

Table S1. Item Content of Attention-Deficit/Hyperactivity Disorder (ADHD) Symptom Scales Included in the Genome-Wide Association (GWA) Meta-Analysis

CBCL 1.5-5: Attention Problems scale	<ul style="list-style-type: none"> • Can't concentrate, can't pay attention for long • Can't sit still, restless, or hyperactive • Poorly coordinated or clumsy • Quickly shifts from one activity to another • Wanders away
CBCL 6-18: Attention Problems scale	<ul style="list-style-type: none"> • Acts too young for his/her age • Fails to finish things he/she starts • Can't concentrate, can't pay attention for long • Can't sit still, restless, or hyperactive; Confused or seems to be in a fog • Daydreams or gets lost in his/her thoughts • Impulsive or acts without thinking • Poor school work • Inattentive or easily distracted • Stares blankly
SDQ: Hyperactivity-inattention scale	<ul style="list-style-type: none"> • Restless, overactive, cannot stay still for long • Constantly fidgeting or squirming • Easily distracted, concentration wanders • Thinks things out before acting • Sees tasks through to the end, good attention span
<p>Conners' Rating Scales-Revised: Long Form</p> <p>Other <i>DSM-IV</i>-based rating scales</p> <p>(items may be phrased slightly differently across scales)</p>	<ul style="list-style-type: none"> • Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities • Often has difficulty sustaining attention in tasks or play activities • Often does not seem to listen when spoken to directly • Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure of comprehension) • Often has difficulty organizing tasks and activities • Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework) • Often loses things necessary for tasks or activities at school or at home (e.g. toys, school assignments, pencils, books or tools) • Is often easily distracted by extraneous stimuli • Is often forgetful in daily activities • Often fidgets with hands or feet or squirms in seat • Often leaves seat in classroom or in other situations in which remaining seated is expected

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| | <ul style="list-style-type: none">• Often runs about or climbs excessively in situations in which it is inappropriate• Often has difficulty playing or engaging in leisure activities quietly• Is often “on the go” or often acts as if “driven by a motor”• Often talks excessively• Often has difficulty awaiting turn• Often blurts out answers to questions before they have been completed• Often interrupts or intrudes on others, e.g. butts into other children's games |
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Note: CBCL = Child Behavior Checklist; SDQ = Strengths and Difficulties Questionnaire.

Table S2. Description of Methods Used for Imputation and Analysis in Each Cohort Included in the Genome-Wide Association (GWA) Meta-Analysis.

Cohort	Genotyping Platform	Pre-Imputation Variant Filters				Pre-Imputation Sample Filters					Imputation Software	Post-Imputation Filters	Association Software
		call rate	MAF	HWE	other filters	call rate	Heterozygosity	ethnicity	gender mismatches	other filters			
ALSPAC	Illumina HumanHap550 quad-chip	0.95	0.01	5E-7		0.97	yes	yes	yes	>10% identity by descent, insufficient sample replication	Minimac and Mach	None	Mach2QTL V112
Generation R	Illumina Human 610 and 660 Quad Array	0.95	0.001	1E-7		0.975	yes	yes	yes	relatedness	Minimac and Mach	None	Plink 1.07
GINI / LISA	Affymetrix 5.0 and Affymetrix 6.0	0.95	0.01	1E-5		0.95	> 4 SD		yes	similarity QC based on MDS	Impute v2.3.0	SNPTEST NA for BETA, SE and P_VAL	SNPTEST v2.4.1
INMA	Illumina Human Omni1	0.95	0.01	1E-6		0.98		no	yes	LRR SD>0.3, duplicates, relatedness	Impute v.2	None	SNPtest v.2
MoBa	Illumina Human 660W Quad Array	0.97	0.01	1E-6	Mitochondrial SNPs, chrY&PAR SNPs, SNPs that could not be updated to hg37, non-"rs" SNPs	0.96	> 4 SD	yes	yes	relatedness	SHAPEIT (v2.r644), Impute (version 2.3.0)	SNPTEST NA for BETA and P_VAL	SNPTEST v2.5-beta4
NTR	Affymetrix 6.0	0.95	0.01	1E-5	Double-typed error rate > 0.02, Mendel error rate > 0.02, allele frequency	0.90	F > 0.10 or F < -0.10	no	yes	IBS/IBD discrepancies, Mendel error rate > 0.02	Minimac and Mach	Plink NA for BETA, SE and P_VAL	Plink 1.07

					difference with reference set > 0.20, C/G and A/T SNPs with MAF > 0.35								
Raine	Illumina Human 660W Quad Array	0.95	0.01	5.7E-7	C/G and A/T SNPs removed	0.97	F > 0.1875; heterozygosity > 0.30	no	yes		Mach		
TEDS	Affymetrix 6.0	0.80	0.01	1E-20	SNPTEST info > 0.975	0.98	yes	yes	yes	relatedness (IBD < 5%), regentyping low concordance	Impute v2	None	Plink 1.07
TRAILS	Illumina Cyto SNP12 v2	0.95	0.01	1E-3	chr X SNPs >1% heterozygous in men	0.95	> 4 SD	yes	yes	duplicates	Impute v2	Callrate 10%, duplicates	SNPtest 2.4.1

Note: ALSPAC = Avon Longitudinal Study of Parents and Children; GINI = German Infant Nutritional Intervention; HWE = Hardy Weinberg equilibrium; IBD = identity by descent; IBS = identity by state; INMA = Infancia y Medio Ambiente; LISA = Influence of Life-style factors on Development of the Immune System and Allergies in East and West Germany plus Air Pollution and Genetics on Allergy Development; LRR = log r ratio; MAF = minor allele frequency; MDS = multidimensional scaling; MoBa = Norwegian Mother and Child Cohort Study; NTR = Netherlands Twin Register; QC = quality control; SNP = single nucleotide polymorphism; TEDS = Twins Early Development Study; TRAILS = 'Tracking Adolescents' Individual Lives' Survey.

Table S3. Results of the Data Cleaning for the Nine Cohorts Included in the Meta-Analysis

Cohort	N	N Variants Uploaded	N Variants Cleaned	Lambda
ALSPAC	5,757	31,326,386	5,942,106	1.01
Generation R	2,211	30,072,738	5,907,888	1.02
GINI / LISA	1,389	16,275,553	5,554,016	1.02
INMA	804	16,105,103	6,245,251	1.08
MOBA	665	14,154,076	6,177,049	1.02
NTR	1,605	8,868,990	5,654,673	1.03
Raine	1,338	28,625,631	5,260,671	0.99
TEDS	2,606	12,223,562	5,572,678	0.98
TRAILS	1,285	18,183,428	5,763,633	1.02

Note: ALSPAC = Avon Longitudinal Study of Parents and Children; GINI = German Infant Nutritional Intervention; INMA = Infancia y Medio Ambiente; LISA = Influence of Life-style factors on Development of the Immune System and Allergies in East and West Germany plus Air Pollution and Genetics on Allergy Development; MoBa = Norwegian Mother and Child Cohort Study; NTR = Netherlands Twin Register; TEDS = Twins Early Development Study; TRAILS = 'TRacking Adolescents' Individual Lives' Survey.

Table S4. Results of Gene-Based Tests for Previously Identified Attention-Deficit/Hyperactivity Disorder (ADHD)**Candidate Genes**

Gene	Chr	Start Position (GRCh37)	Stop Position (GRCh37)	N SNPs	p-value
<i>DRD4</i>	11	637305	640706	5	.88
<i>DRD5</i>	4	9783258	9785633	2	.84
<i>GIT1</i>	17	27900487	27916610	16	.60
<i>HTR1B</i>	6	78171948	78173120	2	.25
<i>NOS1</i>	12	117645947	117799607	347	.18
<i>SLC6A3</i>	5	1392905	1445543	137	.50
<i>SLC6A4</i>	17	28523376	28562954	48	.91
<i>SNAP25</i>	20	10199477	10288065	173	.88
<i>SLC9A9</i>	3	142984064	143567373	1457	.11

Note: SNP = single nucleotide polymorphism.