	NA

Model 1[a]	1 (reference)	1.00 (0.75, 1.33)	0.91 (0.66, 1.26)	0.94 (0.68, 1.31)	0.84 (0.58, 1.21)	0.34
Model 2[b]	1 (reference)	0.98 (0.73, 1.31)	0.88 (0.63, 1.21)	0.91 (0.66, 1.27)	0.82 (0.57, 1.18)	0.29
Model 3[e]	1 (reference)	1.01 (0.75, 1.35)	0.92 (0.66, 1.27)	1.00 (0.72, 1.38)	0.92 (0.63, 1.32)	0.70

[a]Model adjusted for maternal risk factors (age at delivery, race, total energy intake) and offspring sex. Relative risks of obesity and larger than normal somatotype at age 5 were assessed using generalized estimating equation and mean differences in BMI percentile and birth weight were assessed using linear mixed regression.
[b]Adjusted for Model 1 covariates and other maternal risk factors before pregnancy (BMI, physical activity, smoking, parity), household income, spouse's education, and gestational age.
[c]Adjusted for Model 2 covariates and offspring's consumption of ultra-processed foods.
[d]Adjusted for Model 3 covariates and maternal 2010 Alternative Healthy Eating Index score, offspring's birth weight, physical activity, and sedentary time.
[e]Adjusted for Model 2 covariates and maternal 2010 Alternative Healthy Eating Index score and offspring's birth weight (not for the analysis of birth weight).
[f]Linear trend was tested using standardized maternal ultra-processed food consumption as a continuous variable.

Supplementary Table 7. Sensitivity analysis for the relative risk (95% confidence interval) of OWOB in offspring with multiple imputation of missing body mass index according to maternal consumption of ultra-processed foods during peri-pregnancy.

	Q1	Q2	Q3	Q4	Q5	P-trend[e]
N (%)	204 (34.8)	196 (33.6)	202 (34.4)	204 (34.8)	212 (36.2)	NA
Model 1[a]	1 (reference)	1.00 (0.83, 1.19)	1.12 (0.93, 1.35)	1.13 (0.92, 1.38)	1.23 (1.00, 1.51)	0.05
Model 2[b]	1 (reference)	0.94 (0.75, 1.19)	1.05 (0.82, 1.35)	1.06 (0.81, 1.39)	1.13 (0.85, 1.51)	0.22
Model 3[c]	1 (reference)	0.95 (0.75, 1.20)	1.06 (0.83, 1.36)	1.07 (0.82, 1.40)	1.14 (0.85, 1.52)	0.23
Model 4[d]	1 (reference)	0.96 (0.76, 1.22)	1.07 (0.83, 1.38)	1.08 (0.82, 1.42)	1.12 (0.83, 1.51)	0.26

[a]Generalized estimating equation adjusted for maternal risk factors (age at pregnancy, race, 2010 Alternative Healthy Eating Index score, total energy intake) and offspring sex.
[b]Adjusted for Model 1 covariates and other maternal risk factors before pregnancy (BMI, physical activity, smoking, parity), household income, spouse's education, offspring's birth weight, and gestational age.
[c]Adjusted for Model 2 covariates and offspring's consumption of ultra-processed foods during follow-ups.
[d]Adjusted for Model 3 covariates and maternal 2010 Alternative Healthy Eating Index score, offspring's birth weight, physical activity, and sedentary time.
[e]Linear trend was tested using standardized maternal ultra-processed food consumption as a continuous variable.

Supplementary Table 8. Relative risk (95% confidence interval) of OWOB in offspring according to change in maternal consumption of ultra-processed foods from peri-pregnancy to child-rearing period[e]

	Maintained low	From low to high	From high to low	Maintained high	Per serving/d increase	P-value[e]
N (%)	74 (9.6)	46 (12.0)	37 (9.3)	90 (11.6)	NA	NA
Model 1[a]	1 (reference)	1.26 (0.89, 1.79)	1.05 (0.70, 1.56)	1.35 (0.98, 1.86)	1.03 (0.99, 1.07)	0.18
Model 2[b]	1 (reference)	1.19 (0.84, 1.70)	1.02 (0.68, 1.52)	1.27 (0.91, 1.76)	1.03 (0.99, 1.07)	0.18
Model 3[c]	1 (reference)	1.22 (0.84, 1.78)	1.04 (0.68, 1.60)	1.33 (0.92, 1.91)	1.03 (0.99, 1.07)	0.21
Model 4[d]	1 (reference)	1.24 (0.85, 1.81)	1.05 (0.68, 1.61)	1.35 (0.94, 1.96)	1.03 (0.99, 1.07)	0.21

[e]Participants were categorized by the medians of maternal consumption of ultra-processed during peri-pregnancy (6.34 servings/day) and follow-up (6.29 servings/day). Low consumption denotes below the median, and high consumption denotes at or above the median.
[a]Generalized estimating equation adjusted for maternal risk factors (age at delivery, race, total energy intake) and offspring sex.
[b]Additionally adjusted for maternal risk factors before pregnancy (BMI, physical activity, smoking, parity), household income, spouse's education, and gestational age.
[c]Additionally adjusted for offspring consumption of ultra-processed foods.
[d]Additionally adjusted for 2010 Alternative Healthy Eating Index score, offspring's birth weight, physical activity, and sedentary time.
[e]Linear trend was tested using standardized maternal ultra-processed food consumption as a continuous variable.

Supplementary Table 9. Relative risk (95% confidence interval) of OWOB in offspring according to per 1 standard deviation increase in maternal consumption of ultra-processed foods during peri-pregnancy and child-rearing period (mutually adjusted)[e]

	During peri-pregnancy	P-value	During child-rearing period	P-value
Model 1[a]	1.06 (0.91, 1.23)	0.45	1.16 (1.03, 1.30)	0.02
Model 2[b]	1.04 (0.90, 1.21)	0.61	1.14 (1.01, 1.28)	0.03
Model 3[c]	1.04 (0.88, 1.24)	0.65	1.15 (1.01, 1.31)	0.04
Model 4[d]	1.05 (0.88, 1.25)	0.58	1.15 (1.01, 1.32)	0.03

[e]Participants were categorized by the medians of maternal consumption of ultra-processed during peri-pregnancy (6.34 servings/day) and follow-up (6.29 servings/day). Low consumption denotes below the median, and high consumption denotes at or above the median.
[a]Generalized estimating equation adjusted for maternal risk factors (age at delivery, race, total energy intake) and offspring sex.
[b]Additionally adjusted for maternal risk factors before pregnancy (BMI, physical activity, smoking, parity), household income, spouse's education, and gestational age.
[c]Additionally adjusted for offspring consumption of ultra-processed foods.
[d]Additionally adjusted for 2010 Alternative Healthy Eating Index score, offspring's birth weight, physical activity, and sedentary time.