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Table DS1 Phenotypic correlations for entire sample (full-range scores) and phenotypic group correlations between autistic traits and IQ and academic achievement with cut-offs of 15%, 5%, 2% and 1%[a]

	Full-range scores		Phenotypic group correlations[b]					
			Extreme 15%		Extreme 5%		Extreme 2%	Extreme 1%
	Boys	Girls	Boys	Girls	Boys	Girls	Both sexes	Both sexes
Age 7/8 (Parent CAST)								
IQ	−0.18	−0.21	−0.16/−0.13	−0.15/−0.21	−0.24/−0.12	−0.19/−0.18	−0.20/−0.14	−0.25/−0.14
Academic achievement	−0.22	−0.23	−0.23/−0.18	−0.21/−0.20	−0.24/−0.23	−0.26/−0.26	−0.32/−0.30	−0.35/−0.32
Age 9 (Teacher CAST)								
IQ	−0.12	−0.07	−0.09/−0.08	−0.03/−0.07	−0.18/−0.07	−0.06/−0.01	−0.14/−0.05	−0.13/−0.04
Academic achievement	−0.24	−0.24	−0.31/−0.24	−0.28/−0.29	−0.40/−0.17	−0.39/−0.29	−0.45/−0.19	−0.49/−0.21

CAST, Childhood Autism Spectrum Test.
a. Associations given separately for boys and girls in the full-range scores and the extreme 15% and 5%. Limited sample size did not allow separate associations by sex in the 2% and 1% extreme groups.
b. For the phenotypic group correlations, the first correlation is for IQ/academic achievement as the selected variables, the second is for CAST as the selected variable.

Table DS2 Phenotypic correlations for entire sample (full-range scores) and phenotypic group correlations between the triad of autistic traits and IQ and academic achievement

	Childhood Autism Spectrum Test (95% CI)		
	Social impairments	Restricted repetitive behaviours and interests	Communication impairments
Full-range scores (95% CI)			
Age 7/8 (Parent report)			
IQ	−0.10 (−0.13 to −0.10)	−0.07 (−0.09 to −0.04)	−0.24 (−0.26 to −0.21)
Academic achievement	−0.07 (−0.09 to −0.05)	−0.09 (−0.12 to −0.06)	−0.29 (−0.30 to −0.26)
Age 9 (Teacher report)			
IQ	−0.06 (−0.09 to −0.02)	0.09 (0.06 to 0.13)	−0.20 (−0.23 to −0.20)
Academic achievement	−0.18 (−0.21 to −0.15)	0.09 (0.06 to 0.12)	−0.37 (−0.37 to −0.34)
Phenotypic group correlations extreme 5%[a]			
Age 7/8 (Parent report)			
IQ	−0.11/−0.10	−0.09/−0.06	−0.27/−0.21
Academic achievement	−0.12/−0.08	−0.12/−0.16	−0.29/−0.26
Age 9 (Teacher report)			
IQ	−0.08/−0.04	0.05/0.07	−0.20/−0.13
Academic achievement	−0.30/−0.19	−0.05/0.03	−0.50/−0.35

a. For the phenotypic group correlations, the first correlation is for IQ/academic achievement as the selected variable, the second is for the Childhood Autism Spectrum Test score as the selected variable.

Table DS3 Results for DeFries–Fulker univariate and bivariate extremes analyses for autistic-like communication impairments (communication impairments as assessed by the Childhood Autism Spectrum Test (CAST))[a,b]

		Univariate			Bivariate (IQ/academic achievement)				Bivariate (CAST communication impairments)			
	Probands, *n*	Proband	Co-twin	h^2_g (95% CI)	Proband	Co-twin	B_2 (95% CI)	Bivariate h^2_g	Proband	Co-twin	B_2 (95% CI)	Bivariate h^2_g
Parent CAST communication impairments age 8												
Standardised scores												
MZ	227	2.71	2.13									
DZ	206	2.66	0.80									
Transformed scores												
MZ	227	1.00	0.79									
DZ	206	1.00	0.30	0.79 (0.72 to 0.86)								
IQ age 7												
Standardised scores												
MZ	174	−2.12	−1.39		0.50	0.52			−0.69	−0.61		
DZ	172	−2.16	−1.08		0.54	0.11			−0.34	−0.13		
Transformed scores												
MZ	174	1.00	0.66		−0.24	−0.25			−0.27	−0.24		
DZ	172	1.00	0.50	0.31 (0.11 to 0.51)	−0.25	−0.05	−0.25 (−0.35 to −0.15)	0.93	−0.14	−0.05	−0.23 (−0.45 to −0.01)	1.00
Academic achievement age 7												
Standardised scores												
MZ	218	−2.60	−2.21		0.76	0.63			−0.83	−0.79		
DZ	157	−2.58	−1.08		0.63	0.25			−0.72	−0.18		
Transformed scores												
MZ	218	1.00	0.85		−0.29	−0.25			−0.33	−0.31		
DZ	157	1.00	0.42	0.85 (0.78 to 0.92)	−0.25	−0.10	−0.24 (−0.44 to −0.04)	0.92	−0.28	−0.07	−0.31 (−0.42 to 0.20)	1.00
Teacher CAST communication impairments age 9												
Standardised scores												
MZ	90	2.72	1.73									
DZ	98	2.73	0.91									
Transformed scores												
MZ	90	1.00	0.63									
DZ	98	1.00	0.33	0.60 (0.29 to 0.91)								
IQ age 9												
Standardised scores												
MZ	110	−2.26	−1.62		0.39	0.21			−0.49	−0.41		
DZ	113	−2.26	−1.12		0.43	−0.01			−0.05	0.06		
Transformed scores												
MZ	110	1.00	0.72		−0.18	−0.10			−0.19	−0.16		
DZ	113	1.00	0.49	0.44 (0.23 to 0.65)	−0.19	0.00	−0.10 (−0.34 to 0.04)	0.50	−0.02	0.02	−0.13 (−0.35 to 0.09)	1.00
Academic achievement age 9												
Standardised scores												
MZ	85	−2.20	−1.86		1.16	0.97			−0.88	−0.80		
DZ	72	−2.22	−0.88		1.03	0.32			−0.77	−0.36		
Transformed scores												
MZ	85	1.00	0.85		−0.53	−0.44			−0.33	−0.29		
DZ	72	1.00	0.40	0.85 (0.75 to 0.95)	−0.47	−0.14	−0.44 (−0.59 to −0.29)	0.83	−0.29	−0.13	−0.29 (−0.51 to −0.07)	0.88

h^2g, group heritability; B_2, bivariate genetic DeFries–Fulker estimate; MZ, monozygotic; DZ, dizygotic twin.
a. Group heritability (h^2g) estimates were constrained to be equal to or lower than the transformed MZ co-twin mean. In bivariate analyses the selected variable is given in parentheses.
b. The 95% CIs were calculated using corrected standard errors.