

Online Appendix

Maternal Age, Early Childhood Temperament, and Youth Outcomes

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Table S1: Family Fixed Effects Models with Single Observation per Respondent

	Achievement score	Educational attainment	Psychological distress
Insecure temperament	0.005** (0.002)	0.004** (0.002)	0.030* (0.013)
Maternal age at birth	-0.004† (0.002)	-0.004* (0.002)	0.015 (0.010)
Insecure temperament × maternal age	0.036† (0.020)	0.003** (0.001)	-0.001* (0.000)
Age	-0.219 (0.376)	0.309*** (0.030)	0.010 (0.009)
Male	-1.167 (0.743)	-0.431*** (0.049)	-0.131*** (0.020)
Race/Ethnicity (<i>ref.</i> White):			
Black	-0.528 (5.250)	0.189 (0.257)	-0.027 (0.100)
Hispanic	-9.135* (3.903)	-0.011 (0.192)	0.114 (0.068)
Native American	-4.236 (5.010)	0.191 (0.268)	0.089 (0.137)
Asian	-7.066† (4.083)	0.412 (0.407)	-0.058 (0.120)
Other	-2.809 (3.465)	0.212 (0.177)	0.040 (0.073)
Firstborn	2.152* (0.896)	0.051 (0.056)	0.035 (0.023)
Residence (<i>ref.</i> rural):			
Urban	1.133 (1.603)	-0.017 (0.101)	0.016 (0.040)
Unknown	2.666 (3.561)	-0.064 (0.124)	0.071 (0.072)
Age when temperament assessed	0.065 (0.043)	0.001 (0.003)	-0.001 (0.001)
Constant	74.783*** (12.343)	7.457*** (0.887)	0.177 (0.305)
N of observations	6,423	6,851	7,285

Note: Values in parentheses are robust standard errors. The NLSY79-CYA longitudinal weights were applied in estimating the models.

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Table S2: Family Fixed Effects Models Predicting Math, Reading Recognition, and Reading Comprehension Test Scores

	Math	Reading recognition	Reading comprehension
Insecure temperament	-1.168*** (0.349)	-0.861* (0.387)	-0.958** (0.329)
Maternal age at birth	-0.287 (0.261)	-0.165 (0.279)	-0.473† (0.246)
Insecure temperament × maternal age	0.030* (0.013)	0.024† (0.014)	0.027* (0.012)
Age	-0.040 (0.093)	-0.365*** (0.081)	-2.430*** (0.087)
Male	3.257*** (0.536)	-3.666*** (0.584)	-1.820*** (0.528)
Race/Ethnicity (<i>ref.</i> White):			
Black	-3.244 (3.894)	-2.080 (3.744)	-0.900 (4.001)
Hispanic	-8.897*** (2.333)	-6.154* (2.614)	-5.479* (2.452)
Native American	-7.029† (3.683)	3.641 (3.346)	-3.181 (2.870)
Asian	-4.092 (3.400)	-3.548 (3.168)	0.580 (2.608)
Other	-3.377 (2.268)	-3.034 (2.293)	-3.584 (2.465)
Firstborn	1.081† (0.604)	3.902*** (0.669)	4.540*** (0.619)
Residence (<i>ref.</i> rural):			
Urban	-0.768 (0.661)	-0.446 (0.633)	0.219 (0.683)
Unknown	0.647 (1.262)	0.942 (1.102)	0.810 (1.081)
Age when temperament assessed	0.053† (0.032)	0.066† (0.034)	-0.009 (0.030)
Constant	69.640*** (7.789)	71.641*** (8.391)	98.008*** (7.296)
N of observations	23,423	23,408	22,817

Note: Values in parentheses are robust standard errors. The NLSY79-CYA longitudinal weights were applied in estimating the models. All test scores are in percentile. The samples for the three models vary slightly because each outcome has different missing values.

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Table S3: Family Fixed Effects Models Including Period and Birth Order Indicators

	Achievement score		Educational attainment		Psychological distress	
	(1)	(2)	(3)	(4)	(5)	(6)
Insecure temperament	-0.871** (0.316)	-0.857** (0.294)	-0.111*** (0.023)	-0.123*** (0.022)	0.020** (0.007)	0.021** (0.007)
Maternal age at birth	-0.082 (0.245)	-0.213 (0.236)	-0.046** (0.018)	-0.067*** (0.018)	0.006 (0.006)	0.012* (0.006)
Insecure temperament × maternal age	0.023* (0.011)	0.023* (0.011)	0.003*** (0.001)	0.004*** (0.001)	-0.001* (0.000)	-0.001* (0.000)
Age	-0.910*** (0.072)	-0.960*** (0.067)	0.435*** (0.006)	0.421*** (0.008)	0.007** (0.002)	0.013*** (0.003)
Male	-0.801† (0.479)	0.064 (0.451)	-0.415*** (0.035)	-0.375*** (0.034)	-0.118*** (0.010)	-0.121*** (0.011)
Race/Ethnicity (<i>ref.</i> White):						
Black	-2.282 (3.353)	-3.203 (3.556)	-0.103 (0.204)	-0.175 (0.210)	0.023 (0.043)	0.033 (0.044)
Hispanic	-6.925** (2.213)	-5.083* (2.071)	0.024 (0.136)	0.098 (0.137)	0.058 (0.040)	0.054 (0.040)
Native American	-1.662 (2.382)	-0.735 (2.238)	0.210 (0.208)	0.233 (0.206)	-0.032 (0.061)	-0.031 (0.060)
Asian	-2.052 (2.240)	-1.920 (2.345)	0.045 (0.240)	0.009 (0.229)	-0.078 (0.092)	-0.071 (0.092)
Other	-3.262 (2.078)	-2.270 (1.971)	0.119 (0.123)	0.147 (0.119)	0.009 (0.042)	0.010 (0.042)
Birth order (<i>ref.</i> 1st):						
2 nd	-3.421*** (0.565)	-2.818*** (0.539)	-0.119** (0.038)	-0.096* (0.038)	-0.001 (0.013)	-0.002 (0.013)
3 rd and later	-5.133*** (1.012)	-4.315*** (0.966)	-0.180* (0.070)	-0.164* (0.070)	0.014 (0.023)	0.013 (0.023)
Residence (<i>ref.</i> rural):						
Urban	-0.454 (0.529)	-0.429 (0.506)	0.090* (0.041)	0.093* (0.041)	0.012 (0.013)	0.011 (0.013)
Unknown	0.769 (0.983)	-0.664 (1.128)	0.213*** (0.055)	0.098† (0.056)	0.015 (0.017)	-0.012 (0.019)
Age when temperament assessed	0.039 (0.028)	0.016 (0.026)	0.001 (0.003)	-0.000 (0.002)	-0.001 (0.001)	-0.001 (0.001)
<i>Potential mediators:</i>						
Education					-0.018*** (0.003)	-0.019*** (0.003)
Family structure (<i>ref.</i> intact family):						
Single-mother household		-0.708 (0.548)		0.340*** (0.043)		0.035** (0.013)
Single-father household		3.483 (2.142)		0.486*** (0.073)		0.026 (0.026)
Adoptive parents/other relatives		2.891 (2.243)		0.410*** (0.078)		0.052† (0.029)
Independent residence		-5.319 (13.265)		0.244*** (0.045)		-0.003 (0.015)
Other		0.442 (1.342)		0.404*** (0.045)		0.025† (0.014)
Number of children at home		0.474 (0.390)		-0.024 (0.022)		-0.004 (0.006)
Mother's education		-0.076 (0.381)		0.042 (0.031)		0.013 (0.009)

Mother's work status (<i>ref.</i> no job):						
< 30 weekly hours		-0.150		-0.042		-0.049**
		(0.493)		(0.053)		(0.016)
≥ 30 weekly hours		-1.383**		0.084*		-0.019
		(0.444)		(0.038)		(0.013)
Log family income		0.064		-0.002		0.002
		(0.105)		(0.008)		(0.003)
Missing family income		8.892		0.034		-0.012
		(6.763)		(0.074)		(0.022)
Mother-child relation (<i>ref.</i> poor):						
Fair		1.062		-0.054		-0.056
		(2.213)		(0.219)		(0.074)
Good		0.476		0.140		-0.076
		(2.116)		(0.214)		(0.070)
Excellent		1.082		0.311		-0.084
		(2.127)		(0.216)		(0.070)
Other		3.772		0.286		0.005
		(2.397)		(0.226)		(0.076)
Mother's educational aspiration for child (<i>ref.</i> high school or less):						
Some college		5.720***		0.259***		-0.008
		(0.724)		(0.062)		(0.021)
College		11.929***		0.548***		-0.019
		(0.788)		(0.063)		(0.021)
Above college		16.928***		0.739***		-0.035
		(0.876)		(0.075)		(0.025)
Other		7.638***		0.009		-0.122*
		(1.913)		(0.255)		(0.050)
Time period (<i>ref.</i> 1986-2000):						
2001-2009		1.250*		-0.265***		-0.004
		(0.492)		(0.049)		(0.018)
2010-2018		2.289*		-0.130†		-0.079**
		(0.994)		(0.067)		(0.027)
Constant	76.711***	69.844***	5.313***	4.972***	0.526***	0.199
	(7.000)	(8.778)	(0.503)	(0.695)	(0.156)	(0.219)
N of observations	23,524	23,524	23,644	23,644	28,548	28,548

Note: Values in parentheses are robust standard errors. The NLSY79-CYA longitudinal weights were applied in estimating the models.

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Table S4: Overall, between-family, and within-family standard deviations for key variables

Variables	Mean	SD	Between-family SD	Within-family SD
Insecure temperament	18.25	4.45	3.78	2.64
Maternal age at birth	26.32	5.36	4.87	3.22
Achievement score (in percentile)	54.08	24.70	20.63	14.30
Educational attainment (in years)	12.23	1.92	1.34	1.44
Psychological distress	.62	0.53	0.33	0.44

Note: The statistics for insecure temperament and maternal age at birth are based on the full sample (N=55,060), whereas achievement score, educational attainment, and psychological distress are based on the respective sample for each outcome. The statistics here are unweighted, which is why the mean values are slightly different from those presented in Table A1.

Table S5: Unweighted Family Fixed Effects Models Predicting Youth Outcomes

	Achievement score	Educational attainment	Psychological distress
Insecure temperament	-0.675* (0.270)	-0.082*** (0.021)	0.019** (0.006)
Maternal age at birth	0.005 (0.206)	-0.024 (0.016)	0.005 (0.004)
Insecure temperament × maternal age	0.019† (0.010)	0.002** (0.001)	-0.001* (0.000)
Age	-1.062*** (0.044)	0.384*** (0.005)	0.003*** (0.001)
Male	-1.214** (0.427)	-0.423*** (0.031)	-0.103*** (0.009)
Race/Ethnicity (<i>ref.</i> White):			
Black	-1.093 (3.238)	-0.094 (0.221)	0.024 (0.050)
Hispanic	-5.753*** (1.692)	-0.023 (0.128)	0.052 (0.037)
Native American	-1.937 (2.746)	0.132 (0.222)	-0.041 (0.060)
Asian	-4.790* (2.397)	0.053 (0.190)	0.042 (0.079)
Other	-2.681 (1.716)	0.071 (0.126)	-0.019 (0.037)
Firstborn	3.896*** (0.501)	0.097** (0.035)	-0.007 (0.011)
Residence (<i>ref.</i> rural):			
Urban	-0.262 (0.436)	0.097** (0.036)	0.012 (0.011)
Unknown	0.308 (0.568)	0.189*** (0.047)	0.013 (0.015)
Age when temperament assessed	0.019 (0.024)	0.001 (0.002)	-0.001** (0.000)
Constant	67.517*** (6.098)	5.467*** (0.444)	0.592*** (0.130)
N of observations	23,524	23,644	28,548

Note: Values in parentheses are robust standard errors.

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$