Supplementary Information

Genetic and Environmental Influences on Fetal Growth Vary during Sensitive Periods in Pregnancy

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Fetal growth measures	Variance component (%)	P-value*	Standard error
Estimated fetal weight (13 weeks gestation)			
h^2	16.5	0.24	0.21
c^2	53.7	**5.40E-05**	0.13
e^2	29.8		0.10
Estimated fetal weight (20 weeks gestation)			
h^2	40.8	**0.03**	0.17
c^2	38.9	**0.002**	0.12
e^2	20.3		0.07
Estimated fetal weight (27 weeks gestation)			
h^2	71.3	**0.002**	0.17
c^2	11.0	0.22	0.14
e^2	17.7		0.06
Estimated fetal weight (38 weeks gestation)			
h^2	65.8	**0.02**	0.22
c^2	7.3	0.32	0.16
e^2	28.0		0.09
Abdominal circumference (13 weeks gestation)			
h^2	12.8	0.33	0.26
c^2	49.6	**0.0006**	0.16
e^2	38.5		0.12
Abdominal circumference (20 weeks gestation)			
h^2	22.9	0.19	0.22
c^2	47.1	**0.0004**	0.14
e^2	30.0		0.10
Abdominal circumference (27 weeks gestation)			
h^2	53.3	**0.03**	0.22
c^2	19.0	0.11	0.15
e^2	27.7		0.09
Abdominal circumference (38 weeks gestation)			
h^2	45.2	0.06	0.23
c^2	25.8	0.05	0.15
e^2	30.0		0.10
Femur length (13 weeks gestation)			
h^2	29.0	0.10	0.18
c^2	47.2	**1.00E-04**	0.12
e^2	23.5		0.08
Femur length (20 weeks gestation)			
h^2	30.3	0.10	0.19
c^2	44.8	**4.00E-04**	0.13
e^2	24.8		0.09
Femur length (27 weeks gestation)			
h^2	71.8	**6.07E-09**	0.09
c^2	0.0	NA	NA
e^2	28.1		0.09

Femur length (38 weeks gestation)			
h^2	38.7	0.13	0.30
c^2	16.9	0.20	0.19
e^2	45.4		0.13
Humerus length (13 weeks gestation)			
h^2	20.9	0.17	0.19
c^2	53.8	**1.00E-05**	0.12
e^2	25.2		0.09
Humerus length (20 weeks gestation)			
h^2	21.7	0.16	0.18
c^2	54.2	**9.00E-06**	0.12
e^2	24.1		0.08
Humerus length (27 weeks gestation)			
h^2	57.3	**0.01**	0.19
c^2	20.1	8.31E-02	0.14
e^2	22.6		0.08
Humerus length (38 weeks gestation)			
h^2	56.0	**0.02**	0.21
c^2	17.7	0.12	0.15
e^2	26.3		0.09

Table S1. Genetic heritability (h^2), shared (c^2) and unique (e^2) environmental variance estimates and their trajectories across gestation. Models adjusted for maternal age, pre-pregnancy BMI, smoking, alcohol use, race, parity, gravidity, employment status, educational status, and fetal sex as covariates.

*In bold are P-values <0.05.

		End of first trimester	Mid-gestation	End of second trimester	38th week
Estimated fetal weight	Age	p-value=0.0005	p-value=0.0005	p-value=0.002	-
	Sex	p-value=0.0009	p-value=0.0002	p-value=0.003	-
	Race	p-value=0.03	p-value=0.02	p-value=0.03	-
	Variance explained*	10.1%	11.1%	8.4%	-
Abdominal circumference	Age	p-value=0.03	p-value=0.02	p-value=0.02	-
	Sex	p-value=0.02	p-value=0.04	p-value=0.04	-
	Parity	p-value=0.01	p-value=0.04	p-value=0.04	-
	Variance explained*	9.6%	10.9%	7.7%	-
Humerus length	Age	p-value=0.009	p-value=0.01	p-value=0.002	-
	Sex	p-value=0.008	p-value=0.002	-	p-value=0.007
	Race	p-value=0.02	p-value=0.01	p-value=0.003	p-value=0.02
	Variance explained*	6.1%	7.5%	10.3%	9.8%
Femur length	Age	p-value=0.007	p-value=0.003	p-value=0.02	p-value=0.02
	Sex	p-value=0.02	p-value=0.01	-	-
	Race	p-value=0.04	p-value=0.01	p-value=0.0004	p-value=0.003
	Variance explained*	6.6%	8.3%	8.2%	5.0%

Table S2. Covariates that significantly explained fetal growth variations. Models adjusted for maternal age, pre-pregnancy BMI, smoking, alcohol use, race, parity, gravidity, employment status, educational status, and fetal sex as covariates.

*Variance explained by co-variates in the final model.