Table S1. Modeling of each RRB individually; ordinal logistic regression

Variable	CI*	IS*	RMB*
Model 1**			
Age of diagnosis (years)	0.96 (0.94,0.97)	1.06 (1.05,1.08)	1.07 (1.06,1.09)
Comorbid ADHD	0.91 (0.75,1.12)	1.38 (1.13,1.69)	1.27 (1.03,1.58)
Sex (Male)	0.93 (0.79,1.09)	1.01 (0.86,1.18)	1.81 (1.54,2.12)
Model 2***			
CI		1.00 (0.93,1.08)	1.02 (0.95,1.10)
IS	0.99 (0.93,1.07)		1.53 (1.43,1.65)
RMB	1.03 (0.95,1.11)	1.59 (1.47,1.72)	

Note: ADHD: Attention deficit hyperactivity disorder; CI, Circumscribed Interests; IS, Insistence on Sameness; RMB, Repetitive Motor Behaviors; *data presented as OR (95% CI) from ordinal logistic regression.

** Model 1 – basic model, additionally adjusted for calendar year.

*** Model 2 – same adjustments as model 1 but 1 with each RRB added in turn (not simultaneously)

Table S2. Modeling of Full-Scale IQ as both a continuous and dichotomous (low IQ; <70) outcome; linear and logistic regression respectively, by sex

	Male (n=1282)		Female (n=272)	
Variable	**Continuous IQ***	**Low IQ***	**Continuous IQ***	**Low IQ***
Model 1**				
Age of diagnosis (years)	0.95 (0.67,1.23)	0.90 (0.87,0.93)	0.99 (0.4,1.58)	0.92 (0.86,0.98)
Comorbid ADHD	2.97 (-0.51,6.46)	0.65 (0.42,0.98)	6.33 (-1.9,14.55)	0.52 (0.18,1.31)
Model 2***				
CI	-3.74 (-5.11,-2.38)	1.52 (1.31,1.77)	-2.20 (-5.14,0.74)	1.15 (0.86,1.56)
IS	3.61 (2.23,4.99)	0.72 (0.62,0.83)	5.95 (3.20,8.69)	0.56 (0.41,0.75)
RMB	3.44 (1.99,4.89)	0.80 (0.69,0.93)	3.88 (0.88,6.89)	0.83 (0.62,1.12)

* Data presented as unstandardized coefficient (95% CI) for Continuous IQ from linear regression and OR (95% CI) for Low IQ from logistic regression

** Model 1 – basic model, additionally adjusted for calendar year

*** Model 2 – model 1 with each RRB added in turn (not simultaneously)

Table S3. Modeling of Full-Scale IQ as both a continuous and dichotomous (low IQ; <70) outcome; linear and logistic regression respectively, by sex and age of diagnosis.

	Male (n=1282)		Female (n=272)	
Variable	**Continuous IQ***	**Low IQ***	**Continuous IQ***	**Low IQ***
Cohort 1a – Diagnosed age 0-12 years				
CI	-3.30 (-4.74,-1.87)	1.53 (1.30,1.81)	-1.78 (-4.85,1.29)	1.12 (0.82,1.53)
RMB	3.30 (1.79,4.81)	0.81 (0.69,0.96)	3.27 (0.15,6.40)	0.84 (0.61,1.15)
Cohort 2a – Diagnosed age 13+ years				
CI	-6.54 (-10.14,-2.93)	1.6 (1.04,2.56)	-0.81 (-10.53,8.92)	1.88 (0.55,8.04)
RMB	-0.73 (-5.17,3.70)	1.05 (0.65,1.75)	2.78 (-7.69,13.25)	2.17 (0.49,15.18)
Cohort 1b – Diagnosed age 0-3 years				
IS	5.27 (2.45,8.09)	0.67 (0.50,0.88)	4.78 (-0.36,9.91)	0.59 (0.34,0.97)
Cohort 2b – Diagnosed age 4-6 years				
IS	2.95 (0.64,5.27)	0.83 (0.66,1.06)	8.63 (4.43,12.84)	0.27 (0.13,0.50)

Cohort 3b – Diagnosed age 7-12 years				
IS	-0.19 (-2.63,2.25)	0.85 (0.61,1.20)	2.73 (-2.50,7.96)	0.99 (0.51,1.97)
Cohort 4b – Diagnosed age 13+ years				
IS	3.02 (-1.07,7.12)	0.66 (0.41,1.03)	0.7 (-8.89,10.29)	0.96 (0.29,3.47)

* Data presented as unstandardized coefficient (95% CI) for Continuous IQ from linear regression and OR (95% CI) for Low IQ from logistic regression; models adjusted for age of diagnosis, calendar year, and comorbid ADHD. Cohort ‘a’ was split based on an age of ASD diagnosis of 0-12 or 13+ years. Cohort ‘b’ was split based on an age of ASD diagnosis of 0-3, 4-6, 7-12, 13+ years.

Table S4. Modeling of the association between DSM-IV social and communication scores and each RRB individually; ordinal regression

Variable	CI*	IS*	RMB*
Model 1**			
Social Interaction Impairments	1.65 (1.46,1.88)	1.11 (0.99,1.25)	1.07 (0.96,1.21)
Communication Impairments	1.25 (1.18,1.31)	0.78 (0.74,0.82)	0.86 (0.82,0.90)
Model 2***			
Social Interaction Impairments	1.44 (1.27,1.65)	1.43 (1.26,1.62)	1.24 (1.10,1.41)
Communication Impairments	1.19 (1.13,1.25)	0.74 (0.70,0.78)	0.83 (0.79,0.88)

* CI, Circumscribed Interests; IS, Insistence on Sameness; RMB, Repetitive Motor Mannerisms; data presented as OR (95% CI) from ordinal logistic regression

** Model 1 – each mean DSM-IV score added in turn (not simultaneously), adjusted for age of diagnosis, calendar year, and sex

*** Model 2 – same adjustments as model 1 but with both DSM-IV scores simultaneously in the model

Figure S1: Individual social and communication criteria rating concordance, by sex; percentage of criteria Met (score 2-3)

Note: 1a: Nonverbal behaviors; 1b: Peer relationships; 1c: Sharing enjoyment with others; 1d: Social/emotional reciprocity; 2a: Spoken language delays; 2b: Conversation initiation and sustaining; 2c: Repetitive language use; 2d: Spontaneous make-believe play; 3a: CI; 3b: IS; 3c: RMB; 3d: preoccupation with parts of objects. Each plotted value represents the percentage of the full sample that met both criteria, where the columns and rows match for example 1a-1a, this is the percentage of the full sample that met criteria 1a and therefore that would be the maximum possible percentage that any of the other 1a pairings could reach.