Supplementary Material

Rate of Change in Childhood Body Mass Index and Risk of Metabolic Syndrome; Pathways and Generational Effects

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Included in the Online Supplementary Material:

Supplementary Figure S1: Flow chart of the study

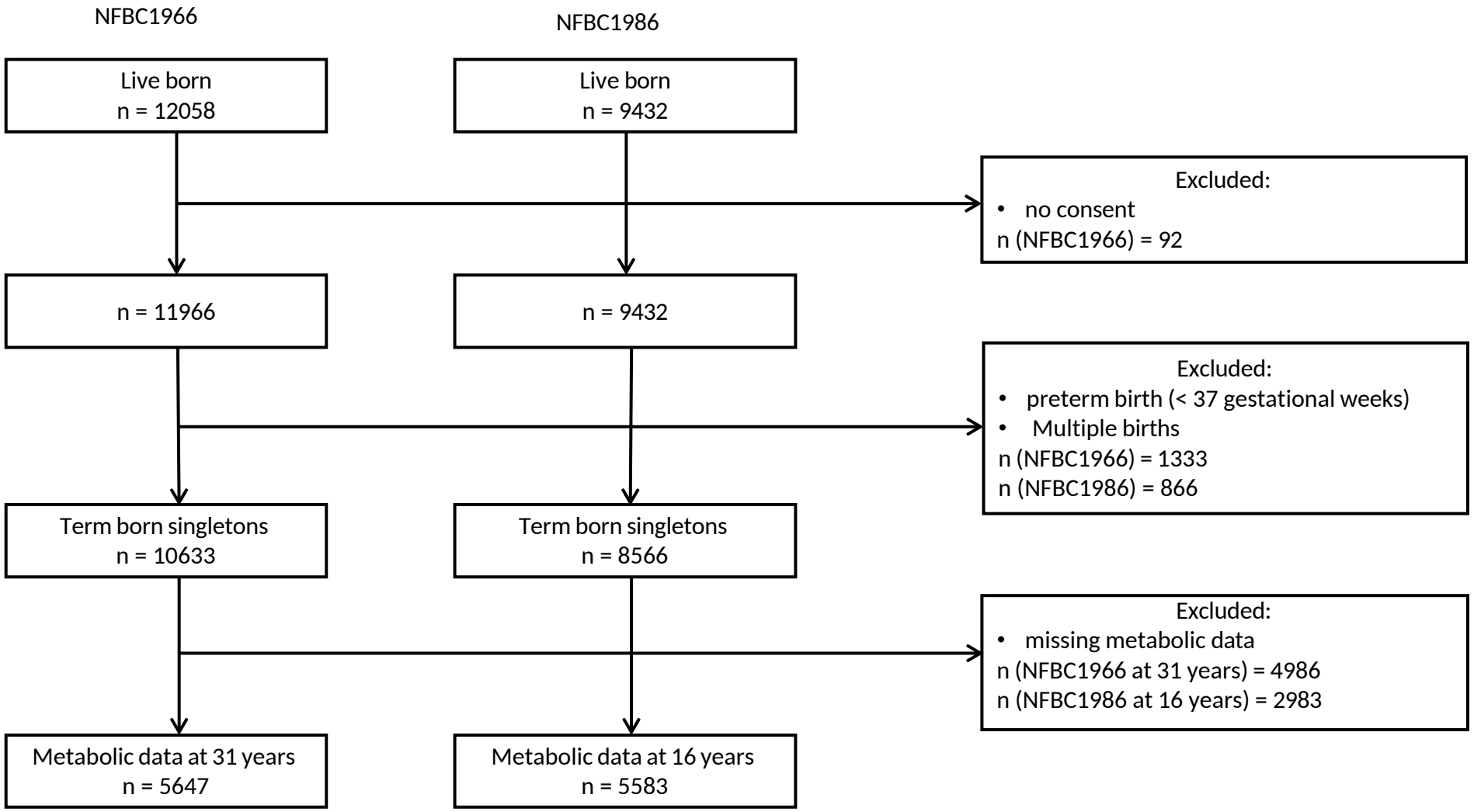
Supplementary Table S1: Number of study participants with metabolic syndrome

Supplementary Table S2: Individual metabolic components, thresholds, and prevalence among NFBC 1966 and 1986 cohorts

Supplementary Table S3: Association of childhood BMI slopes and metabolic syndrome among NFBC 1966 and 1986 cohorts

Supplementary Figure S2: Correlation matrix indicating the relationship between BMI slopes and metabolic syndrome among males in NFBC 1966 at 31 years and NFBC 1986 at 16 years

Supplementary Figure S3: Correlation matrix indicating the relationship between BMI slopes and metabolic syndrome among females in NFBC 1966 at 31 years and NFBC 1986 at 16 years



Supplementary Figure S1: Flow chart of the study design

Abbreviation: NFBC = Northern Finland Birth Cohort

Supplementary Table S1: Number of study participants with metabolic syndrome

	With Metabolic syndrome n (%)	Without Metabolic syndrome n (%)
NFBC1966 at 31 years		
Total (n=5647)	648 (11%)	4999 (89%)
Males (n=2774)	398 (13%)	2376(87%)
Females (n=2873)	250 (5%)	2623 (95%)
NFBC1986 at 16 years		
Total (n=5583)	142 (3%)	5441 (97%)
Males (n=2818)	94 (3%)	2724 (97%)
Females (n=2765)	48 (2%)	2717 (98%)

Abbreviation: NFBC = Northern Finland Birth Cohort

Supplementary Table S2: Individual metabolic components, thresholds, and prevalence among NFBC 1966 and 1986 cohorts

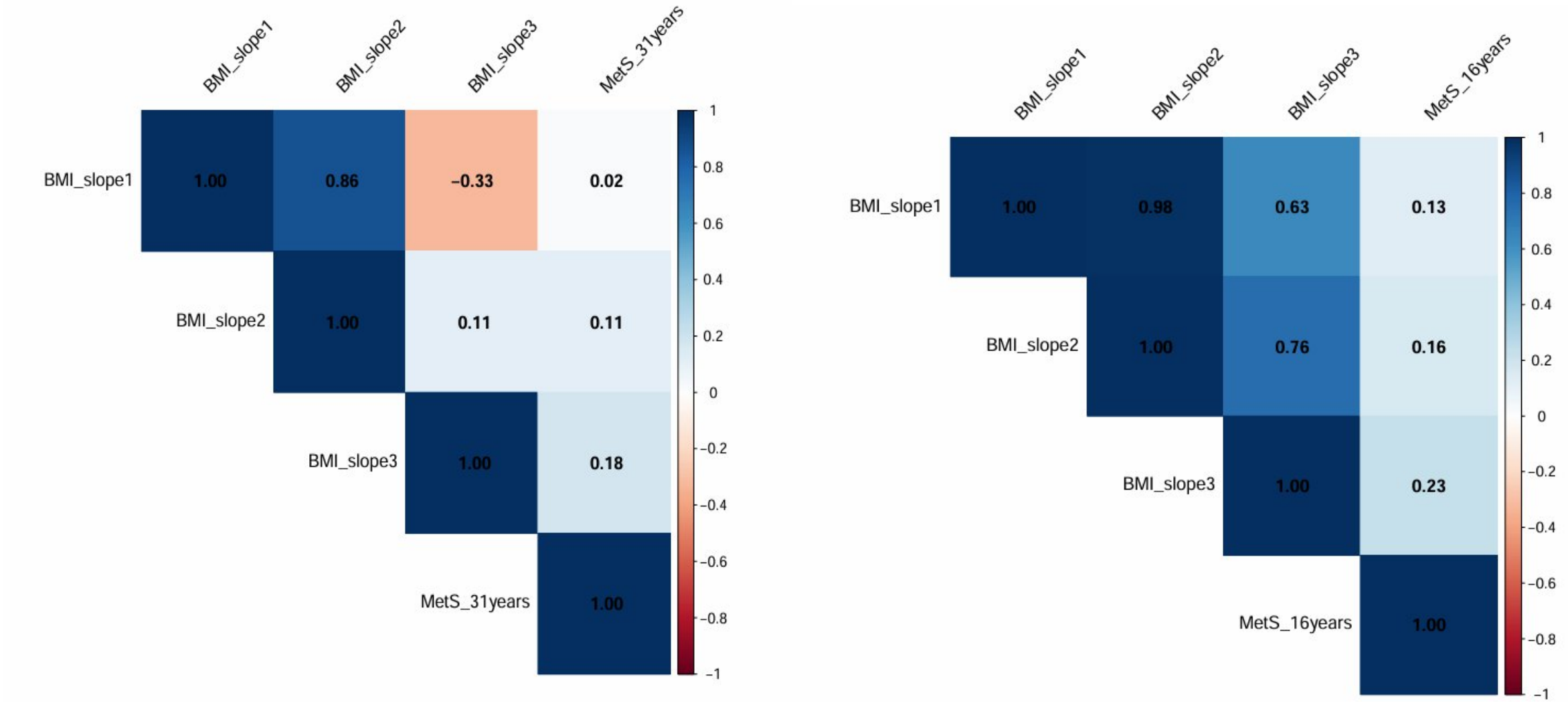
	NFBC1966 at 31 years (n=5647; males = 2,774, females = 2,873)				**NFBC1986 at 16 years (n=5583; males = 2,818, females = 2,765)**			
	Threshold	**Total**	**Male**	**Female**	**Threshold**	**Total**	**Male**	**Female**
Waist circumference	Men > 102 cm Women > 88 cm	13% (747)	9% (248)	17% (499)	≥ 90cm for boys ≥ 80cm for girls	11% (590)	8% (225)	13% (365)
Systolic BP	≥ 130 mm Hg	35% (1979)	50% (1388)	21% (591)	≥ 130 mm Hg	13% (730)	22% (630)	4% (100)
Diastolic BP	≥ 85 mm Hg	26% (1471)	35% (980)	17% (491)	≥ 85 mm Hg	2% (107)	3% (77)	1% (30)
Glucose	≥ 6.1 mmol/L	3% (186)	4% (123)	2% (63)	≥ 5.6 mmol/L	16% (886)	24% (668)	8% (218)
Triglyceride	≥ 1.7 mmol/L	15% (852)	22% (605)	9% (247)	≥ 1.7 mmol/L	4% (201)	4% (106)	3% (95)
HDL-cholesterol	Men < 1.04 mmol/L Women <1.30mmol/L	12% (709)	10% (265)	16% (444)	< 1.03 mmol/L	8% (425)	12% (326)	4% (99)

Abbreviations: NFBC = Northern Finland Birth Cohort; BP = blood pressure; HDL= high-density lipoprotein

Supplementary Table S3: Association of childhood BMI slopes and metabolic syndrome among NFBC 1966 and 1986 cohorts

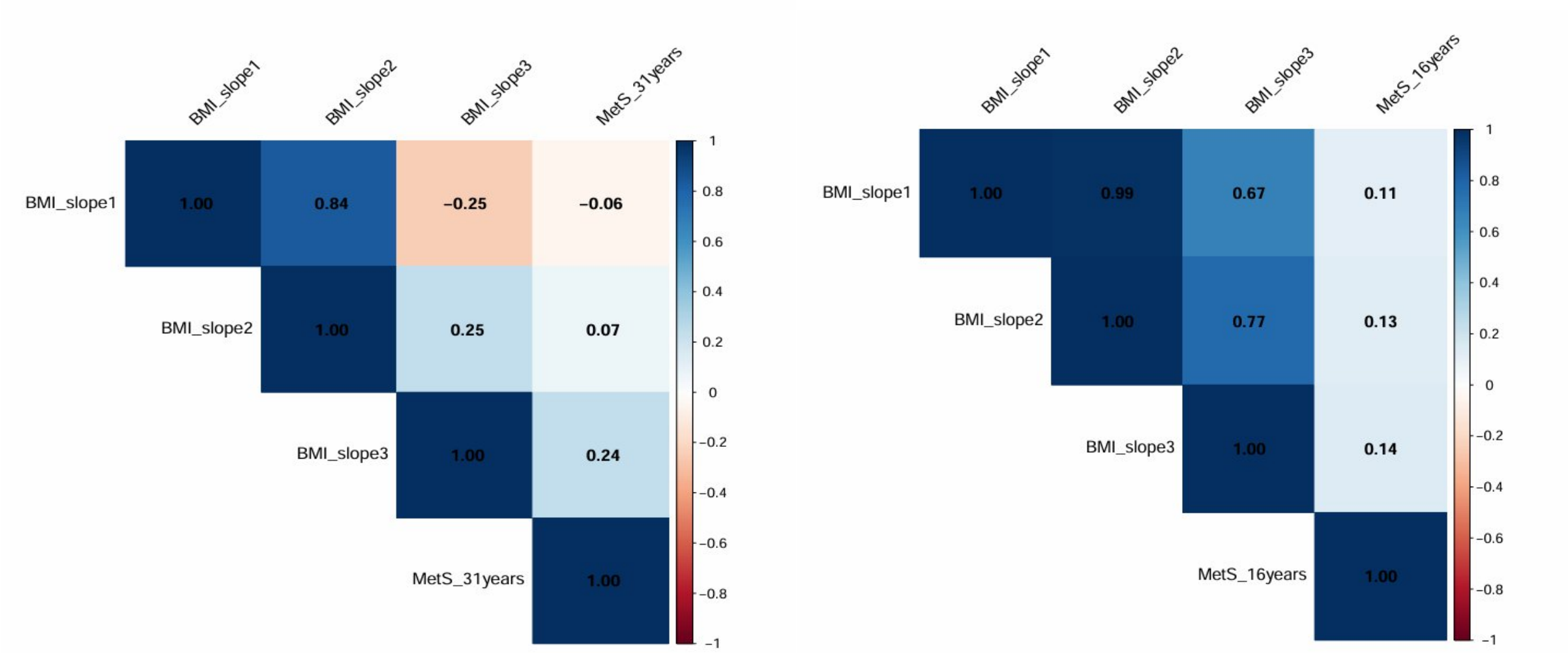
	0 – 5 months		1.5 – 3.5 years		6.5 – 10 years	
	OR	95% CI	OR	95% CI	OR	95% CI
NFBC 1966 at 31years						
Unadjusted	0.9	0.8-1.0	1.2	1.1-1.3	1.5	1.3-1.6
Sex adjusted	1.0	0.9-1.1	1.3	1.1-1.4	1.5	1.4-1.7
Fully adjusted	1.0	0.9-1.2	1.3	1.2-1.5	1.6	1.4-1.8
NFBC 1986 at 16years						
Unadjusted	1.4	1.2-1.6	1.9	1.7-2.3	3.0	2.6-3.5
Sex adjusted	2.4	2.0-2.9	2.3	2.0-2.8	2.9	2.5-3.4
Fully adjusted	2.3	1.9-2.8	2.3	2.0-2.8	2.9	2.4-3.5

Results are presented as odds ratios (ORs) and 95% confidence intervals (CIs) for the unadjusted, sex-adjusted, and fully adjusted models, including sex, birthweight, maternal pre-pregnancy BMI, maternal education, maternal occupation, and maternal smoking during pregnancy. Results are presented as a 1-unit standard deviation change in BMI slope. Abbreviations: BMI = Body Mass Index, MetS = Metabolic Syndrome, NFBC = Northern Finland Birth Cohort,



Supplementary Figure S2: Correlation matrix indicating the relationship between BMI slopes and metabolic syndrome among males in NFBC 1966 at 31 years and NFBC 1986 at 16 years

Abbreviation: BMI_slope1 = body mass index slope from 0 to 5 months; BMI_slope2 = body mass index slope from 1.5 to 3.5 years; BMI_slope3 = body mass index slope from 6.5 to 10 years; MetS_31 years = metabolic syndrome at 31 years; MetS_16 years = metabolic syndrome at 16 years; NFBC = Northern Finland Birth Cohort



Supplementary Figure S3: Correlation matrix indicating the relationship between BMI slopes and metabolic syndrome among females in NFBC 1966 at 31 years and NFBC 1986 at 16 years

Abbreviation: BMI_slope1 = body mass index slope from 0 to 5 months; BMI_slope2 = body mass index slope from 1.5 to 3.5 years; BMI_slope3 = body mass index slope from 6.5 to 10 years; MetS_31 years = metabolic syndrome at 31 years; MetS_16 years = metabolic syndrome at 16 years; NFBC = Northern Finland Birth Cohort