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Supplementary Material

Figure S1

Sensitivity Analysis Re-computing the Birth Mother Analysis Displayed in Figure 2, With (a) Executive Function at 27 Months Dropped From the Model and (b) Executive Function at 27 Months and 54 Months Dropped From the Model

[Figure S1a.jpg and Figure S1b.jpg go here]

Note. Model fit: (a) $\chi^2(138) = 297.44$, $p < .001$, CFI = .90 RMSEA = .05, SRMR = .06; (b) $\chi^2(81) = 225.96$, $p < .001$, CFI = .91 RMSEA = .06, SRMR = .06. Standardized estimates reported. Faded arrows represent non-significant pathways. Dashed lines represent parameters that are fixed to 1. Adoption openness, child sex, and obstetric risk were included as covariates in the model. BM = birth mother; EF = executive function; WAIS Info = Wechsler Adult Intelligence Scale-III Information Subscale; WJ = Woodcock-Johnson III; LW = letter-word association; RF = reading fluency; WA = word-attack; MF = maths fluency; FG = forbidden gift; GG = guessing game; DT = dinky toys; G NG = Go NoGo.
$^{***}p < .001$. $^{**}p < .01$. $^{*}p < .05$. $^{\dagger}p < .1$. $^{ns}p \geq .1$.

Figure S2

Sensitivity Analysis Re-computing the Analysis Displayed in Figure 4, With Verbal Performance at 27 Months and 4.5 Years Dropped From the Model

[Figure S2.jpg goes here]

Note. Model fit: $\chi^2(110) = 292.22$, $p < .001$, CFI = .90, RMSEA = .06, SRMR = .07. Standardized estimates reported. Dashed lines represent parameters that are fixed to 1. Adoption openness, child sex, and obstetric risk were included as covariates in the model. BM = birth mother; WAIS Info = Wechsler Adult Intelligence Scale-III Information Subscale; WJ = Woodcock-Johnson III; LW = letter-word association; RF = reading fluency; WA = word-attack; MF = maths fluency; WPPSI = Wechsler Preschool and Primary Scale of Intelligence; ISF = Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Initial Sound Fluency; LNF = DIBELS Letter Naming Fluency; PSF = DIBELS Phoneme Segmentation Fluency; NWF = DIBELS Nonsense Word Fluency.
***$p < .001$. **$p < .01$. *$p < .05$. †$p < .1$. $^{ns}p \geq .1$.

Figure S3

Sensitivity Analysis Re-computing the Birth Father Analysis Displayed in Figure 5, With (a) Verbal Performance at 4.5 Years Dropped From the Model and (b) Verbal Performance at 4.5 and 6 Years Dropped From the Model

[Figure S3a.jpg and Figure S3b.jpg go here]

Note. Model fit: (a) $\chi^2(110) = 230.88$, $p < .001$, CFI = .92, RMSEA = .05, SRMR = .09; (b) $\chi^2(50) = 101.62$, $p < .001$, CFI = .95, RMSEA = .05, SRMR = .08. Standardized estimates reported. Dashed lines represent parameters that are fixed to 1. Adoption openness, child sex, and obstetric risk were included as covariates in the model. BF = birth father; WAIS Info = Wechsler Adult Intelligence Scale-III Information Subscale; WJ = Woodcock-Johnson III; LW = letter-word association; RF = reading fluency; WA = word-attack; MF = maths fluency; WPPSI = Wechsler Preschool and Primary Scale of Intelligence; ISF = Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Initial Sound Fluency; LNF = DIBELS Letter Naming Fluency; PSF = DIBELS Phoneme Segmentation Fluency; NWF = DIBELS Nonsense Word Fluency.
***$p < .001$. **$p < .01$. *$p < .05$. †$p < .1$. $^{ns}p \geq .1$.

Sensitivity Analysis: Multiple Imputation

A sensitivity analysis was conducted in which all models presented in the restuls section were re-run using multiple imputation (MI) instead of full information maximum likelihood (FIML). There were no noteable discrepancies between the main findings (using FIML) and the sensitivity analysis replication (using MI), apart from the following discrepancies. In the replication of the birth father and child EF model (Figure 2), using multiple imputation, the negative association between birth father intellectual performance and child EF at 6 years had a higher standardized beta coefficient and reached statistical significance ($\beta = -.19$, 95% CI [−.35, −.03], $p = .023$). In the replication of the birth mother and child verbal performance model (Figure 3), using multiple imputation, the estimate of genetic effects at 27 months was numerically similar to the beta coefficient in the main analysis (using FIML) but reached statistical significance ($\beta = .18$, 95% CI [.09, .27], $p < .001$). The replication of the birth father and verbal performance model (Figure 4) using MI would not converge.

Sensitivity Analysis: Birth Parent Age

As not all of the birth parent measures of intellectual performance were age-normed, we conducted a sensitivity analysis, examining whether birth parent age confounded associations between birth parents and children. We began by examining whether birth parent age (when they were administered the measures of intellectual performance) was associated with their intellectual performance. There was no association between birth mother age and intellectual performance ($\beta = -.004$, 95% CI [-.12, 0.11], $p = .95$). However, there was a negative association between birth father age and intellectual performance ($\beta = -.29$, 95% CI [−.47, −0.11], $p = .007$). Consequently, we re-computed our main birth father and EF and verbal performance models, to test whether birth father age confounded any of the associations between birth parent intellectual performance and child EF, verbal performance and academic test performance. Model fit declined from good, in the original models (RMSEA = .03–05, SRMR = .07–.08) to poor, when birth father age was added to the models (RMSEA = .08–.16, SRMR = .06–.16). There were no meaningful changes in associations between birth fathers and children, apart from that the effect estimate for the association between birth father intellectual performance and child verbal performance at 4.5 years reduced from β = .37 to β = .23.