

Supplemental Online Content

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eAppendix. HAPO Follow-Up Study Cooperative Research Group Members

This supplemental material has been provided by the authors to give readers additional information about their work.

eMethods

Offspring CVH During Early Adolescence

Height and weight were each measured twice by trained study personnel using calibrated instruments, and BMI was calculated as weight (kg) divided by height squared (m^2). Blood pressure was measured three times by trained study personnel using calibrated instruments; the first measurement was discarded and the latter two were averaged. Venous blood was drawn fasting and 30 minutes, 1 hour, and 2 hours after an oral glucose load of 1.75 g per kg body weight (maximum 75 g) and sent to a central laboratory for analysis. Fasting serum cholesterol levels were measured with direct enzymatic methods (Beckman AU5800), with total and within-run coefficients of variation of <3 percent. Fasting and post-load glucose levels were measured enzymatically and hemoglobin A1C was measured with standard methods (Beckman Coulter SYNCHRON LX); quality control data have been reported.¹ For the present analysis, only fasting and 2-hour post-load glucose levels were utilized (**Table 1**). Medical diagnoses (including diabetes) and medication use were collected from the mother via questionnaire.

Statistical Analyses

We confirmed linearity assumptions for the CVH score exposure by (1) visually inspecting plots of the natural log-odds of categorical outcome variables against the continuous CVH exposure and scatterplots of residuals versus fitted values for the continuous outcome variable (all appeared linear), and (2) estimating restricted cubic splines (using the rms R software packages) by fitting Model 2 for the child 2 or more poor (vs all ideal) metrics outcome with a spline term for CVH score with 3, 4, and 5 knots set at equally spaced quantiles (Wald chi-square statistic confirmed lack of statistical significance for the spline term).

Secondary Analyses

First, we sought to determine whether significant maternal-child total CVH associations were driven by any single maternal or child CVH metric. We repeated analyses using individual gestational CVH metrics (non-ideal [combined intermediate/poor] vs. ideal) as exposures and individual child CVH metrics (non-ideal vs. ideal) as outcomes. These analyses adjusted for all Model 2 covariates, and analyses with individual gestational CVH metrics as exposures also adjusted for the levels (non-ideal vs. ideal) of the other gestational CVH metrics.

Second, we sought to determine whether significant maternal-child CVH associations were fully explained by adverse pregnancy outcomes. If significant associations were found to be partly independent of adverse pregnancy outcomes, this would suggest that gestational CVH has clinical utility for identifying newborns at higher risk for poor CVH by early adolescence, even once pregnancy outcomes are known. To address this question, we added to Model 2 of our primary analyses three separate sets of categorical pregnancy and birth outcomes. The “clinical” set included factors that are typically available to a pediatrician and have well-established significant associations with later offspring cardiometabolic health: preeclampsia/eclampsia,^{2,4} newborn low birthweight⁵ (<2.5 kg; referent 2.5-4.5 kg), and macrosomia⁵ (>4.5 kg; referent 2.5-4.5 kg). The “extended” set retained preeclampsia/eclampsia but also included more liberal thresholds for newborn birthweight categories and added other factors with less clinical availability or evidence basis. “Extended” variables included: preeclampsia/eclampsia, newborn small and large for gestational age (<10th and >90th percentile; referent 10th-90th percentile), sum of skinfolds >90th percentile (referent 10th-90th percentile), and cord blood insulin sensitivity index⁶⁻⁸ <10th percentile (referent all others); percentiles were calculated within the entire HAPO cohort using quantile regression for newborn race-sex group with adjustment for gestational age, field center, and maternal parity.^{9,10} The “comprehensive” set included factors in the “extended” set plus gestational hypertension and gestational diabetes; for this analysis, pregnant mothers with chronic hypertension (n=61) were excluded (since they were not at risk for gestational hypertension), and gestational CVH was characterized by only BMI, total cholesterol, and smoking status (since 28-week blood pressure and glucose were utilized to define gestational hypertension and diabetes).

Sensitivity Analyses

We conducted four separate sensitivity analyses for the primary maternal-child CVH associations. First, we added terms for child Tanner stage and sex*Tanner stage interaction to Model 2. The rationale was that CVH measures change with pubertal development; however, Tanner stage was not included in primary analyses since pubertal development could be on the causal pathway from gestational CVH to child CVH. Second, we excluded mothers who were underweight during pregnancy (BMI <22.6 kg/m², based on HAPO regression analyses¹¹) and children who were underweight at follow-up (based on International Obesity Task Force thresholds¹²); in primary analyses these mothers and children were classified as having “ideal” BMI, as the BMI metric in AHA-defined CVH focuses on excess weight.¹³ Third, we used triglycerides as the lipid metric in gestational CVH, because although total cholesterol is the AHA-defined CVH lipid metric outside of pregnancy,¹³ short-term newborn outcomes may be more associated with triglycerides.¹⁰ Gestational triglyceride levels were defined as ideal if <220 mg/dL, intermediate if 220-299 mg/dL, and poor if ≥300 mg/dL, as done previously in HAPO (**Table 1**, footnote);¹⁰ as with gestational total cholesterol, this produced a distribution of ideal, intermediate, and poor triglyceride levels similar to the distribution for BMI. Fourth, we utilized an alternative child glucose metric based on a composite of 3 indicators¹⁴ (**Table 1**, footnote): fasting glucose (as in the primary analysis), hemoglobin A1C (ideal: <5.7%, intermediate: 5.7-6.4%, poor: ≥6.5%), and 2-hour post-load glucose (ideal: <140 mg/dL, intermediate: 140-199 mg/dL, poor: ≥200 mg/dL), because although fasting glucose is the AHA-defined CVH glucose metric, multi-indicator measures are more sensitive. The composite glycemia indicator was considered ideal if all 3 indicators were ideal, intermediate if any indicator was intermediate but none were poor, and poor if any indicator was poor.

eResults

Sensitivity Analyses

A total of 1,889 mother-offspring dyads with child Tanner stage data available were included in the first sensitivity analysis. Among these children, 438 (23.2%) were in Tanner stage 1, 917 (48.5%) were in stage 2/3, and 534 (28.3%) were in stage 4/5. After adding Tanner stage and sex*Tanner stage interaction terms to Model 2 of the main analyses, associations between gestational CVH and offspring CVH were similar to those in the primary analysis, with some strengthening of point estimates but overlapping confidence intervals (**eFigures 1-5**).

After exclusion of 284 mothers who were underweight during pregnancy and 74 children who were underweight at age 10-14 years, 1,944 mother-offspring dyads were included in the second sensitivity analysis. Again, associations between gestational CVH and offspring CVH were similar to those in the primary analysis, with overlapping confidence intervals (**eFigures 1-5**).

A total of 2,286 dyads had maternal gestational triglyceride data available and were included in the third sensitivity analysis. Triglyceride levels were ideal in 1,462 (64.0%), intermediate in 568 (24.8%), and poor in 256 (11.2%) mothers during pregnancy. In contrast to gestational total cholesterol (**Figure 3** and **eTable 3**), gestational triglycerides did not demonstrate statistically significant associations with child total CVH categories after adjustment for the other CVH metrics (data not shown). When considering single child CVH metrics, a significant independent association with non-ideal (vs. ideal) gestational triglycerides was detected for child non-ideal (vs. ideal) blood pressure (RR 1.22, 95% CI 1.00-1.49; data not shown), but not for child non-ideal (vs. ideal) total cholesterol (RR 1.08, 95% CI 0.96-1.22; data not shown). Nevertheless, when triglycerides were substituted (instead of total cholesterol) as the gestational CVH lipid metric, associations of total gestational CVH with total offspring CVH were not meaningfully different from those in the primary analyses (**eFigures 1-5**).

A total of 1,997 dyads had data available for all 3 child glycemia indicators (fasting glucose, 2-hour post-load glucose, and hemoglobin A1C) and were included in the fourth sensitivity analysis. Glycemia indicators were all ideal among 1,620 (81.1%) children, 1 or more were intermediate but none were poor among 371 (18.6%) children, and at least 1 was poor among 6 (0.3%) children. Associations of gestational total CVH and single gestational CVH metrics with the child 3-indicator glycemia metric (data not shown) were similar to those with the child fasting glucose metric used in primary analyses (**Figure 3** and **eTable 3**). When the 3-indicator glycemia metric was utilized (instead of fasting glucose) in the definition of total child CVH, associations of total gestational CVH with total child CVH were not meaningfully different from those in the primary analyses (**eFigures 1-5**).

eTable 1. Missing Data Among 2,302 Mother-Child Dyads in the Ancillary Study (Primary Analytic Sample)

	N (%) Missing Among 2,302 Dyads	
	Mothers: During Pregnancy	Children: At Follow-Up
Field center location	0	
Age at study exam	0	1 (0.04)
Gestational age at study exam	0	---
Parity at study exam	0	---
Height at study exam	0	---
Alcohol use at study exam	0	---
Gestational age at delivery	0	
Sex	---	0
Race/ethnicity	3 (0.1)	
Body mass index category at study exam	0	1 (0.04)
Blood pressure category at study exam	0	8 (0.3)
Total cholesterol category at study exam	35 (1.5)	92 (4.0)
Glucose category at study exam	0	79 (3.4)
Smoking category at study exam	0	---
Cardiovascular health at study exam ^a	35 (1.5)	99 (4.3)
Triglycerides category at study exam ^b	16 (0.7)	---
Three-indicator glycemia metric at study exam ^b	0	305 (13.2)
Tanner stage at study exam ^b	---	413 (17.9)

^aBecause of incomplete overlap in missingness of CVH scores between mothers and children, a total of 2,170 dyads had complete data for both maternal cardiovascular health during pregnancy and offspring cardiovascular health at follow-up.

^bData utilized only for sensitivity analysis.

eTable 2. Adjusted^a Associations of Maternal Gestational (Mean 28 Weeks' Gestation) Cardiovascular Health with Offspring Cardiovascular Health in Childhood

	Model 1 ^a	Model 2 ^b	Model 2 ^b + "Clinical" ^c Pregnancy & Birth Outcomes	Model 2 ^b + "Extended" ^d Pregnancy & Birth Outcomes	Model 2 ^b + "Comprehensive" ^e Pregnancy & Birth Outcomes
Estimated Regression Coefficient (95% Confidence Interval) for Child Cardiovascular Health Score^f					
Number in Model	2173	2173	2173	1714	1677
Maternal Gestational CVH Variable					
All Ideal Metrics	0 (reference)	0 (reference)	0 (reference)	0 (reference)	0 (reference)
1 or More Intermediate (vs All Ideal) Metrics	-0.19 (-0.33, -0.06)	-0.21 (-0.34, -0.08)	-0.21 (-0.34, -0.08)	-0.21 (-0.34, -0.08)	-0.21 (-0.34, -0.08)
1 Poor (vs All Ideal) Metrics	-0.46 (-0.60, -0.32)	-0.47 (-0.61, -0.33)	-0.47 (-0.61, -0.33)	-0.47 (-0.61, -0.33)	-0.47 (-0.61, -0.33)
2 or More Poor (vs All Ideal) Metrics	-0.78 (-1.02, -0.54)	-0.81 (-1.05, -0.56)	-0.81 (-1.05, -0.56)	-0.81 (-1.05, -0.56)	-0.81 (-1.05, -0.56)
Global P-value for categories ^g	<.001	<.001	<.001	<.001	<.001
Relative Risk (95% Confidence Interval) for Child All Ideal (vs Any Non-Ideal) Metrics					
Number in Model	2174	2174	2174	1715	1678
Maternal Gestational CVH Variable					
All Ideal Metrics	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
1 or More Intermediate (vs All Ideal) Metrics	0.89 (0.78-1.004)	0.87 (0.77-0.99)	0.88 (0.77-0.99)	0.89 (0.77-1.03)	0.88 (0.76-1.01)
1 Poor (vs All Ideal) Metrics	0.68 (0.59-0.78)	0.67 (0.58-0.77)	0.67 (0.58-0.78)	0.66 (0.55-0.78)	0.70 (0.58-0.84)
2 or More Poor (vs All Ideal) Metrics	0.64 (0.49-0.84)	0.63 (0.48-0.82)	0.63 (0.48-0.83)	0.67 (0.49-0.91)	0.67 (0.38-1.21)
Global P-value for categories ^g	<.001	<.001	<.001	<.001	.02
Relative Risk (95% Confidence Interval) for Child 1 or More Intermediate (vs All Ideal) Metrics					
Number in Model	1601	1601	1601	1251	1234
Maternal Gestational CVH Variable					
All Ideal Metrics	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
1 or More Intermediate (vs All Ideal) Metrics	1.06 (0.94-1.21)	1.07 (0.95-1.22)	1.08 (0.95-1.22)	1.06 (0.92-1.22)	1.06 (0.93-1.21)
1 Poor (vs All Ideal) Metrics	1.25 (1.10-1.41)	1.26 (1.11-1.43)	1.26 (1.11-1.43)	1.27 (1.10-1.46)	1.16 (1.00-1.35)
2 or More Poor (vs All Ideal) Metrics	1.13 (0.89-1.44)	1.15 (0.90-1.47)	1.16 (0.91-1.49)	0.99 (0.70-1.40)	0.93 (0.45-1.92)
Global P-value for categories ^g	.09	.09	.09	.13	.60
Relative Risk (95% Confidence Interval) for Child 1 Poor (vs All Ideal) Metrics					
Number in Model	1284	1284	1284	1007	983
Maternal Gestational CVH Variable					
All Ideal Metrics	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
1 or More Intermediate (vs All Ideal) Metrics	1.15 (0.95-1.40)	1.17 (0.96-1.42)	1.16 (0.95-1.41)	1.17 (0.94-1.46)	1.19 (0.97-1.47)
1 Poor (vs All Ideal) Metrics	1.62 (1.35-1.93)	1.66 (1.39-1.99)	1.66 (1.39-1.99)	1.68 (1.37-2.06)	1.75 (1.43-2.14)
2 or More Poor (vs All Ideal) Metrics	1.93 (1.49-2.51)	2.02 (1.55-2.64)	2.01 (1.54-2.63)	2.04 (1.51-2.77)	2.14 (1.29-3.58)
Global P-value for categories ^g	<.001	<.001	<.001	<.001	<.001

	Model 1 ^a	Model 2 ^b	Model 2 ^b + “Clinical” ^c Pregnancy & Birth Outcomes	Model 2 ^b + “Extended” ^d Pregnancy & Birth Outcomes	Model 2 ^b + “Comprehensive” ^e Pregnancy & Birth Outcomes
Relative Risk (95% Confidence Interval) for Child 2 or More Poor (vs All Ideal) Metrics					
Number in Model	909	909	909	713	697
Maternal Gestational CVH Variable					
All Ideal Metrics	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
1 or More Intermediate (vs All Ideal) Metrics	2.04 (1.17-3.56)	2.15 (1.23-3.75)	2.03 (1.16-3.54)	1.90 (1.06-3.43)	1.90 (1.12-3.23)
1 Poor (vs All Ideal) Metrics	3.20 (1.90-5.49)	3.32 (1.96-5.62)	3.16 (1.85-5.40)	2.67 (1.53-4.66)	2.98 (1.70-5.23)
2 or More Poor (vs All Ideal) Metrics	6.19 (3.31-11.60)	7.82 (4.12-14.85)	6.49 (3.31-12.75)	6.23 (3.03-12.82)	4.92 (1.41-17.18)
Global P-value for categories^g	<.001	<.001	<.001	<.001	.004

^aModel 1 covariates include field center (each with a high level of demographic homogeneity) and child sex and age at follow-up.

^bModel 2 includes Model 1 covariates plus maternal variables during the pregnancy exam, including age, height, parity, alcohol use, and gestational age.

^c“Clinical” pregnancy and birth outcomes include: low birthweight (<2.5 kg; referent 2.5-4.5 kg), macrosomia (>4.5 kg; referent 2.5-4.5 kg), and preeclampsia/eclampsia.

^d“Extended” pregnancy and birth outcomes include: small for gestational age (<10th percentile; referent 10th-90th percentile), large for gestational age (>90th percentile; referent 10th-90th percentile), preeclampsia/eclampsia, sum of skinfolds >90th percentile (referent 10th-90th percentile), and cord blood insulin sensitivity index <10th percentile (referent all others). All percentiles were based on quantile regression for newborn race-sex group with adjustment for field center, gestational age, race/ethnicity, and maternal parity among the entire HAPO cohort; see Methods and eMethods for details.

^e“Comprehensive” pregnancy and birth outcomes include: preeclampsia/eclampsia, gestational hypertension, gestational diabetes mellitus, newborn small for gestational age, large for gestational age, sum of skinfolds >90th percentile, and cord blood insulin sensitivity index <10th percentile; see footnote for “Extended” set, Methods, and eMethods for details on newborn outcome definitions. For this analysis, 61 mothers with chronic hypertension were excluded and gestational CVH was defined by the combination of only body mass index, total cholesterol, and smoking status; see Methods and eMethods for details.

^fChild CVH score range is 0-8 points possible. For most analyses, maternal gestational CVH score range is 0-10 points possible, except when adjusting for “Comprehensive” Pregnancy & Birth Outcomes, the maternal gestational CVH score range is 0-6 points possible because gestational blood pressure and glucose are not part of the CVH definition. See Methods and eMethods for details.

^gThe global P-value is from a 3-df omnibus test comparing the log likelihood of the model with the categorical CVH variable to that without it.

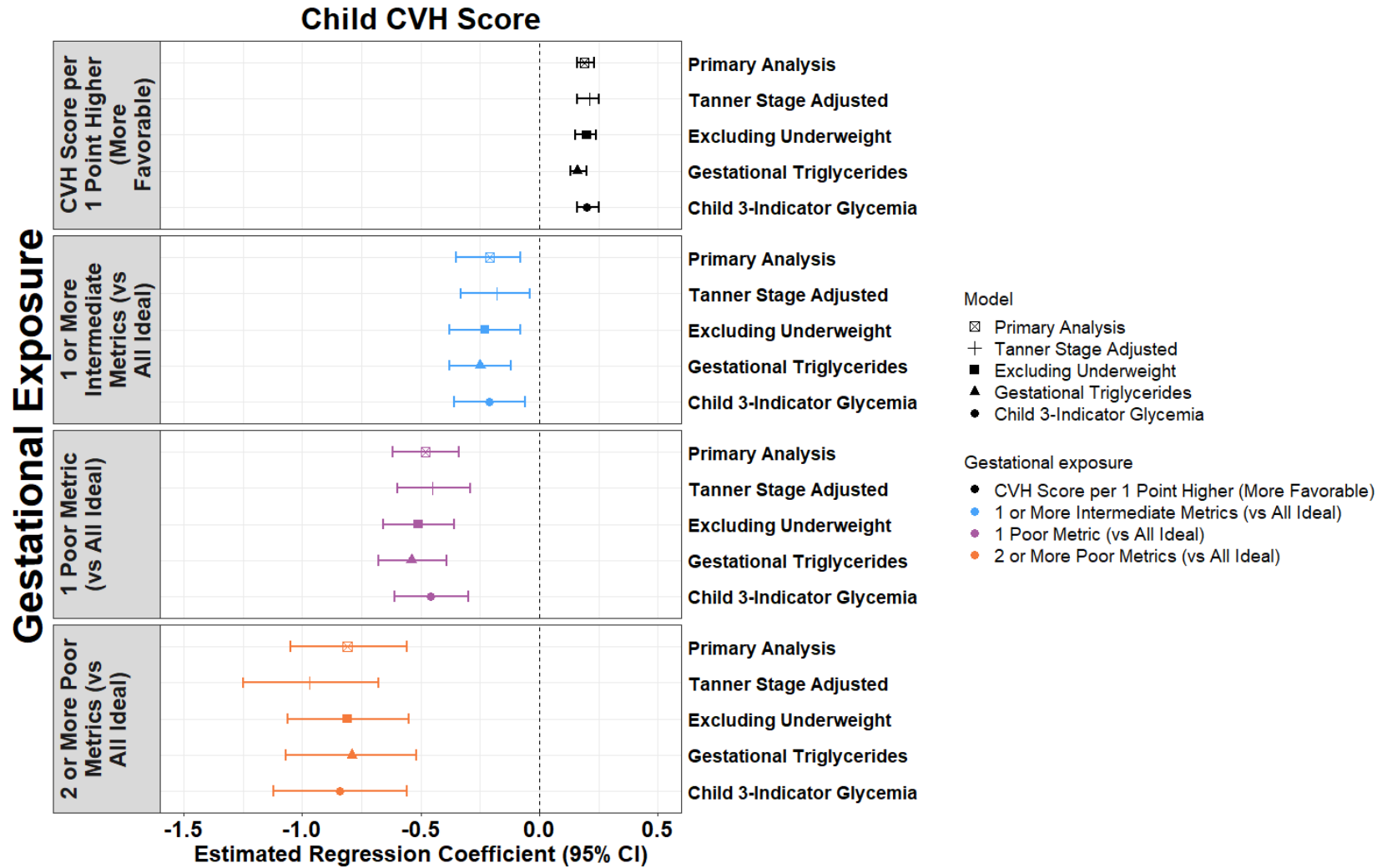
CVH, cardiovascular health.

eTable 3. Adjusted Associations between Individual Metrics of Maternal Gestational Cardiovascular Health and Offspring Childhood Cardiovascular Health

Maternal Gestational CVH Variable	N (%) of Mothers with CVH Status	Adjusted ^a Relative Risk (95% CI) for Child Cardiovascular Health Status			
		All Ideal (vs Any Non-Ideal) Metrics	1 or More Intermediate (vs All Ideal) Metrics	1 Poor (vs All Ideal) Metrics	2 or More Poor (vs All Ideal) Metrics
N (%) of Children with CVH Status	---	821 (37.3)	801 (36.3)	482 (21.9)	100 (4.5)
Gestational CVH Metric with Non-Ideal (vs Ideal) Status					
Body Mass Index	834 (36.2)	0.73 (0.64-0.83)	1.12 (0.998-1.26)	1.63 (1.40-1.91)	2.61 (1.70-4.01)
Blood Pressure	303 (13.2)	0.78 (0.64-0.95)	1.14 (0.98-1.32)	1.25 (1.04-1.50)	2.43 (1.59-3.71)
Total Cholesterol	822 (36.3)	0.89 (0.80-0.999)	1.06 (0.96-1.18)	1.16 (1.001-1.34)	1.51 (1.05-2.21)
Glucose	287 (12.5)	0.85 (0.70-1.03)	1.17 (1.02-1.35)	1.07 (0.88-1.30)	1.41 (0.88-2.27)
Smoking	94 (4.1)	0.88 (0.68-1.15)	1.21 (0.93-1.57)	1.09 (0.71-1.66)	0.52 (0.10-2.72)
Maternal Gestational CVH Variable					
Maternal Gestational CVH Variable	N (%) of Mothers with CVH Status	Adjusted ^a Relative Risk (95% CI) for Child Cardiovascular Health Metric Status			
		Non-Ideal (vs Ideal) Body Mass Index	Non-Ideal (vs Ideal) Blood Pressure	Non-Ideal (vs Ideal) Total Cholesterol	Non-Ideal (vs Ideal) Fasting Glucose
N (%) of Children with CVH Metric Status	---	770 (33.5)	380 (16.6)	771 (34.9)	169 (7.6)
Gestational CVH Score, per 1 Point Higher (More Favorable)	---	0.86 (0.82-0.89)	0.90 (0.84-0.96)	0.92 (0.88-0.96)	0.89 (0.80-0.98)
Gestational CVH Category (versus All Ideal Metrics)					
1 or More Intermediate Metrics	719 (31.7)	1.29 (1.10-1.51)	0.95 (0.75-1.21)	1.15 (0.997-1.34)	1.17 (0.81-1.67)
1 Poor Metrics	669 (29.5)	1.49 (1.27-1.73)	1.17 (0.92-1.48)	1.40 (1.22-1.62)	1.17 (0.81-1.69)
2 or More Poor Metrics	137 (6.0)	2.09 (1.71-2.55)	1.34 (0.91-1.97)	1.16 (0.88-1.53)	1.85 (1.04-3.28)
Gestational CVH Metric with Non-Ideal (vs Ideal) Status					
Body Mass Index	834 (36.2)	1.83 (1.62-2.08)	1.36 (1.11-1.67)	1.01 (0.89-1.15)	1.31 (0.96-1.80)
Blood Pressure	303 (13.2)	1.20 (1.05-1.38)	1.41 (1.11-1.78)	1.03 (0.86-1.23)	0.86 (0.55-1.34)
Total Cholesterol	822 (36.3)	0.93 (0.82-1.05)	0.99 (0.81-1.20)	1.38 (1.23-1.54)	1.31 (0.97-1.75)
Glucose	287 (12.5)	1.10 (0.95-1.28)	1.08 (0.83-1.41)	1.18 (1.00-1.39)	1.55 (1.08-2.21)
Smoking	94 (4.1)	1.17 (0.87-1.57)	0.76 (0.43-1.34)	1.09 (0.74-1.59)	0.61 (0.20-1.87)

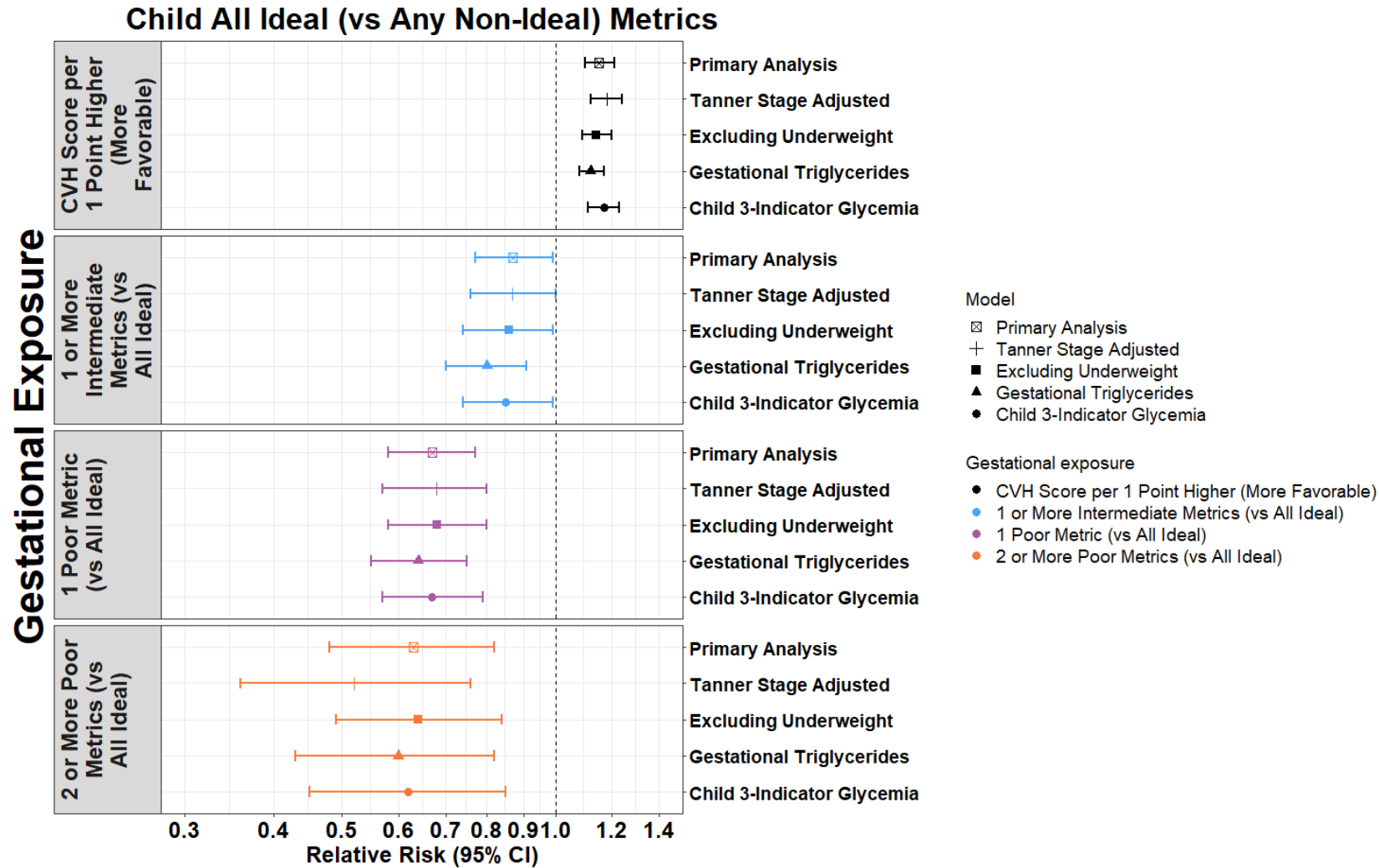
^aAll estimates are adjusted for field center (each with a high level of demographic homogeneity); child sex and age at follow-up; maternal variables during the pregnancy exam, including age, height, parity, alcohol use, and gestational age; as well as levels (ideal versus non-ideal [intermediate/poor]) of each of the other four gestational CVH metrics (except when total gestational CVH is the exposure). CI, confidence interval; CVH, cardiovascular health.

eFigure 1. Sensitivity Analyses of Associations of Maternal Gestational Cardiovascular Health with Offspring Cardiovascular Health Score in Childhood



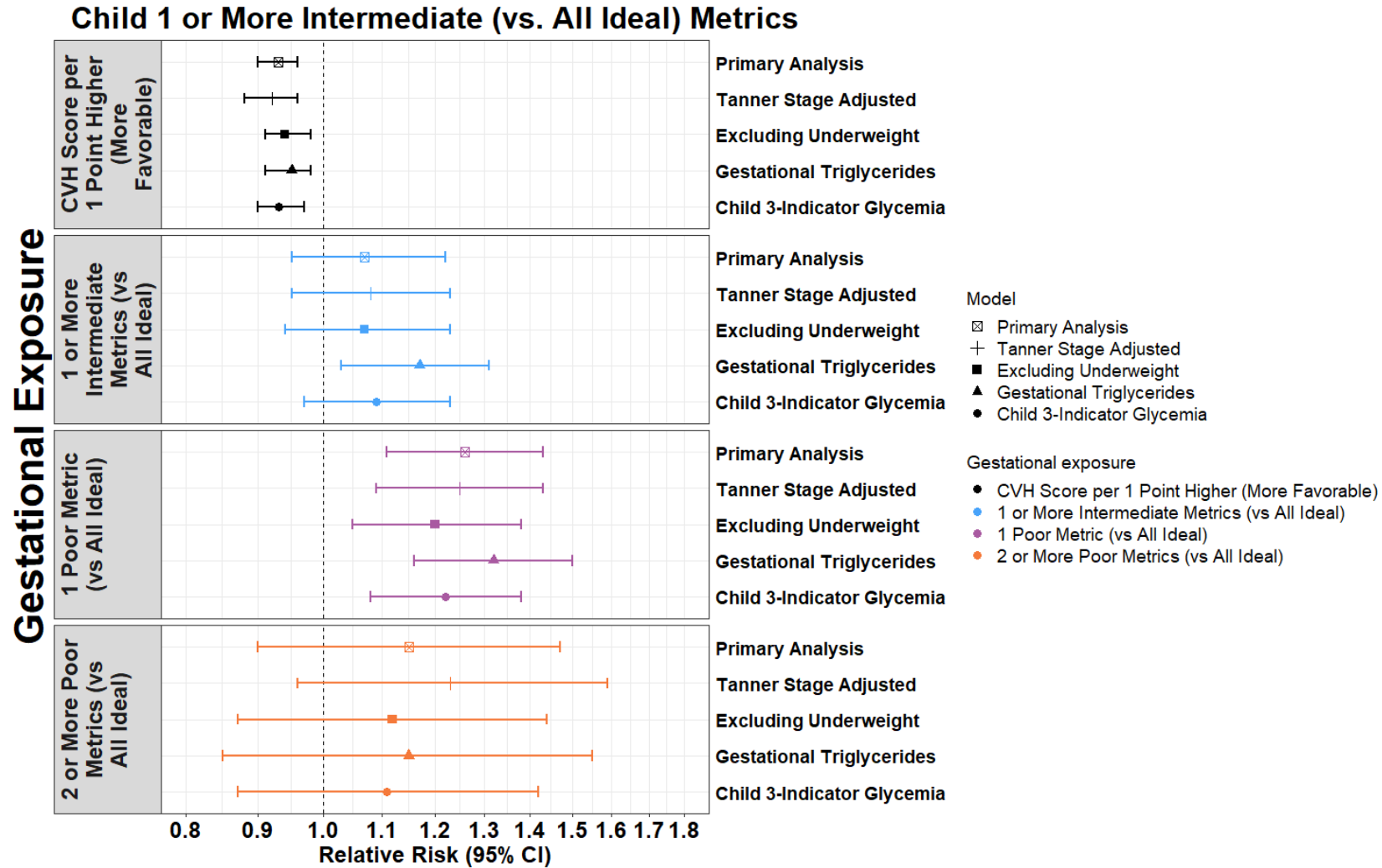
Estimates in all models were adjusted for field center (each with a high level of demographic homogeneity), child sex and age at follow-up, and maternal variables during the pregnancy exam, including age, height, parity, alcohol use, and gestational age. Models are as follows. "Primary" indicates estimates from the main analysis (i.e., Model 2 from eTable 2) for comparison with sensitivity analyses. "Tanner Stage-Adjusted" indicates estimates additionally adjusted for child Tanner stage and sex* Tanner stage at follow-up. "Excluding Underweight" indicates estimates that excluded mothers who were underweight during pregnancy and children who were underweight at follow-up. "Gestational Triglycerides" indicates estimates based on a maternal gestational CVH definition substituting triglycerides for total cholesterol as the lipid metric. "Child 3-Indicator Glycemia" indicates estimates based on a child CVH definition substituting the 3-indicator glycemia variable for fasting glucose as the child glycemia metric. See Methods and eMethods for details. The CVH score range is 0-10 points for maternal gestational CVH and 0-8 points for child CVH. CI, confidence interval; CVH, cardiovascular health.

eFigure 2. Sensitivity Analyses of Associations of Maternal Gestational Cardiovascular Health with Offspring All Ideal (versus Any Non-Ideal) Cardiovascular Health Metrics in Childhood



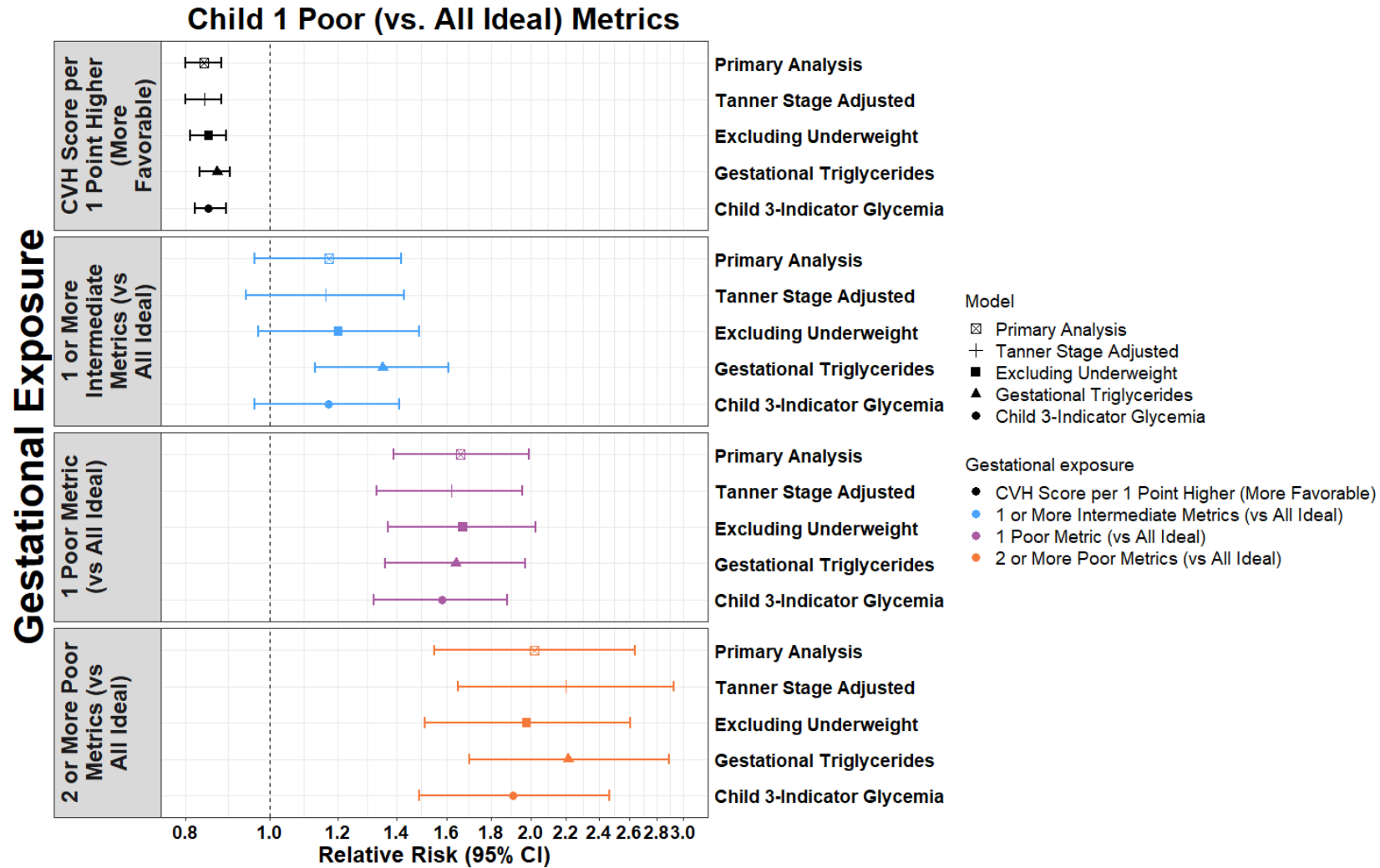
Estimates in all models were adjusted for field center (each with a high level of demographic homogeneity), child sex and age at follow-up, and maternal variables during the pregnancy exam, including age, height, parity, alcohol use, and gestational age. Models are as follows. "Primary" indicates estimates from the main analysis (i.e., Model 2 from eTable 2) for comparison with sensitivity analyses. "Tanner Stage-Adjusted" indicates estimates additionally adjusted for child Tanner stage and sex* Tanner stage at follow-up. "Excluding Underweight" indicates estimates that excluded mothers who were underweight during pregnancy and children who were underweight at follow-up. "Gestational Triglycerides" indicates estimates based on a maternal gestational CVH definition substituting triglycerides for total cholesterol as the lipid metric. "Child 3-Indicator Glycemia" indicates estimates based on a child CVH definition substituting the 3-indicator glycemia variable for fasting glucose as the child glycemia metric. See Methods and eMethods for details. The CVH score range is 0-10 points for maternal gestational CVH and 0-8 points for child CVH. CI, confidence interval; CVH, cardiovascular health.

eFigure 3. Sensitivity Analyses of Associations of Maternal Gestational Cardiovascular Health with Offspring 1 or More Intermediate (versus All Ideal) Cardiovascular Health Metrics in Childhood



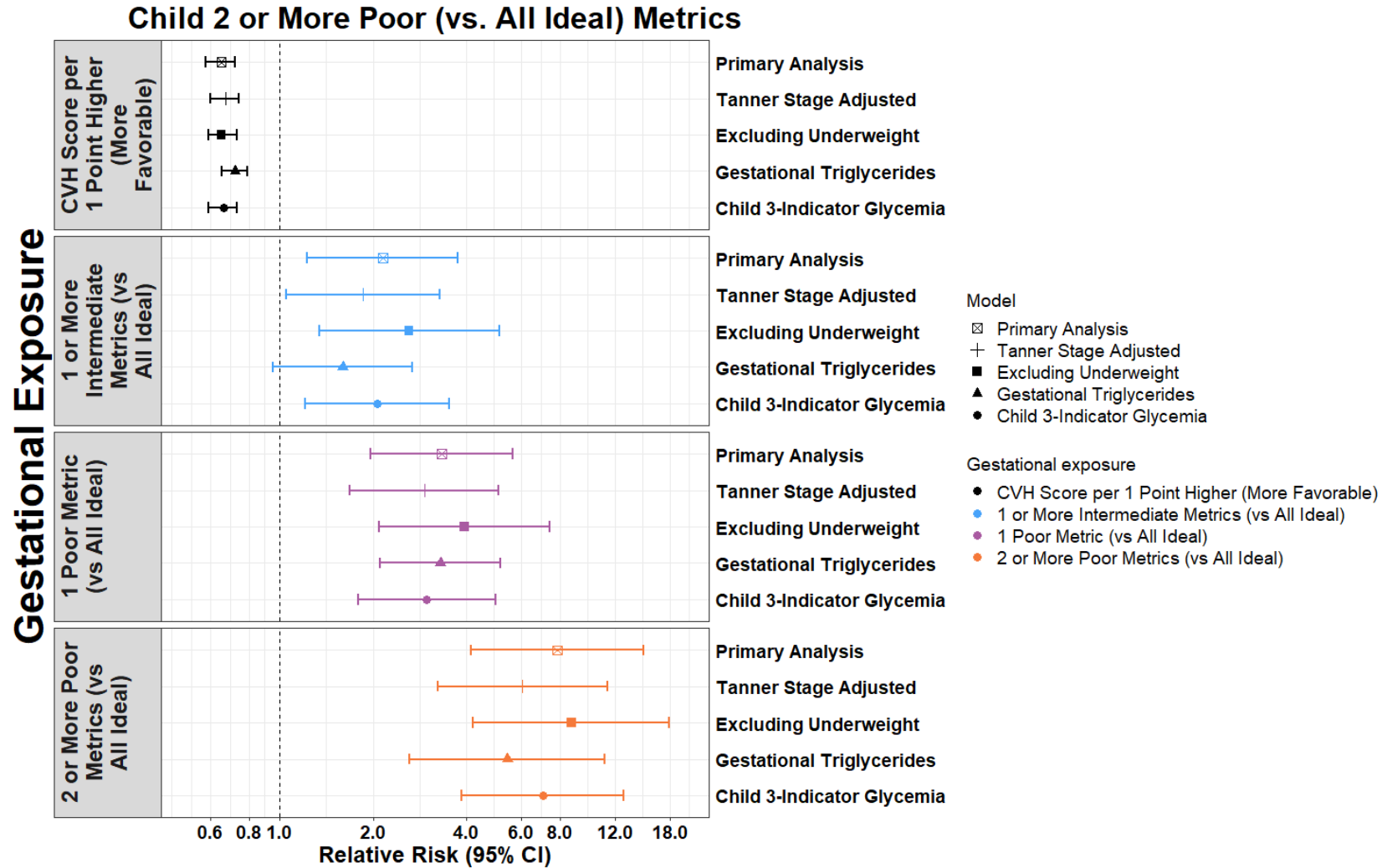
Estimates in all models were adjusted for field center (each with a high level of demographic homogeneity), child sex and age at follow-up, and maternal variables during the pregnancy exam, including age, height, parity, alcohol use, and gestational age. Models are as follows. "Primary" indicates estimates from the main analysis (i.e., Model 2 from eTable 2) for comparison with sensitivity analyses. "Tanner Stage-Adjusted" indicates estimates additionally adjusted for child Tanner stage and sex* Tanner stage at follow-up. "Excluding Underweight" indicates estimates that excluded mothers who were underweight during pregnancy and children who were underweight at follow-up. "Gestational Triglycerides" indicates estimates based on a maternal gestational CVH definition substituting triglycerides for total cholesterol as the lipid metric. "Child 3-Indicator Glycemia" indicates estimates based on a child CVH definition substituting the 3-indicator glycemia variable for fasting glucose as the child glycemia metric. See Methods and eMethods for details. The CVH score range is 0-10 points for maternal gestational CVH and 0-8 points for child CVH. CI, confidence interval; CVH, cardiovascular health.

eFigure 4. Sensitivity Analyses of Associations of Maternal Gestational Cardiovascular Health with Offspring 1 Poor (versus All Ideal) Cardiovascular Health Metric in Childhood



Estimates in all models were adjusted for field center (each with a high level of demographic homogeneity), child sex and age at follow-up, and maternal variables during the pregnancy exam, including age, height, parity, alcohol use, and gestational age. Models are as follows. "Primary" indicates estimates from the main analysis (i.e., Model 2 from eTable 2) for comparison with sensitivity analyses. "Tanner Stage-Adjusted" indicates estimates additionally adjusted for child Tanner stage and sex* Tanner stage at follow-up. "Excluding Underweight" indicates estimates that excluded mothers who were underweight during pregnancy and children who were underweight at follow-up. "Gestational Triglycerides" indicates estimates based on a maternal gestational CVH definition substituting triglycerides for total cholesterol as the lipid metric. "Child 3-Indicator Glycemia" indicates estimates based on a child CVH definition substituting the 3-indicator glycemia variable for fasting glucose as the child glycemia metric. See Methods and eMethods for details. The CVH score range is 0-10 points for maternal gestational CVH and 0-8 points for child CVH. CI, confidence interval; CVH, cardiovascular health.

eFigure 5. Sensitivity Analyses of Associations of Maternal Gestational Cardiovascular Health with Offspring 2 or More Poor (versus All Ideal) Cardiovascular Health Metrics in Childhood



Estimates in all models were adjusted for field center (each with a high level of demographic homogeneity), child sex and age at follow-up, and maternal variables during the pregnancy exam, including age, height, parity, alcohol use, and gestational age. Models are as follows. "Primary" indicates estimates from the main analysis (i.e., Model 2 from eTable 2) for comparison with sensitivity analyses. "Tanner Stage-Adjusted" indicates estimates additionally adjusted for child Tanner stage and sex* Tanner stage at follow-up. "Excluding Underweight" indicates estimates that excluded mothers who were underweight during pregnancy and children who were underweight at follow-up. "Gestational Triglycerides" indicates estimates based on a maternal gestational CVH definition substituting triglycerides for total cholesterol as the lipid metric. "Child 3-Indicator Glycemia" indicates estimates based on a child CVH definition substituting the 3-indicator glycemia variable for fasting glucose as the child glycemia metric. See Methods and eMethods for details. The CVH score range is 0-10 points for maternal gestational CVH and 0-8 points for child CVH. CI, confidence interval; CVH, cardiovascular health.

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