Tables and Figures

Table 1. Main Effects of Birth Weight and Neuroplasticity Genes on IQ

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Neuroplasticity Genes	0.4808	0.4252	-0.0856
	(0.4382)	(0.4354)	(0.8055)
Standardized Birth Weight	1.4088***	1.4045***	1.3967**
	(0.4856)	(0.5066)	(0.6689)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1324	0.1284	0.6951

Notes: (i) Neuroplasticity Genes is the additive genetic risk score of plastic alleles for *APOE*, *BDNF*, and *COMT* (ii) Demographic and family controls include race, sex, birth year (age), birth order, mother's education, father's education, and a score for family SES in 1957. (iii) Standard errors are clustered at the family level with *, **, and *** representing significance at the 10, 5, and 1% significance level, respectively.

Table 2. Effects of Neuroplasticity Genes on Birth Weight

Dependent Variable: Standardized Birth Weight			
	(1)	(2)	(3)
Neuroplasticity Genes	0.0290	0.0524	0.0409
	(0.0321)	(0.0349)	(0.0543)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.0451	0.0577	0.6315

Notes: (i) Neuroplasticity Genes is the additive genetic risk score of plastic alleles for *APOE*, *BDNF*, and *COMT* (ii) Demographic and family controls include race, sex, birth year (age), birth order, mother's education, father's education, and a score for family SES in 1957. (iii) Standard errors are clustered at the family level with *, **, and *** representing significance at the 10, 5, and 1% significance level, respectively.

Table 3. Differential Effects of Birth Weight

Dependent Variable: High School IQ				
Sample	$BDNF + COMT + APOE \leq$ Median		$BDNF + COMT + APOE >$ Median	
	(1)	(2)	(3)	(4)
Standardized Birth Weight	2.5428***	1.8957*	0.0192	-0.6509
	(0.6528)	(1.1012)	(0.6694)	(0.8825)
Controls				
Demographic and Family SES	Y	Y	Y	Y
Sibling Fixed Effects	N	Y	N	Y
Test				
p-value for coeff. of col. (1) = coeff. of col. (3)	–	–	0.0002	–
p-value for coeff. of col. (2) = coeff. of col. (4)	–	–	–	0.0042
N	505	505	433	433
R Sqr.	0.1262	0.7671	0.1625	0.8312

Notes: (i) Columns (1) and (2) restrict the sample to individuals that have less than or equal to the median number of plastic alleles. Columns (3) and (4) restrict the sample to individuals to individuals with a greater than median number neuroplasticity alleles. (ii) The estimation of Table 3 is represented graphically by Figure 1. (iii) The distribution of additive genetic neuroplasticity score is given in Figure 2. (iv) Demographic and family controls include race, sex, birth year (age), birth order, mother's education, father's education, and a score for family SES in 1957. (iv) Standard errors are clustered at the family level with *, **, and *** representing significance at the 10, 5, and 1% significance level, respectively.

Table 4. Effect of Interaction between Birth Weight and Neuroplasticity Genes on IQ

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Neuroplasticity Genes	0.4435	0.4294	-0.0497
	(0.4343)	(0.4319)	(0.7932)
Standardized Birth Weight	5.2976***	5.6284***	6.1441**
	(1.7969)	(1.8188)	(2.4866)
G × E	-0.8961**	-0.9595**	-1.0691**
	(0.3841)	(0.3933)	(0.5239)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1366	0.1360	0.6978

Notes: (i) Neuroplasticity Genes is the additive genetic risk score of plastic alleles for *APOE*, *BDNF*, and *COMT*. G × E represents the interaction between our measure of neuroplasticity and standardized birth weight. (ii) Demographic and family controls include race, sex, birth year (age), birth order, mother's education, father's education, and a score for family SES in 1957. (vi) Standard errors are clustered at the family level with *, **, and *** representing significance at the 10, 5, and 1% significance level, respectively.

Table 5. G×E: Alternative Measures for Neuroplasticity

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Panel A: Neuroplasticity Genes = Indicator for $BDNF + COMT + APOE > Median$			
Neuroplasticity Genes	0.9378	0.8035	-3.5792**
	(1.0315)	(1.0381)	(1.5526)
Standardized Birth Weight	2.7535***	3.1386***	3.1751***
	(0.9134)	(0.9521)	(1.2084)
G × E	-1.8931*	-2.3416**	-2.2956*
	(1.0246)	(1.0728)	(1.3511)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1353	0.1357	0.7000
Panel B: Neuroplasticity Genes = $BDNF \times COMT \times APOE$			
Neuroplasticity Genes	0.2556	0.2642	-0.1567
	(0.1804)	(0.1851)	(0.2963)
Standardized Birth Weight	2.6416***	2.7838***	2.8848***
	(0.7171)	(0.7502)	(0.9541)
G × E	-0.4232***	-0.4574***	-0.4617**
	(0.1578)	(0.1719)	(0.2009)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1390	0.1390	0.6985

Notes: (i) For Panel A, neuroplasticity is measured by an indicator for having at least one plastic allele for each gene. For Panel B, the multiplicative interaction of plasticity genes is used to measure neuroplasticity. G × E represents the interaction between each respective measure of neuroplasticity and standardized birth weight. (ii) Demographic and family controls include race, sex, birth year (age), birth order, mother's education, father's education, and a score for family SES in 1957. (vi) Standard errors are clustered at the family level with *, **, and *** representing significance at the 10, 5, and 1% significance level, respectively.

Table 6. Effect of Interaction on Productivity

Dependent Variable: ln Wage Rate in 1992			
	(1)	(2)	(3)
Panel A: Main Effects			
Neuroplasticity Genes	-0.0634	-0.0659*	-0.0413
	(0.0392)	(0.0397)	(0.0840)
Standardized Birth Weight	0.0507	0.0531	0.0997
	(0.0473)	(0.0476)	(0.0788)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	820	820	820
R Sqr.	0.0933	0.0957	0.6008
Panel B: Gene-Environment Interaction			
Neuroplasticity Genes	-0.0613	-0.0635	-0.0213
	(0.0394)	(0.0399)	(0.0832)
Standardized Birth Weight	0.1221**	0.1204**	0.3156***
	(0.0523)	(0.0522)	(0.1030)
G × E	-0.0237*	-0.0226*	-0.0666***
	(0.0129)	(0.0126)	(0.0207)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	820	820	820
R Sqr.	0.0950	0.0972	0.6069

Notes: (i) Neuroplasticity Genes is the additive genetic risk score of plastic alleles for *APOE*, *BDNF*, and *COMT*. G × E represents the interaction between our measure of neuroplasticity and standardized birth weight. (ii) Demographic and family controls include race, sex, birth year (age), birth order, mother's education, father's education, and a score for family SES in 1957. (vi) Standard errors are clustered at the family level with *, **, and *** representing significance at the 10, 5, and 1% significance level, respectively.

Table 6. Effect of Interaction on Productivity

Dependent Variable: ln Wage Rate in 1992			
	(1)	(2)	(3)
Neuroplasticity Genes	-0.0613	-0.0635	-0.0213
	(0.0394)	(0.0399)	(0.0832)
Standardized Birth Weight	0.1221**	0.1204**	0.3156***
	(0.0523)	(0.0522)	(0.1030)
G × E	-0.0237*	-0.0226*	-0.0666***
	(0.0129)	(0.0126)	(0.0207)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	820	820	820
R Sqr.	0.0950	0.0972	0.6069

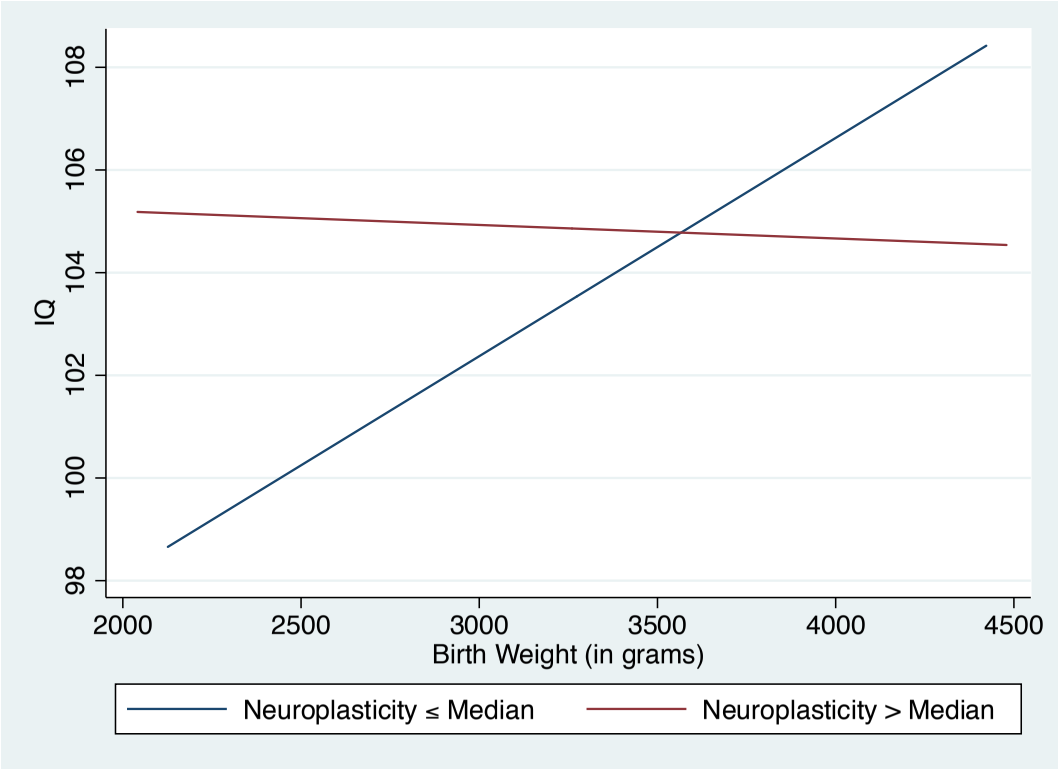

Figure 1. Differential Effects of Birth Weight by Neuroplasticicity (Dichotomous)

Notes: (i) This figure plots the effect of birth weight on IQ for two distinct populations, which are based on the number of neuroplasticity alleles. For individuals with less than or equal to the median number of plastic alleles (N=505), the effect of birth weight has a strong positive relationship with IQ; however, individuals with greater than the median number of plastic alleles (N=433) have no significant association between birth weight and later-life IQ. (ii) Slope coefficients, conditional on family and individual controls, are found in Table 3.

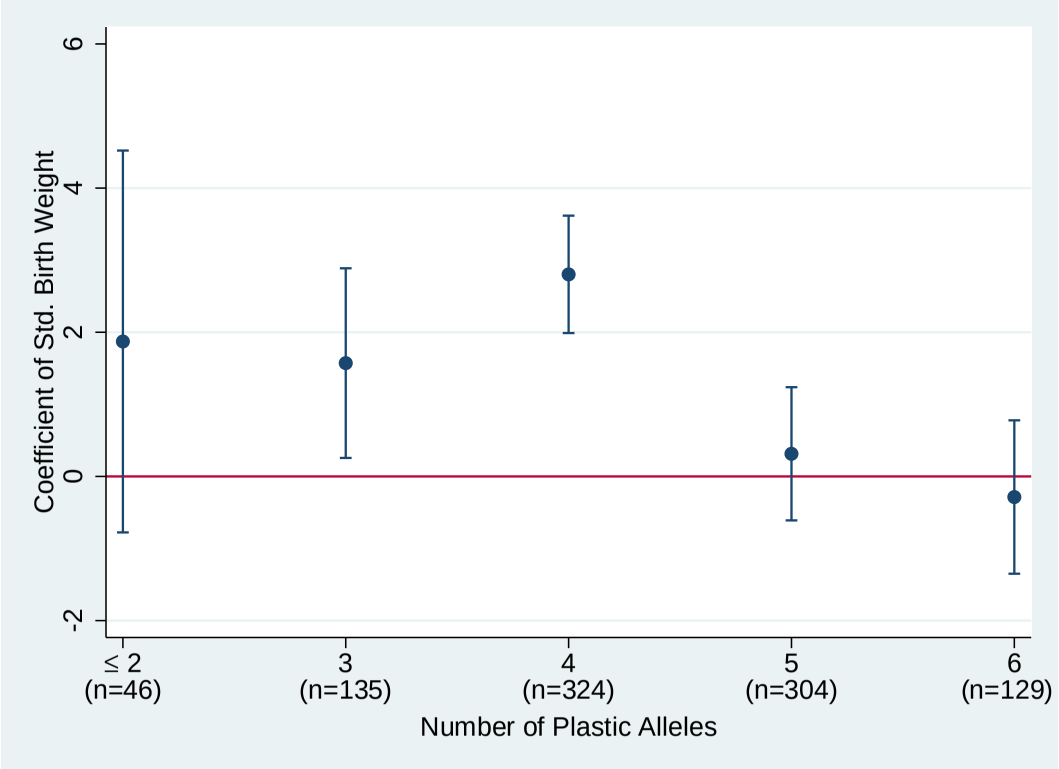

Figure 2. Differential Effects of Birth Weight by Neuroplasticicity

Notes: (i) This figure plots the effect of birth weight on IQ for the number of neuroplasticity alleles.

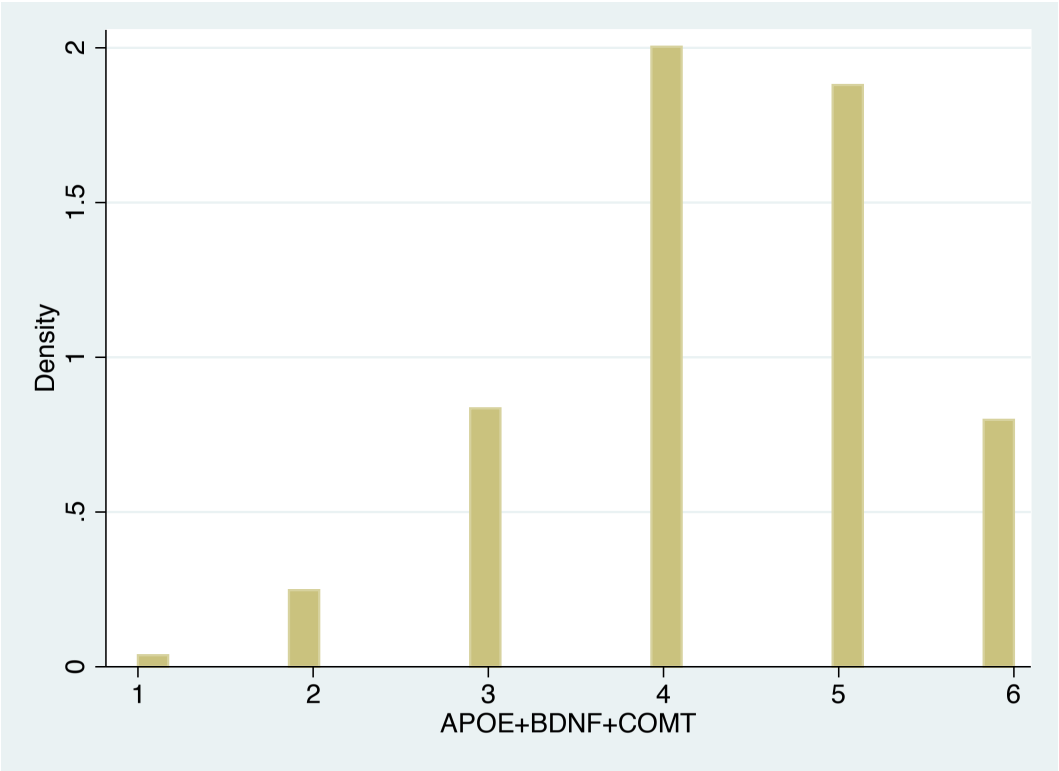

Figure 3. Distribution of Base Neuroplasticity Measure

Notes: (i) This figure gives the distribution for the additive genetic risk score of plastic alleles for BDNF, COMT, and APOE, the main measure of neuroplasticity used within the paper. Each SNP is defined by the count, or number, of plastic variants.

Appendix A: Summary Statistics and Sample Selection

Table A1. Summary Statistics for Differing Samples

	Base Sibling (Unweighted)	Base Sibling (Weighted)	All with DNA and Birth Weight	All with DNA	All with Birth Weight	Max
	(1)	(2)	(3)	(4)	(5)	(6)
IQ	104.19	101.43	103.73	103.46	102.61	101.38
	(14.82)	(14.67)	(14.80)	(14.95)	(14.85)	(15.27)
Mother's Education	10.77	10.67	10.70	10.62	10.63	10.51
	(2.78)	(2.77)	(2.76)	(2.80)	(2.74)	(2.79)
Father's Education	10.17	10.03	9.97	9.88	9.87	9.76
	(3.38)	(3.36)	(3.41)	(3.42)	(3.39)	(3.41)
Family SES in 1957	17.52	16.96	17.01	16.75	16.75	16.40
	(11.65)	(11.45)	(11.08)	(11.10)	(11.03)	(11.03)
Birth Year	1939.66	1939.24	1939.31	1939.21	1939.34	1939.24
	(4.27)	(3.75)	(3.57)	(3.65)	(3.72)	(4.39)
Female	0.55	0.51	0.56	0.52	0.58	0.52
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
Birth Order	2.34	2.30	2.36	2.47	2.38	2.51
	(1.42)	(1.40)	(1.67)	(1.78)	(1.68)	(1.80)
Birth Weight (in grams)	3367.55	3363.75	3378.36	–	3374.32	–
	(631.85)	(635.38)	(630.02)	–	(636.72)	–
Neuroplasticity Genes	4.35	4.35	4.39	4.40	–	–
(Additive Score)	(1.06)	(1.06)	(1.04)	(1.03)	–	–
N	938	938	3799	6097	6452	15676

Notes: Columns (1) and (2) are comprised of our base sibling pair sample. Column (3) consists of all individuals (i.e., not pairs) that contain data for the SNPs used to measure neuroplasticity and birth weight. Column (4) consists of all individuals with data for neuroplasticity SNPs and column (5) consists of all individuals with data for birth weight. Column (6) gives sample statistics for the maximum available sample. SES is an index created from father's education, mother's education, father's occupation (Duncan SEI), and family income.

Table A2. Summary Statistics for Differing Samples of Siblings

	Siblings Pairs with Data for:			
	IQ	Birth Weight	DNA	BW + DNA
	(1)	(2)	(3)	(4)
IQ	101.35	103.25	104.56	104.19
	(15.37)	(14.85)	(15.02)	14.82
Birth Weight (in grams)		3394.96		3367.55
		(636.82)		(631.85)
Neuroplasticity Genes (Additive Score)			4.39	4.35
			(1.04)	(1.06)
Mother's Education	10.52	10.75	10.68	10.77
	(2.77)	(2.67)	(2.78)	(2.78)
Father's Education	9.74	9.98	9.97	10.17
	(3.35)	(3.37)	(3.35)	(3.38)
Family SES in 1957	16.17	16.82	16.77	17.52
	(10.93)	(11.01)	(11.26)	(11.65)
Birth Year	1939.29	1939.69	1939.49	1939.66
	(4.84)	(4.63)	(4.52)	(4.27)
Female	0.52	0.56	0.52	0.55
	(0.52)	(0.50)	(0.50)	(0.50)
Birth Order	2.54	2.35	2.50	2.34
	(1.73)	(1.48)	(1.66)	(1.42)
N	13224	2360	2246	938

Notes: Column (1) restricts the sample to sibling pairs containing data on IQ as well as our base set of controls. Column (2) gives sample statistics for sibling pairs containing data on birth weight, while column (3) restricts the sample to sibling pairs with data for our neuroplasticity SNPs. Column (4) restricts the sample to sibling pairs with both birth weight and DNA data; this represents our base sibling sample.

Table A3. Summary Statistics by Neuroplasticity Score

No. of Neuroplasticity Variants:	0-2	3	4	5	6
	(1)	(2)	(3)	(4)	(5)
IQ	103.24	103.71	104.21	103.72	106.11
	(14.51)	(14.23)	(15.19)	(14.94)	(14.38)
Birth Weight (in grams)	3348.32	3271.74	3380.07	3388.61	3393.59
	(627.98)	(656.28)	(641.75)	(580.27)	(696.25)
Mother's Education	10.26	10.57	10.85	10.78	10.99
	(2.29)	(2.73)	(2.75)	(2.86)	(2.86)
Father's Education	10.48	10.25	10.04	10.22	10.21
	(3.20)	(3.33)	(3.30)	(3.45)	(3.55)
Family SES	19.54	18.94	17.60	16.68	17.10
	(10.80)	(12.65)	(11.75)	(10.92)	(12.21)
Birth Year	1939.09	1938.93	1940.12	1939.66	1939.46
	(3.28)	(4.26)	(4.60)	(4.25)	(3.63)
Female	0.63	0.59	0.54	0.54	0.56
	(0.49)	(0.49)	(0.50)	(0.50)	(0.50)
Birth Order	2.15	2.16	2.50	2.32	2.22
	(1.11)	(1.27)	(1.64)	(1.35)	(1.19)
N	46	135	324	304	129

Table A4. Summary Statistics: Siblings with Discordant Genotypes

	Siblings Pair Sample:		
	Base	Concordant	Discordant
	(1)	(2)	(3)
IQ	104.19	104.03	104.42
	(14.82)	(15.04)	(14.52)
Birth Weight	3367.55	3386.28	3340.76
(in grams)	631.85	(623.80)	(643.05)
Neuroplasticity Genes	4.35	4.35	4.36
(Count)	(1.06)	(1.10)	(1.00)
N	938	386	552

Notes: This table separates the base sibling sample by differences in sibling genotypes. Column (1) gives our base sample; column (2) considers only siblings that are concordant in regards to our base neuroplasticity measure (i.e., the additive risk score of BDNF, COMT, and APOE); and column (3) gives sample statistics for siblings who differ in genotype.

Table A5. Base Estimation: Siblings with Discordant Genotypes

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Neuroplasticity Genes	0.7779	0.5907	-0.1729
	(0.5333)	(0.5364)	(0.8028)
Standardized Birth Weight	8.4402***	7.6851***	6.9706**
	(2.2905)	(2.3009)	(3.1306)
G×E	-1.4125***	-1.2430***	-1.0512
	(0.4628)	(0.4675)	(0.6579)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	552	552	552
R Sqr.	0.1755	0.1737	0.7099

Notes: This table performs our base estimation (Table 4) with sibling pairs that are discordant in regards to neuroplasticity genes.

Table A6. Summary Statistics: Siblings with Discordant Environment (Birth Weight)

	Siblings Pair Sample:		
	Base	Concordant	Discordant
	(1)	(2)	(3)
IQ	104.19	104.16	104.19
	(14.82)	(15.34)	(14.81)
Birth Weight	3367.55	3626.16	3354.82
(in grams)	631.85	(628.58)	(629.62)
Neuroplasticity Genes	4.35	4.47	4.34
(Count)	(1.06)	(0.0.85)	(1.07)
N	938	44	894

Notes: This table separates the base sibling sample by differences in sibling birth weight. Column (1) gives our base sample; column (2) considers only siblings that have identical birth weights; and column (3) gives sample statistics for siblings who differ in birth weight.

Table A7. Base Estimation: Siblings with Discordant Environment (Birth Weight)

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Neuroplasticity Genes	0.4450	0.3558	-0.1348
	(0.4456)	(0.4420)	(0.8174)
Standardized Birth Weight	5.3788***	5.6883***	6.5211**
	(1.8519)	(1.7954)	(2.5254)
G×E	-0.9212**	-0.9989**	-1.1431**
	(0.3970)	(0.3919)	(0.5307)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	894	894	894
R Sqr.	0.1391	0.1363	0.6986

Notes: This table performs our base estimation (Table 4) with sibling pairs that are discordant in regards to birth weight.

Table A8. Summary Statistics: Siblings with Discordant Gene-Environment Interaction

	Siblings Pair Sample:		
	Base	Concordant	Discordant
	(1)	(2)	(3)
IQ	104.19	110.08	104.04
	(14.82)	(14.48)	(14.81)
Birth Weight	3367.55	3385.40	3367.08
(in grams)	631.85	(570.98)	(633.65)
Neuroplasticity Genes	4.35	4.71	4.34
(Count)	(1.06)	(0.81)	(1.06)
N	938	24	914

Notes: This table separates the base sibling sample by differences in the interaction between our neuroplasticity score and birth weight. Column (1) gives our base sample; column (2) considers only siblings that have an identical interaction; and column (3) gives sample statistics for siblings who differ.

Table A9. Base Estimation: Siblings with Discordant Gene-Environment Interaction

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Neuroplasticity Genes	0.4477	0.3700	-0.0427
	(0.4407)	(0.4370)	(0.7939)
Standardized Birth Weight	5.0416***	5.2843***	6.2350**
	(1.8095)	(1.7511)	(2.4978)
G×E	-0.8254**	-0.8925**	-1.0829**
	(0.3873)	(0.3811)	(0.5263)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	914	914	914
R Sqr.	0.1386	0.1350	0.6999

Notes: This table performs our base estimation (Table 4) with sibling pairs that are discordant in regards to the interaction between birth weight and the base measure (i.e., interaction) of neuroplasticity genes.

Appendix B: Effects of Individual SNPs

Table B1. BDNF

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Panel A: BDNF = Categorical			
BDNF	0.0045	0.0708	1.4912
	(0.8455)	(0.8282)	(1.2867)
Standardized Birth Weight	2.0633	1.3300	2.7466
	(1.6560)	(1.5164)	(2.0975)
G × E	-0.3912	0.0604	-0.8219
	(0.9269)	(0.8776)	(1.1457)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1314	0.1274	0.6964
Panel B: BDNF = Indicator for at Least One Plastic Allele			
BDNF	-2.7718	-3.2794*	-1.2093
	(2.1192)	(1.9548)	(2.4292)
Standardized Birth Weight	4.9296*	4.9697*	1.3985
	(2.8294)	(2.5840)	(3.5031)
G × E	-3.5965	-3.6098	0.0130
	(2.8408)	(2.6162)	(3.5019)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1336	0.1300	0.6952
Panel C: BDNF = Indicator for Two Plastic Alleles			
BDNF	0.4237	0.5419	2.3319
	(1.0152)	(1.0186)	(1.5569)
Standardized Birth Weight	1.4989*	1.1763	2.3262*
	(0.8716)	(0.8106)	(1.1860)
G × E	-0.1269	0.3736	-1.3270
	(1.0035)	(0.9824)	(1.3111)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1314	0.1279	0.6974

Notes: (i) This table performs our base estimation (Table 4) while restricting our neuroplasticity measure solely to the SNP of BDNF. Panel A uses the count of plastic alleles (i.e., 0, 1, 2); Panel B uses an indicator for individuals who have at least one plastic variant; and Panel C uses an indicator for individuals containing two plastic variants. (ii) For our base sibling sample, 4.69% (N=44) do not carry a plastic variant of BDNF, 29.64% (N=278) carry one plastic variant, and 65.67% (N=616) carry two

Table B2. COMT

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Panel A: COMT = Categorical			
COMT	1.0489	0.9765	-1.6149
	(0.6678)	(0.6726)	(1.1147)
Standardized Birth Weight	2.6407***	2.9524***	3.3930***
	(0.8509)	(0.8691)	(1.2145)
G × E	-1.1894*	-1.5307**	-1.8397**
	(0.6351)	(0.6458)	(0.8589)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1369	0.1355	0.6997
Panel B: COMT = Indicator for at Least One Plastic Allele			
COMT	1.4789	1.5582	-3.4361*
	(1.1055)	(1.0928)	(1.7655)
Standardized Birth Weight	2.5994***	3.1344***	3.4404**
	(1.0046)	(0.9907)	(1.4300)
G × E	-1.5578	-2.3100**	-2.5871
	(1.1247)	(1.1157)	(1.5713)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1350	0.1344	0.7000
Panel C: COMT = Indicator for Two Plastic Alleles			
COMT	1.3402	1.1163	-0.3986
	(1.0634)	(1.0933)	(1.6125)
Standardized Birth Weight	1.8700***	1.8991***	2.1001***
	(0.5700)	(0.6173)	(0.7648)
G × E	-1.6594*	-1.8289*	-2.3244*
	(0.9524)	(1.0270)	(1.2367)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1351	0.1316	0.6972

Notes: (i) This table performs our base estimation (Table 4) while restricting our neuroplasticity measure solely to the SNP of COMT. Panel A uses the count of plastic alleles (i.e., 0, 1, 2); Panel B uses an indicator for individuals who have at least one plastic variant; and Panel C uses an indicator for individuals containing two plastic variants. (ii) For our base sibling sample, 24.2% (N=227) do not carry a plastic variant of COMT, 49.36% (N=463) carry one plastic variant, and 26.44% (N=248) carry two plastic variants.

Table B3. APOE

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Panel A: APOE = Categorical (Number of Non-E4 Variants)			
APOE	-0.1234	-0.4261	0.4813
	(0.9378)	(0.9589)	(1.6044)
Standardized Birth Weight	3.5779**	3.5566**	2.0827
	(1.4039)	(1.4047)	(1.6848)
G × E	-1.2753	-1.2529	-0.4037
	(0.7990)	(0.8110)	(0.9818)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1333	0.1297	0.6953
Panel B: APOE = Indicator for at Least One Plastic Allele (Non-E4)			
APOE	1.1955	0.3517	-6.2198
	(2.7048)	(2.7389)	(5.6859)
Standardized Birth Weight	4.4718**	4.4955**	6.8658***
	(2.0865)	(1.9976)	(1.7918)
G × E	-3.1892	-3.2164	-5.7101***
	(2.1399)	(2.0655)	(1.8993)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1333	0.1296	0.6977
Panel C: APOE = Indicator for Two Plastic Alleles (Non-E4)			
APOE	-0.3011	-0.5955	0.9848
	(1.1024)	(1.1229)	(1.6938)
Standardized Birth Weight	2.3399***	2.3142***	1.2145
	(0.8616)	(0.8678)	(1.0849)
G × E	-1.2527	-1.1944	0.2811
	(1.0125)	(1.0383)	(1.2910)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1326	0.1290	0.6954

Notes: (i) This table performs our base estimation (Table 4) while restricting our neuroplasticity measure solely to the SNP of APOE. For APOE, plastic variants are defined as not having the E4 variant. Panel A uses the count of plastic alleles (i.e., 0, 1, 2); Panel B uses an indicator for individuals who have at least one plastic variant; and Panel C uses an indicator for individuals containing two plastic variants. (ii) For our base sibling sample, 2.35% (N = 22) carry 2 copies of the E4 variant, 23.45% (N=220) carry one copy of the E4 variant, and 74.2% (N=696) carry no copies of the E4 variant.

Table B4. Alternative Interactions between BDNF, COMT, and APOE

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Panel A: BDNF + COMT			
BDNF × COMT	0.5647	0.5477	-0.2785
	(0.5068)	(0.5018)	(0.9250)
Standardized Birth Weight	3.4547**	3.5336***	5.0920**
	(1.3849)	(1.3462)	(2.0721)
G × E	-0.7729*	-0.8169*	-1.3350**
	(0.4546)	(0.4435)	(0.6701)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1351	0.1318	0.6985
Panel B: BDNF + APOE			
BDNF × APOE	-0.0980	-0.1845	1.1247
	(0.5973)	(0.6020)	(1.0024)
Standardized Birth Weight	4.3016**	3.5880*	3.4296
	(2.0475)	(2.0295)	(2.5690)
G × E	-0.8654	-0.6508	-0.6052
	(0.5909)	(0.6058)	(0.7429)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1331	0.1285	0.6964
Panel C: COMT + APOE			
COMT × APOE	0.7471	0.6330	-0.8228
	(0.5472)	(0.5456)	(0.8870)
Standardized Birth Weight	4.6887***	5.3457***	4.7813**
	(1.4842)	(1.4782)	(1.8611)
G × E	-1.2046**	-1.4562***	-1.2313**
	(0.5042)	(0.5024)	(0.6178)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1382	0.1366	0.6981

Notes: This table performs our base estimation (Table 4) with differing interactions between our 3 neuroplasticity genes. Panel A considers the additive score between BDNF and COMT, Panel B considers the additive score between BDNF and APOE, and Panel C uses the additive score between COMT and APOE.

Appendix C: Alternate Measures of Birth Weight

Table C1. Alternative Measures of Birth Weight

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Panel A: Indicator for Not being Born with Low Birth Weight (i.e., Birth Weight $> 2,500$*)*			
Neuroplasticity Genes	-0.2764	0.1070	-1.0907
	(1.2858)	(1.2179)	(1.6810)
Not Low Birth Weight	1.9095	4.1390	1.0672
	(5.9248)	(5.5712)	(6.7756)
G × E	0.7767	0.3026	0.9708
	(1.3386)	(1.2925)	(1.5810)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1331	0.1301	0.6964
Panel B: Linear Birth Weight			
Neuroplasticity Genes	5.1328**	5.3934***	5.5448*
	(2.0724)	(2.0079)	(2.8327)
Birth Weight (in grams)	0.0082***	0.0086***	0.0095**
	(0.0028)	(0.0027)	(0.0039)
G × E	-0.0014**	-0.0015**	-0.0017**
	(0.0006)	(0.0006)	(0.0008)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1366	0.1334	0.6978
Panel C: Log of Birth Weight			
Neuroplasticity Genes	26.6121	29.5111*	26.8097
	(16.3833)	(15.7542)	(23.0081)
ln Birth Weight	20.6155**	21.8059**	21.3781
	(9.0908)	(8.5985)	(13.0570)
G × E	-3.2288	-3.5955*	-3.3183
	(2.0205)	(1.9468)	(2.8401)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1351	0.1315	0.6965

Notes: This table performs our base estimation (Table 4) with alternative measures of birth weight. Our base measure of birth weight is the standard score of birth weight given in grams. Panel A defines birth weight by an indicator for individuals not born of low birth weight (i.e., 2500 grams). Roughly 8% of our base sibling sample is born under 2,500 grams. Panel B uses unadjusted measure of birth weight given in grams. And Panel C uses the natural log of birth weight.

Table C2. Baseline Interaction Controlling for Non-Linear Effects of Birth Weight: Quadratic

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Neuroplasticity Genes	0.4423	0.3691	-0.0627
	(0.4344)	(0.4322)	(0.7926)
Standardized Birth Weight	5.0424***	5.3704***	5.7055**
	(1.9317)	(1.8856)	(2.6344)
Standardized Birth Weight Sqr.	-0.1074	-0.0690	-0.1761
	(0.1951)	(0.2256)	(0.2472)
G × E	-0.8377**	-0.9231**	-0.9680*
	(0.4208)	(0.4158)	(0.5570)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1368	0.1335	0.6981

Notes: (i) Neuroplasticity Genes is the additive genetic risk score of plastic alleles for *APOE*, *BDNF*, and *COMT*. G × E represents the interaction between our measure of neuroplasticity and standardized birth weight. (ii) Demographic and family controls include race, sex, birth year (age), birth order, mother's education, father's education, and a score for family SES in 1957. (vi) Standard errors are clustered at the family level with *, **, and *** representing significance at the 10, 5, and 1% significance level, respectively.

Table C3. Baseline Interaction Controlling for Non-Linear Effects of Birth Weight: Cubic

Dependent Variable: High School IQ			
	(1)	(2)	(3)
Neuroplasticity Genes	0.4326	0.3630	-0.0384
	(0.4355)	(0.4340)	(0.7944)
Standardized Birth Weight	5.0404***	5.3534***	5.7081**
	(1.9320)	(1.8891)	(2.6276)
Standardized Birth Weight Sqr.	-0.1390	-0.0844	-0.1225
	(0.2398)	(0.2563)	(0.3034)
Standardized Birth Weight Cubed	0.0205	0.0143	-0.0336
	(0.0489)	(0.0559)	(0.0647)
G × E	-0.8640**	-0.9377**	-0.9193
	(0.4285)	(0.4195)	(0.5709)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	938	938	938
R Sqr.	0.1369	0.1335	0.6982

Notes: (i) Neuroplasticity Genes is the additive genetic risk score of plastic alleles for *APOE*, *BDNF*, and *COMT*. G × E represents the interaction between our measure of neuroplasticity and standardized birth weight. (ii) Demographic and family controls include race, sex, birth year (age), birth order, mother's education, father's education, and a score for family SES in 1957. (vi) Standard errors are clustered at the family level with *, **, and *** representing significance at the 10, 5, and 1% significance level, respectively.

Appendix D: Additional Tables for Labor Market Outcomes

Table D1. Effect of Interaction on Productivity: Using an Indicator for Neuroplasticity

Dependent Variable: ln Wage Rate in 1992			
	(1)	(2)	(3)
Panel A: Main Effects			
Neuroplasticity Genes	-0.2087**	-0.2181**	-0.2847
	(0.1000)	(0.1041)	(0.2507)
Standardized Birth Weight	0.0505	0.0532	0.1041
	(0.0476)	(0.0479)	(0.0795)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	820	820	820
R Sqr.	0.0954	0.0979	0.6025
Panel B: Gene-Environment Interaction			
Neuroplasticity Genes	-0.2084**	-0.2172**	-0.2728
	(0.1001)	(0.1044)	(0.2459)
Standardized Birth Weight	0.1207*	0.1182*	0.3877***
	(0.0640)	(0.0628)	(0.1308)
G × E	-0.0979	-0.0916	-0.3918***
	(0.0884)	(0.0879)	(0.1359)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	820	820	820
R Sqr.	0.0962	0.0986	0.6080

Notes: This table recreates the estimates of Table 6 using alternate measure for neuroplasticity genes. Our base measure is the interaction between BDNF, COMT, and APOE, while the estimates in Table D1 use an indicator for having at least one plastic variant for each considered gene.

Table D2. Effect of Interaction on Productivity: Using the Multiplicative Interaction of Plastic Alleles

Dependent Variable: ln Wage Rate in 1992			
	(1)	(2)	(3)
Panel A: Main Effects			
Neuroplasticity Genes	-0.0141	-0.0147	-0.0187
	(0.0164)	(0.0164)	(0.0311)
Standardized Birth Weight	0.0501	0.0526	0.1008
	(0.0473)	(0.0476)	(0.0786)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	820	820	820
R Sqr.	0.0919	0.0942	0.6009
Panel B: Gene-Environment Interaction			
Neuroplasticity Genes	-0.0130	-0.0136	-0.0104
	(0.0165)	(0.0164)	(0.0311)
Standardized Birth Weight	0.1224**	0.1212**	0.3155***
	(0.0526)	(0.0525)	(0.1036)
G × E	-0.0241*	-0.0231*	-0.0664***
	(0.0129)	(0.0127)	(0.0209)
Controls			
Demographic and Family SES	Y	Y	Y
Sibling Fixed Effects	N	N	Y
Estimation			
Weighting by Prob. of Being in Sib Sample	N	Y	N
N	820	820	820
R Sqr.	0.0936	0.0957	0.6069

Notes: This table recreates the estimates of Table 6 using alternate measure for neuroplasticity genes. Our base measure is the additive risk score between BDNF, COMT, and APOE, while the estimates in Table D2 use the multiplicative interaction between BDNF, COMT, and APOE.

Table D3. GE Interaction on Alternative Labor Market Outcomes

Dependent Variable:	Ind. for Full Time Worker	Hours Worked per Week	ln Family Income	ln Family Income	Std. Net Worth
Wave	1992/3	1992/3	1992/3	2003/4	2003/4
	(1)	(2)	(3)	(4)	(5)
Neuroplasticity Genes	-0.0128	0.3606	0.2911*	0.0282	0.0443
	(0.0231)	(0.9042)	(0.1725)	(0.0428)	(0.0416)
Std. Birth Weight	0.1286	0.4581	0.3038	0.2712*	0.2214**
	(0.0820)	(3.2218)	(0.6829)	(0.1632)	(0.1081)
G×E	-0.0310*	-0.3690	-0.0693	-0.0455	-0.0257
	(0.0175)	(0.6571)	(0.1422)	(0.0354)	(0.0212)
Controls					
Demographic and Family SES	Y	Y	Y	Y	Y
Sibling Fixed Effects	Y	Y	Y	Y	Y
N	878	878	894	1002	1002
R Sqr.	0.6009	0.6635	0.5203	0.6213	0.7691

Notes: This table recreates the estimates of Table 6 using additional labor market outcomes. All estimations include sibling fixed effects.

Appendix E: Placebo Tests

Table E1. Summary of t-statistics for All 3-way Genetic Combinations

	N	Mean	Std. Dev.	Min	Max
All 3-way combinations:					
t-statistic	109,736	-0.24	1.18	-4.49	5.12
Abs. t-stat.	109,736	0.96	0.73	0.00	5.12
Sample Size	109,736	881.45	146.81	428	1004
3-way combinations, excluding neuroplasticity SNPs:					
t-statistic	95,284	-0.28	1.17	-4.39	5.12
Abs. t-stat.	95,284	0.96	0.73	0.00	5.12
Sample Size	95,284	878.08	149.23	428	1004

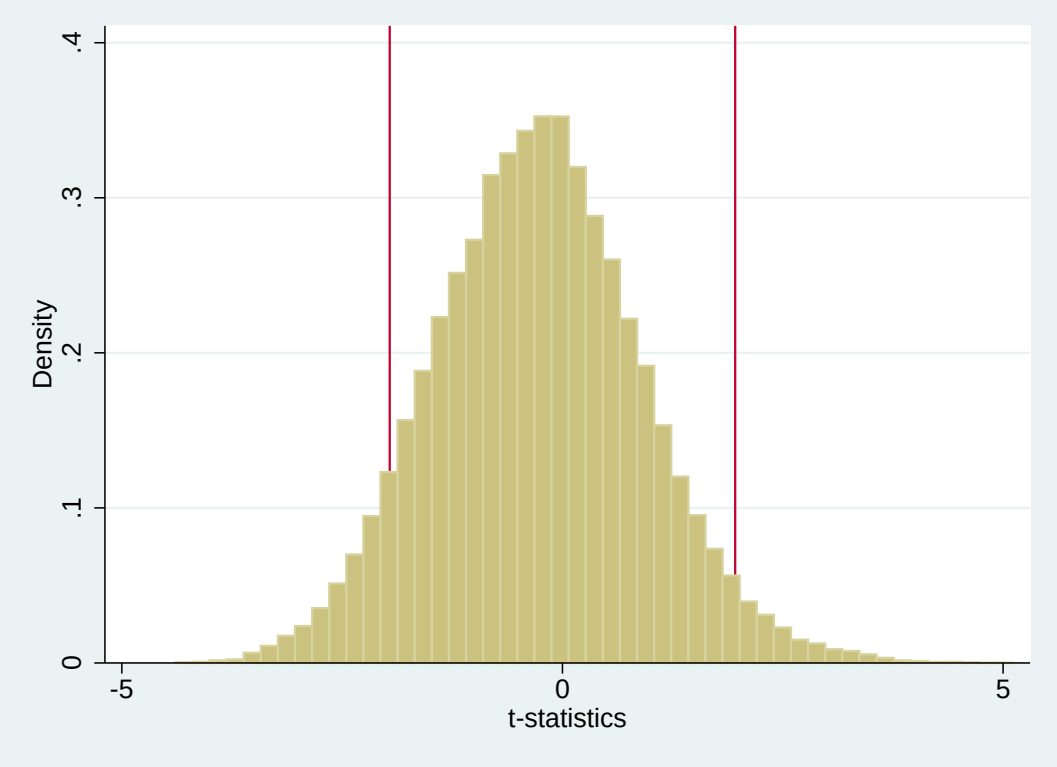

Figure E1. Significance of GxE for All 3-way SNP Combinations (excluding Neuroplasticity SNPs)

Notes: (i) This figure plots t-statistics for the coefficient of the interaction between birth weight and all possible 3-way genetic combinations (excluding neuroplasticity SNPs). After Bonferroni correction, no coefficient in the above figure remains statistically significant.

Appendix F: Heterogeneity of Birth Weight

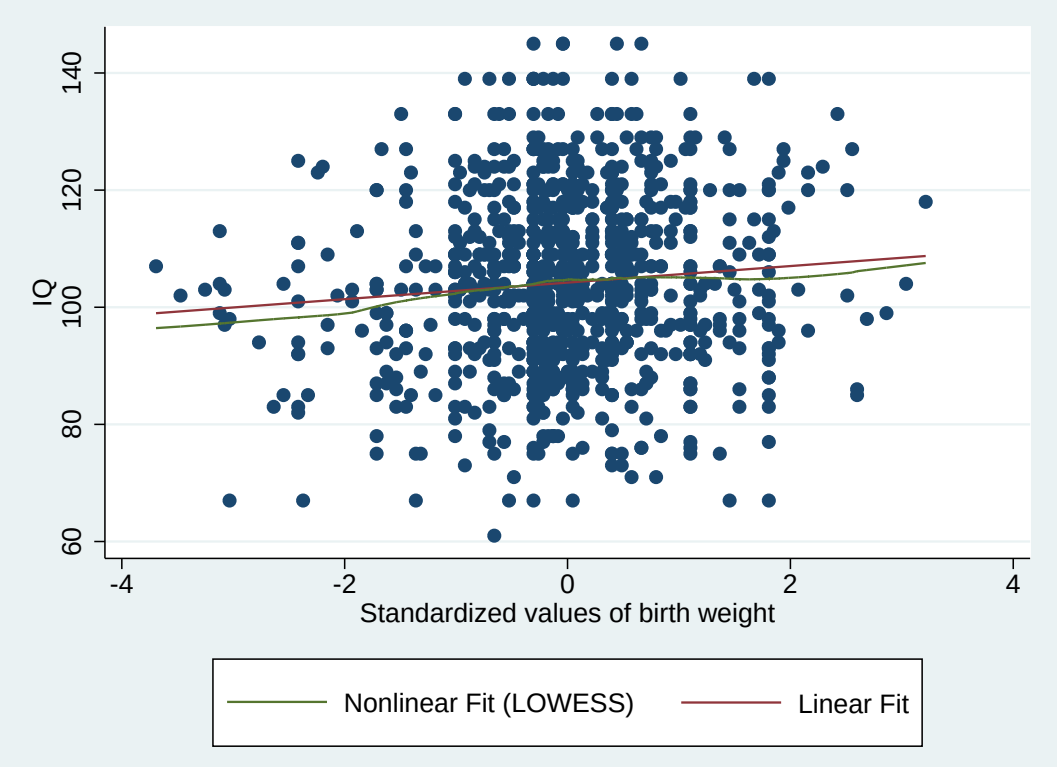

Figure F1. Linear vs. Nonlinear Fit of Birth Weight

Notes: This figure plots the linear association between birth weight and IQ as well as a non-linear, non-parametric association. Of note, the non-linear effect of birth weight is slightly lessened for low and high birth weight individuals. This finding supports our hypothesis of hetergoneity in birth weight.

Table F1. Finite Mixture Model

Dependent Variable: High School IQ		
	2-component (1)	3-component (2)
Component 1		
Std. Birth Weight	1.3961***	1.4319***
	(0.4697)	(0.4726)
Birth Order	-1.1412***	-1.0880**
	(0.4374)	(0.4427)
Birth Year	0.7766***	0.7651***
	(0.1243)	(0.1255)
Family SES	0.3460***	0.3422***
	(0.0490)	(0.0495)
Component 2		
Std. Birth Weight	0.8315***	0.8313***
	(0.0471)	(0.0479)
Birth Order	-1.6836***	-1.6835***
	(0.0282)	(0.0281)
Birth Year	0.8127***	0.8127***
	(0.0056)	(0.0056)
Family SES	-0.8660***	-0.8660***
	(0.0027)	(0.0027)
Component 3		
Std. Birth Weight		1.4582***
		(0.1405)
Birth Order		-8.4545***
		(0.1256)
Birth Year		0.7823***
		(0.0222)
Family SES		0.0212***
		(0.0034)
p-value, comp.1 = comp.2	0.23	–
p-value, comp.1 = comp.2 = comp.3	–	0.00
Obs.	938	938
BIC	7,654.51	7,685.46

Notes: This table presents estimates from a finite mixture model. Given the relatively smaller, bur roughly similar, BIC, the 2-component model is preferred. For convergence of the model, a simpler set of controls is used. This set includes birth year, birth order, and family SES. Additionally, no weights are used in estimation.

Table F2. Neuroplasticity's Effect on Responsive to Birth Weight

Dependent Variable: Indicator for being in "Responsive Sample"		
	2-component	3-component
	(1)	(2)
Neuroplasticity Genes	-0.0121**	-0.0039
	(0.0058)	(0.0069)
Obs.	938	938
R Sqr.	0.0119	0.0005

Notes: This table regresses the responsive group from FMM estimation in Table F1 on our measure of neuroplasticity. For the 2-component model, the size of the responsive group is 29 individuals, comprising roughly 3% of our sample. For the 3-component model, only 21 individuals, or 2.24% of our base sample, are found within the responsive sample. The negative (and significant in the 2-component model) coefficient on our measure of neuroplasticity implies more plastic individuals have smaller effects from birth weight on IQ, supporting our primary hypothesis.

Table F3. Effect of Birth Weight on IQ by Early Life Environments, OLS

Dependent Variable: High School IQ								
Sample Division:	Mother's Edu		Father's Edu		Family SES		Urban/Rural	
	< 12 yrs.	≥ 12 yrs.	< 12 yrs.	≥ 12 yrs.	$<$ Median	$\geq$ Median	Rural	Urban
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Std. Birth Weight	2.0727***	0.9113	0.6303	2.5044***	1.1651	1.4363**	1.1013**	2.2896*
	(0.6834)	(0.6424)	(0.6054)	(0.6755)	(0.7589)	(0.6725)	(0.5135)	(1.2775)
Baseline Controls	Y	Y	Y	Y	Y	Y	Y	Y
N	434	504	540	398	436	502	732	206
R Sqr.	0.0968	0.1221	0.1086	0.1250	0.0858	0.0872	0.1370	0.1205

Notes: This table regresses high school IQ on birth weight and the set of baseline controls. The set of baseline controls excludes the variable on which the sample is divided. Although not reported above, we have also dichotomized the sample by sex. For females, the coefficient of standardized birth weight is 1.64 (0.65); while for males, the coefficient is 1.12 (0.66).

Table F4. Effect of Birth Weight on IQ by Early Life Environments, FE

Dependent Variable: High School IQ								
Sample Division:	Mother's Edu		Father's Edu		Family SES		Urban/Rural	
	< 12 yrs.	≥ 12 yrs.	< 12 yrs.	≥ 12 yrs.	$<$ Median	$\geq$ Median	Rural	Urban
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Std. Birth Weight	1.8399**	0.9657	1.4577	1.1112	1.6927*	1.1357	1.3252*	2.3008
	(0.8950)	(0.9634)	(0.9425)	(0.8971)	(0.9651)	(0.8988)	(0.7240)	(1.6593)
Baseline Controls	Y	Y	Y	Y	Y	Y	Y	Y
Sibling Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
N	434	504	540	398	436	502	732	206
R Sqr.	0.6952	0.6750	0.6786	0.7060	0.7081	0.6619	0.6970	0.7113

Notes: This table regresses high school IQ on birth weight, the set of baseline controls, and family indicators. With fixed effects estimation, our preferred specification, the coefficient of birth weight is statistically indistinguishable within each bifurcation.