Supplementary Material

The Avon Longitudinal Study of Parents and Children (ALSPAC)

Pregnant women resident in Avon, UK with expected dates of delivery 1st April 1991 to 31st December 1992 were invited to take part in the study. The initial number of pregnancies enrolled is 14,541 (for these at least one questionnaire has been returned or a "Children in Focus" clinic had been attended by 19/07/99). Of these initial pregnancies, there was a total of 14,676 foetuses, resulting in 14,062 live births and 13,988 children who were alive at 1 year of age. When the oldest children were approximately 7 years of age, an attempt was made to bolster the initial sample with eligible cases who had failed to join the study originally. These individuals were not included in our analyses as we focussed on outcomes prior to age 7 years. The sample is relatively homogeneous in regard to ethnicity (approximately 98% White): all participants are from the Bristol area in the United Kingdom.[1] Please note that the study website contains details of all the data that is available through a fully searchable data dictionary and variable search tool: http://www.bristol.ac.uk/alspac/researchers/our-data/. Further details of the study, measures and sample can be found elsewhere.[1-3]

Generating polygenic scores

In total 9912 ALSPAC children were genotyped using the Illumina HumanHap500-quad genotyping array. Individuals were excluded on the basis of gender mismatches; minimal or excessive heterozygosity, disproportionate levels of individual missingness (>3%), insufficient sample replication (IBD <0.8), non-European ancestry (assessed by multidimensional scaling analysis and compared with Hapmap II) and cryptic relatedness (IBD > 0.1). SNPs were excluded based on minor allele frequency (<1%), call rate (<95%) or evidence for violations of Hardy-Weinberg equilibrium ($P < 5E-7$). Imputation was conducted by the ALSPAC team using Impute V2.2.2 against the 1000 genomes reference panel (Phase 1, Version 3: all polymorphic SNPs excluding singletons), using all 2186 reference haplotypes (including non-Europeans). SNPs were subsequently filtered based on minor allele frequency (<1%) and imputation quality (INFO<0.8). Sensitivity analyses utilised the top 10 principal components (in-line with previously work[4]) generated using PLINK[5] --pca command (https://gist.github.com/explodecomputer/ab3552ee06b5c0df76139fc587373599). Following quality control and limiting individuals to one child per family, genetic data were available for N=7975.

Genome-wide association study (GWAS) were filtered to remove SNPs that were palindromic, insertions/deletions, non-autosomal, INFO score <0.8, missing in N>1 study and duplicates (https://github.com/ricanney).

PGS were generated for individuals in ALSPAC as the number of disorder risk alleles – defined using the GWAS summary statistics - weighted by effect size, using PRSice;[6] SNPs were clumped with an R^2 threshold of 0.1 and a distance threshold of 1000kb and excluding the extended major histocompatibility complex (MHC; chromosome 6: 26-33Mb) due to the high linkage disequilibrium (LD) within this region. PGS were derived based on a seven p-value thresholds (p<1, p<0.5, p<0.01, p<0.05, p<0.01, p<0.005, p<0.001), standardized using Z-score transformation and the first principal component extracted and analysed using the PGS–PCA approach.[7]

Inverse probability weighting

Inverse probability weighting (IPW) was used to assess the impact of missing genetic data and has been recommended over alternative methods such as multiple imputation in situations where whole blocks of data are missing for a large proportion of individuals.[8] Weights were derived from a logistic regression analysis of missing genetic data for a set of measures assessed in pregnancy with minimal (<12%) missingness: see Supplementary Table 11. Missing data on indicators used to derive weights were singly imputed as the modal or mean value. The Hosmer-Lemeshow test did not indicate poor fit (Hosmer-Lemeshow $\chi2(10)=12.83$, p=0.12). For the included sample (N=7498) weights ranged from 1.33 to 4.75. Analyses conducted using IPW to minimise potential bias caused by only a subsample of having genetic data revealed the same pattern of results as the primary analyses (see Supplementary Table 7).

Excluding participants who developed ADHD

Sensitivity analyses were conducting excluding individuals who met DSM-IV criteria for ADHD. ADHD was assessed at age 7 years using the Development and Wellbeing Assessment (DAWBA).[9] A paper version of the DAWBA structured assessment was completed by parents and teachers. Those at high risk were identified by an algorithm and reviewed by child psychiatrists. Coexisting pervasive developmental disorders and affective disorders were excluded to determine a final DSM-IV diagnosis of ADHD. These DAWBA data were available for N=5503 of our sample, of whom N=115 we assigned a diagnosis of ADHD (2%) and N=18 a diagnosis of pervasive developmental disorder: the remaining N=5370 who were assigned as not meeting ADHD diagnostic criteria were included in our sensitivity analyses.
Results (shown in Supplementary Table 9) showed a similar pattern of results to the primary analyses.

Supplementary Table 1. Multivariable associations between polygenic risk scores and toddler developmental outcomes

	N	ADHD PGS β	ADHD PGS (95% CI)	ADHD PGS p	Autism PGS β	Autism PGS (95% CI)	Autism PGS p	Schizophrenia PGS β	Schizophrenia PGS (95% CI)	Schizophrenia PGS p	Overall model R²
Motor											
Fine motor	6301	-0.01	(-0.04, 0.01)	0.28	0.01	(-0.01, 0.04)	0.27	-0.02	(-0.05, 0.01)	0.08	0.08%
Gross motor	6328	**0.04**	**(0.01, 0.06)**	**3x10^{-03}**	-0.02	(-0.05, 0.00)	0.09	-0.02	(-0.05, 0.00)	0.11	0.19%
Language											
Vocabulary	6289	-0.03	(-0.05, -0.00)	0.05	-0.01	(-0.03, 0.02)	0.68	0.01	(-0.02, 0.03)	0.46	0.08%
Grammar	5880	-0.01	(-0.04, 0.01)	0.28	-0.02	(-0.05, 0.01)	0.16	0.02	(-0.01, 0.05)	0.13	0.11%
Temperament											
Activity	6260	**0.07**	**(0.04, 0.09)**	**5x10^{-07}**	-0.01	-0.03, 0.02)	0.59	0.00	(-0.02, 0.03)	0.94	0.41%
Rhythmicity	6257	0.03	(0.00, 0.05)	0.03	-0.02	(-0.04, 0.01)	0.19	-0.02	(-0.03, 0.02)	0.89	0.09%
Withdrawal	6253	**-0.05**	**(-0.07, -0.02)**	**3x10^{-04}**	-0.01	(-0.03, 0.02)	0.67	-0.00	(-0.03, 0.02)	0.98	0.24%
Adaptability	6233	0.02	(-0.01, 0.04)	0.16	0.00	(-0.03, 0.03)	0.97	0.02	(-0.00, 0.05)	0.09	0.08%
Intensity	6255	0.03	(0.03, 0.01)	0.02	0.02	(-0.01, 0.04)	0.23	0.02	(-0.00, 0.05)	0.09	0.20%
Mood	6259	-0.01	(-0.03, 0.02)	0.57	-0.01	(-0.04, 0.02)	0.42	**0.04**	**(0.02, 0.07)**	**5x10^{-04}**	0.21%
Persistence	6252	0.01	(-0.02, 0.03)	0.55	-0.02	(-0.05, 0.00)	0.11	0.03	(0.00, 0.05)	0.03	0.11%
Distractibility	6255	-0.00	(-0.03, 0.03)	>0.99	-0.02	(-0.05, 0.00)	0.07	0.02	(-0.00, 0.04)	0.12	0.09%
Threshold of response	6260	0.01	(-0.02, 0.03)	0.59	-0.03	(-0.06, -0.00)	0.02	0.02	(-0.00, 0.05)	0.07	0.14%

Standardised betas presented: effect size reflect 1 SD increase in the outcome variable per 1 SD increase in polygenic risk score. Highlighted in bold where associations meet the multiple testing corrected p-value threshold of <0.005.

Supplementary Table 2. Principal component analysis of outcomes to identify the number of independent tests

Component	Eigenvalue	Difference	Proportion	Cumulative
1	2.82	0.83	0.22	0.22
2	1.98	0.70	0.15	0.37
3	1.29	0.11	0.10	0.47
4	1.17	0.13	0.09	0.56
5	1.04	0.14	0.08	0.64
6	0.90	0.04	0.07	0.71
7	0.86	0.11	0.07	0.77
8	0.74	0.10	0.06	0.83
9	0.65	0.10	0.05	0.88
10	0.55	0.09	0.04	0.92
11	0.46	0.11	0.04	0.96
12	0.35	0.16	0.03	0.99
13	0.19	.	0.01	1.00

N=5411, unrotated rho=1

Supplementary Table 3. Correlations between toddler developmental outcomes

	A	B	C	D	E	F	G	H	I	J	K	L	M
A. Fine motor	1												
B. Gross motor	0.29	1											
C. Vocabulary	0.27	0.20	1										
D. Grammar	0.20	0.16	0.81	1									
E. Activity	-0.03	0.11	-0.06	-0.06	1								
F. Rhythmicity	-0.02	0.01	-0.05	-0.02	0.11	1							
G. Withdrawal	-0.02	-0.08	-0.05	-0.04	-0.10	0.03	1						
H. Adaptability	-0.11	-0.05	-0.16	-0.15	0.47	0.22	0.20	1					
I. Intensity	-0.00	0.03	-0.03	-0.04	0.41	0.14	0.02	0.39	1				
J. Mood	-0.08	-0.07	-0.12	-0.09	0.26	0.26	0.37	0.59	0.36	1			
K. Persistence	-0.20	-0.11	-0.24	-0.24	0.28	0.14	0.06	0.33	0.13	0.29	1		
L. Distractibility	-0.02	-0.01	0.00	-0.01	0.15	-0.00	-0.01	0.05	0.13	0.06	0.14	1	
M. Threshold of response	0.11	0.09	0.21	0.17	-0.01	-0.03	-0.11	-0.04	0.12	0.02	-0.11	0.20	1

N=5880-6328

Supplementary Table 4. Multivariable associations between polygenic scores and toddler developmental outcomes stratified by sex

	N	ADHD PGS β	ADHD PGS (95% CI)	p	Autism PGS β	Autism PGS (95% CI)	p	Schizophrenia PGS β	Schizophrenia PGS (95% CI)	p	Overall model R^2
a) Males											
Fine motor	3241	-0.04	(-0.07, -0.00)	0.04	0.03	(-0.01, 0.06)	0.11	-0.02	(-0.05, 0.02)	0.27	0.22%
Gross motor	3250	**0.05**	**(0.02, 0.09)**	**3x10^{-03}**	0.00	(-0.03, 0.04)	0.97	-0.04	(-0.07, -0.00)	0.03	0.40%
Vocabulary	3232	-0.00	(-0.05, 0.03)	0.59	-0.02	(-0.05, 0.02)	0.33	-0.00	(-0.04, 0.03)	0.91	0.05%
Grammar	2951	-0.01	(-0.04, 0.03)	0.72	-0.03	(-0.07, 0.00)	0.07	0.01	(-0.03, 0.05)	0.63	0.14%
Activity	3222	**0.07**	**(0.04, 0.11)**	**8x10^{-05}**	-0.02	(-0.06, 0.01)	0.25	-0.00	(-0.04, 0.03)	0.25	0.48%
Rhythmicity	3221	0.04	(0.01, 0.08)	0.02	-0.01	(-0.04, 0.04)	0.74	-0.01	(0.04, 0.03)	0.75	0.17%
Withdrawal	3219	**-0.06**	**(-0.10, -0.02)**	**1x10^{-03}**	0.00	(-0.03, 0.04)	0.83	0.00	(-0.03, 0.04)	0.95	0.35%
Adaptability	3209	0.02	(-0.01, 0.06)	0.21	-0.00	(-0.04, 0.03)	0.81	0.01	(-0.02, 0.05)	0.43	0.07%
Intensity	3218	0.02	(-0.01, 0.06)	0.23	0.00	(-0.03, 0.04)	0.80	0.02	(-0.01, 0.06)	0.23	0.11%
Mood	3221	-0.01	(-0.04, 0.03)	0.71	-0.02	(-0.05, 0.02)	0.31	0.04	(0.01, 0.07)	0.02	0.19%
Persistence	3219	0.02	(-0.01, 0.06)	0.19	-0.03	(-0.06, 0.01)	0.15	0.04	(0.00, 0.07)	0.03	0.25%
Distractibility	3219	-0.01	(-0.05, 0.02)	0.43	-0.04	(-0.07, -0.00)	0.04	0.03	(-0.01, 0.06)	0.12	0.25%
Threshold of response	3221	-0.01	(-0.04, 0.03)	0.64	-0.01	(-0.05, 0.02)	0.43	0.03	(-0.00, 0.07)	0.06	0.14%
b) Females											
Fine motor	3060	0.01	(-0.02, 0.05)	0.53	-0.00	(-0.04, 0.04)	0.95	-0.02	(-0.06, 0.01)	0.18	0.07%
Gross motor	3078	0.02	(-0.01, 0.06)	0.21	-0.04	(-0.08, -0.01)	0.02	-0.00	(-0.04, 0.03)	0.87	0.20%
Vocabulary	3057	-0.05	(-0.08, -0.00)	0.03	0.00	(-0.03, 0.04)	0.85	0.03	(-0.01, 0.06)	0.15	0.22%
Grammar	2929	-0.02	(-0.06, 0.02)	0.32	-0.01	(-0.05, 0.03)	0.66	0.03	(-0.00, 0.07)	0.08	0.15%
Activity	3038	**0.06**	**(0.02, 0.09)**	**2x10^{-03}**	0.01	(-0.03, 0.05)	0.64	0.00	(-0.03, 0.04)	0.85	0.38%
Rhythmicity	3036	0.01	(-0.02, 0.05)	0.45	-0.03	(-0.07, 0.01)	0.12	0.00	(-0.03, 0.04)	0.12	0.09%
Withdrawal	3034	-0.03	(-0.07, 0.00)	0.08	-0.02	(-0.05, 0.02)	0.36	0.00	(-0.04, 0.04)	0.99	0.16%
Adaptability	3024	0.01	(-0.02, 0.05)	0.50	0.01	(-0.03, 0.04)	0.71	0.03	(-0.01, 0.06)	0.13	0.11%
Intensity	3037	0.04	(0.00, 0.08)	0.03	0.03	(-0.01, 0.06)	0.15	0.02	(-0.01, 0.06)	0.24	0.35%
Mood	3038	-0.01	(-0.04, 0.03)	0.67	-0.02	(-0.04, 0.03)	0.92	**0.05**	**(0.01, 0.08)**	**8x10^{-03}**	0.24%
Persistence	3033	-0.01	(-0.05, 0.03)	0.57	-0.01	(-0.05, 0.02)	0.44	0.01	(-0.02, 0.05)	0.48	0.05%
Distractibility	3036	0.02	(-0.02, 0.05)	0.39	-0.01	(-0.05, 0.03)	0.61	0.01	(-0.02, 0.05)	0.50	0.04%
Threshold of response	3039	0.03	(-0.01, 0.06)	0.18	-0.05	(-0.09, -0.01)	0.01	0.02	(-0.02, 0.05)	0.39	0.27%

Standardised betas presented: effect size reflect 1 SD increase in the outcome variable per 1 SD increase in polygenic risk score. Highlighted in bold where associations meet the multiple testing corrected p-value threshold of <0.005.

Supplementary Table 5. Interaction terms assessing sex-differences in multivariable associations between polygenic risk scores and toddler developmental

	N	β	ADHD PGS (95% CI)	p	β	Autism PGS (95% CI)	p	β	Schizophrenia PGS (95% CI)	p
Motor										
Fine motor	6301	-0.05	(-0.10, 0.00)	0.05	0.03	(-0.02, 0.08)	0.23	0.00	(-0.05, 0.05)	0.87
Gross motor	6328	0.03	(-0.02, 0.08)	0.27	0.05	(-0.01, 0.10)	0.08	-0.03	(-0.08, 0.02)	0.18
Language										
Vocabulary	6289	0.03	(-0.02, 0.08)	0.25	-0.02	(-0.07, 0.03)	0.40	-0.03	(-0.08, 0.02)	0.28
Grammar	5880	0.01	(-0.04, 0.07)	0.63	-0.03	(-0.08, 0.03)	0.34	-0.02	(-0.07, 0.03)	0.34
Temperament										
Activity	6260	0.01	(-0.04, 0.06)	0.63	-0.03	(-0.08, 0.02)	0.25	-0.01	(-0.06, 0.04)	0.79
Rhythmicity	6257	0.03	(-0.02, 0.08)	0.27	0.02	(-0.03, 0.07)	0.40	-0.01	(-0.06, 0.04)	0.74
Withdrawal	6253	-0.03	(-0.08, 0.02)	0.29	0.02	(-0.03, 0.07)	0.43	0.00	(-0.05, 0.05)	0.98
Adaptability	6233	0.01	(-0.04, 0.06)	0.70	-0.01	(-0.06, 0.04)	0.66	-0.01	(-0.06, 0.04)	0.58
Intensity	6255	-0.02	(-0.07, 0.03)	0.49	-0.02	(-0.07, 0.03)	0.41	0.00	(-0.05, 0.05)	0.98
Mood	6259	0.00	(-0.05, 0.05)	0.98	-0.02	(-0.07, 0.03)	0.51	-0.01	(-0.06, 0.04)	0.78
Persistence	6252	0.03	(-0.02, 0.09)	0.19	-0.01	(-0.06, 0.04)	0.63	0.03	(-0.02, 0.08)	0.31
Distractibility	6255	-0.03	(-0.08, 0.02)	0.24	-0.03	(-0.08, 0.02)	0.25	0.02	(-0.03, 0.07)	0.52
Threshold of response	6260	-0.03	(-0.08, 0.02)	0.20	0.03	(-0.02, 0.09)	0.18	0.02	(-0.03, 0.07)	0.49

Standardised betas presented: effect size reflect 1 SD increase in the outcome variable per 1 SD increase in polygenic risk score

Supplementary Table 6. Univariable associations between polygenic scores and toddler developmental

	N	ADHD PGS β	(95% CI)	p	Autism PGS β	(95% CI)	p	Schizophrenia PGS β	(95% CI)	p
Motor										
Fine motor	6301	-0.01	(-0.04, 0.01)	0.34	0.01	(-0.01, 0.03)	0.42	-0.02	(-0.05, 0.00)	0.07
Gross motor	6328	0.03	(0.01, 0.06)	0.01	-0.01	(-0.04, 0.01)	0.28	-0.02	(-0.04, 0.01)	0.13
Language										
Vocabulary	6289	-0.03	(-0.05 -0.00)	0.04	-0.01	(-0.04, 0.01)	0.37	0.01	(-0.02, 0.03)	0.54
Grammar	5880	-0.02	(-0.04, 0.01)	0.16	-0.02	(-0.05, 0.00)	0.09	0.02	(-0.01, 0.04)	0.16
Temperament										
Activity	6260	0.06	(0.04, 0.09)	4×10^{-07}	0.01	(-0.02, 0.03)	0.47	0.00	(-0.02, 0.03)	0.74
Rhythmicity	6257	0.02	(-0.00, 0.05)	0.05	-0.01	(-0.03, 0.01)	0.43	-0.00	(-0.03, 0.02)	0.95
Withdrawal	6253	-0.05	(-0.07, -0.02)	1×10^{-04}	-0.02	(-0.04, 0.01)	0.17	0.00	(-0.03, 0.02)	0.82
Adaptability	6233	0.02	(-0.01, 0.04)	0.12	0.01	(-0.02, 0.03)	0.65	0.02	(-0.00, 0.05)	0.08
Intensity	6255	0.04	(-0.01, 0.06)	4×10^{-03}	0.02	(-0.00, 0.05)	0.06	0.02	(-0.00, 0.05)	0.06
Mood	6259	-0.01	(-0.03, 0.02)	0.55	-0.01	(-0.04, 0.01)	0.39	0.04	(-0.02, 0.07)	1×10^{-03}
Persistence	6252	0.00	(-0.02, 0.03)	0.76	-0.02	(-0.04, 0.01)	0.16	0.03	(-0.00, 0.05)	0.04
Distractibility	6255	0.00	(-0.03, 0.02)	0.67	-0.02	(-0.05, 0.00)	0.07	0.02	(-0.01, 0.04)	0.13
Threshold of response	6260	0.01	(-0.02, 0.03)	0.96	-0.03	(-0.05, -0.00)	0.03	0.02	(-0.00, 0.05)	0.08

Standardised betas presented: effect size reflect 1 SD increase in the outcome variable per 1 SD increase in polygenic risk score

Supplementary Table 7. Multivariable associations using inverse probability weighting

	N	β	ADHD PGS (95% CI)	p	β	Autism PGS (95% CI)	p	β	Schizophrenia PGS (95% CI)	p
Motor										
Fine motor	6301	-0.02	(-0.04, 0.01)	0.23	0.01	(-0.01, 0.04)	0.34	-0.02	(-0.05, 0.00)	0.12
Gross motor	6328	0.04	(0.01, 0.06)	7×10^{-03}	-0.02	(-0.05, 0.00)	0.09	-0.01	(-0.04, 0.01)	0.24
Language										
Vocabulary	6289	-0.03	(-0.05, -0.00)	0.04	-0.00	(-0.03, 0.02)	0.77	0.01	(-0.01, 0.04)	0.32
Grammar	5880	-0.01	(-0.04, 0.01)	0.32	-0.02	(-0.05, 0.01)	0.15	0.02	(-0.01, 0.05)	0.13
Temperament										
Activity	6260	0.06	(0.04, 0.09)	8×10^{-07}	-0.00	(-0.03, 0.02)	0.72	-0.00	(-0.03, 0.02)	0.96
Rhythmicity	6257	0.03	(0.00, 0.05)	0.03	-0.02	(-0.04, 0.01)	0.15	-0.00	(-0.03, 0.02)	0.78
Withdrawal	6253	-0.05	(-0.07, -0.02)	3×10^{-04}	-0.01	(-0.03, 0.02)	0.66	0.00	(-0.02, 0.03)	0.81
Adaptability	6233	0.02	(-0.01, 0.05)	0.14	-0.00	(-0.03, 0.02)	0.89	0.02	(-0.00, 0.05)	0.09
Intensity	6255	0.03	(0.00, 0.06)	0.02	0.01	(-0.01, 0.04)	0.36	0.02	(-0.00, 0.05)	0.09
Mood	6259	-0.01	(-0.03, 0.02)	0.52	-0.01	(-0.04, 0.02)	0.44	0.04	(0.02, 0.07)	1×10^{-03}
Persistence	6252	0.01	(-0.02, 0.04)	0.45	-0.02	(-0.04, 0.01)	0.15	0.03	(0.00, 0.05)	0.03
Distractibility	6255	-0.00	(-0.03, 0.02)	0.88	-0.02	(-0.05, 0.00)	0.10	0.02	(-0.00, 0.05)	0.09
Threshold of response	6260	0.00	(-0.03, 0.03)	0.95	-0.03	(-0.06, -0.01)	0.02	0.03	(0.00, 0.05)	0.03

Standardised betas presented: effect size reflect 1 SD increase in the outcome variable per 1 SD increase in polygenic risk score

Supplementary Table 8. Multivariable associations between polygenic scores and toddler developmental including population stratification covariates

	N	ADHD PGS β	(95% CI)	p	Autism PGS β	(95% CI)	p	Schizophrenia PGS β	(95% CI)	p
Motor										
Fine motor	6297	-0.01	(-0.04, 0.01)	0.28	0.02	(-0.01, 0.04)	0.24	-0.02	(-0.05, 0.01)	0.08
Gross motor	6324	**0.04**	**(0.01, 0.06)**	**3×10^{-03}**	-0.02	(-0.05, 0.00)	0.10	-0.02	(-0.04, 0.01)	0.15
Language										
Vocabulary	6285	-0.03	(-0.05, -0.00)	0.05	-0.00	(-0.03, 0.02)	0.71	0.01	(-0.02, 0.03)	0.52
Grammar	5878	-0.01	(-0.04, 0.01)	0.30	-0.02	(-0.05, 0.01)	0.15	0.02	(-0.01, 0.04)	0.17
Temperament										
Activity	6256	**0.07**	**(0.04, 0.09)**	**4×10^{-07}**	-0.01	-0.03, 0.02)	0.56	0.00	(-0.02, 0.03)	0.98
Rhythmicity	6253	0.03	(0.00, 0.05)	0.03	-0.02	(-0.04, 0.01)	0.18	-0.00	(-0.03, 0.02)	0.90
Withdrawal	6249	**-0.05**	**(-0.07, -0.02)**	**4×10^{-04}**	-0.00	(-0.03, 0.02)	0.73	-0.00	(-0.03, 0.02)	0.97
Adaptability	6229	0.02	(-0.01, 0.04)	0.15	-0.00	(-0.03, 0.03)	0.97	0.02	(-0.00, 0.05)	0.10
Intensity	6251	0.03	(0.01, 0.06)	0.02	0.01	(-0.01, 0.04)	0.26	0.02	(-0.00, 0.05)	0.09
Mood	6255	-0.01	(-0.03, 0.02)	0.57	-0.01	(-0.04, 0.02)	0.42	**0.04**	**(0.02, 0.07)**	**5×10^{-04}**
Persistence	6248	0.01	(-0.02, 0.03)	0.51	-0.02	(-0.05, 0.00)	0.10	0.03	(0.00, 0.05)	0.04
Distractibility	6251	-0.00	(-0.03, 0.02)	0.96	-0.02	(-0.05, 0.00)	0.07	0.02	(-0.00, 0.05)	0.11
Threshold of response	6256	0.01	(-0.02, 0.03)	0.58	-0.03	(-0.06, -0.00)	0.02	0.02	(-0.00, 0.05)	0.06

Standardised betas presented: effect size reflect 1 SD increase in the outcome variable per 1 SD increase in polygenic risk score. Highlighted in bold where associations meet the multiple testing corrected p-value threshold of <0.005.

Supplementary Table 9. Multivariable associations excluding those with ADHD

	N	ADHD PGS β	(95% CI)	p	Autism PGS β	(95% CI)	p	Schizophrenia PGS β	(95% CI)	p
Motor										
Fine motor	4987	-0.01	(-0.03, 0.02)	0.72	0.01	(-0.02, 0.04)	0.65	-0.03	(-0.05, 0.00)	0.06
Gross motor	5005	0.04	(0.01, 0.07)	9x10^{-03}	-0.02	(-0.05, 0.01)	0.18	-0.02	(-0.05, 0.00)	0.10
Language										
Vocabulary	5057	-0.02	(-0.05, 0.01)	0.13	-0.00	(-0.03, 0.03)	0.98	0.02	(-0.01, 0.05)	0.18
Grammar	4748	-0.01	(-0.04, 0.02)	0.70	-0.01	(-0.04, 0.02)	0.35	0.02	(-0.01, 0.05)	0.22
Temperament										
Activity	5040	0.07	(0.05, 0.10)	4x10^{-07}	-0.01	(-0.04, 0.02)	0.51	0.01	(-0.02, 0.03)	0.60
Rhythmicity	5040	0.03	(0.00, 0.06)	0.02	-0.01	(-0.03, 0.02)	0.67	-0.01	(-0.04, 0.02)	0.51
Withdrawal	5039	-0.05	(-0.08, -0.02)	5x10^{-04}	-0.01	(-0.03, 0.02)	0.68	-0.00	(-0.03, 0.03)	0.97
Adaptability	6233	0.03	(0.00, 0.06)	0.05	0.00	(-0.02, 0.03)	0.80	0.03	(-0.02, 0.03)	0.04
Intensity	5040	0.03	(0.01, 0.06)	0.02	0.01	(-0.02, 0.04)	0.51	0.02	(-0.01, 0.05)	0.12
Mood	5040	0.00	(-0.03, 0.03)	0.93	-0.01	(-0.04, 0.02)	0.62	0.05	(0.02, 0.08)	2x10^{-04}
Persistence	5037	0.01	(-0.02, 0.03)	0.66	-0.02	(-0.05, 0.01)	0.13	0.04	(0.01, 0.07)	5x10^{-03}
Distractibility	5039	0.01	(-0.02, 0.03)	0.72	-0.03	(-0.06, -0.00)	0.05	0.03	(0.00, 0.06)	0.05
Threshold of response	5042	0.01	(-0.02, 0.04)	0.39	-0.03	(-0.06, 0.00)	0.05	0.03	(0.00, 0.06)	0.04

Standardised betas presented: effect size reflect 1 SD increase in the outcome variable per 1 SD increase in polygenic risk score

Supplementary Table 10. Questions included in motor assessments

	Yes, can do well	Has only done once or twice	Has not yet started

Fine motor questions

1. Can hold a rattle
2. Can focus her eyes on a small object such as a raisin
3. Can pick up a small object such as a raisin
4. Can pass an object from one hand to another
5. Can bang together two similar objects that she is holding
6. Grabs objects using the whole hand
7. Can pick up a small object using finger and thumb only
8. Will use a pencil and scribble
9. Can build a tower putting one object on top of another
10. Can build a tower of 3 bricks
11. Can build a tower of 4 bricks
12. Can build a tower 8 bricks
13. Holds a pencil in her fist
14. Can copy a vertical line with a pencil
15. Points to what she wants
16. Will turn the pages of a book

Gross motor questions

1. Can stand up without being supported even if only for a very short time
2. From a standing position can bend down and return to standing
3. Can stand alone for at least a minute without holding on to anything
4. Can walk while holding someone's hand
5. Can walk alone for at least 5 steps
6. Can walk backwards 5 steps
7. Can kick a ball
8. Can throw a ball
9. Can balance on one foot
10. Can jump up and down
11. Can climb stairs

Supplementary Table 11. Associations between variables included in the inverse probability weight and not having genetic data

	Multivariable association
Maternal age (years)	OR=0.95, 95% CI=0.95-0.96
Maternal education (1-5)	OR=0.83, 95% CI=0.80-0.85
Crowding index (0-3)	OR=1.09, 95% CI=1.05-1.13
Gestation (weeks)	OR=0.98, 95% CI=0.96-1.00
Birthweight (kgs)	OR=0.80, 95% CI=0.74-0.86

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