

Supplementary Table A. Revised algorithm composition with item numbers and cut-offs

Domains	Item	Mod 1, No Words	Item	Mod 1, Some Words	Item	Mod 2 Younger	Item	Mod 2 Older	Item	Mod 3
Social Affect	A-2	Frequency of Vocalization	A-2	Frequency of Vocalization	B-11	Quality of Rapport	B-11	Quality of Rapport	B-10	Quality of Rapport
	A-8	Gestures	A-8	Gestures	A-8	Gestures	A-8	Gestures	A-9	Gestures
	B-1	Unusual Eye Contact	B-1	Unusual Eye Contact	B-1	Unusual Eye Contact	B-1	Unusual Eye Contact	B-1	Unusual Eye Contact
	B-3	Facial Expressions	B-3	Facial Expressions	B-2	Facial Expressions	B-2	Facial Expressions	B-2	Facial Expressions
	B-4	Gaze and Other Behaviors	B-4	Gaze and Other Behaviors	B-10	Amount of Social Communication	B-10	Amount of Social Communication	B-9	Amount of Social Communication
	B-5	Shared Enjoyment	B-5	Shared Enjoyment	B-3	Shared Enjoyment	B-3	Shared Enjoyment	B-4	Shared Enjoyment
	B-9	Showing	B-9	Showing	B-5	Showing	B-5	Showing	B-8	Quality of Social Response
	B-10	Initiation of Joint Attention	B-10	Initiation of Joint Attention	B-6	Initiation of Joint Attention	B-6	Initiation of Joint Attention	A-7	Reporting of Events
	B-11	Response to Joint Attention	A-7	Pointing	A-7	Pointing	A-7	Pointing	A-8	Conversation
	B-12	Quality of Social Overtures	B-12	Quality of Social Overtures	B-8	Quality of Social Overtures	B-8	Quality of Social Overtures	B-7	Quality of Social Overtures
Restricted Repetitive Behaviors	A-3	Intonation	A-5	Stereotyped Language	A-5	Stereotyped Language	A-5	Stereotyped Language	A-5	Stereotyped Language
	D-1	Unusual Sensory Interest	D-1	Unusual Sensory Interest	D-1	Unusual Sensory Interest	D-1	Unusual Sensory Interest	D-1	Unusual Sensory Interest
	D-2	Hand Mannerisms	D-2	Hand Mannerisms	D-2	Hand Mannerisms	D-2	Hand Mannerisms	D-2	Hand Mannerisms
	D-4	Repetitive Interests	D-4	Repetitive Interests	D-4	Repetitive Interests	D-4	Repetitive Interests	D-4	Highly Specific Topics
Cut-offs		AUT=16 ASD=11		AUT=12 ASD=8		AUT=10 ASD=7		AUT=9 ASD=8		AUT=9 ASD=7

Note. Item names have been abbreviated from the Western Psychological Services ADOS. Refer to the ADOS Manual, Figure 6 (Lord et al., 1999) for complete names.

Note. Items from the 2000 algorithm not included in new algorithm: Stereotyped/Idiosyncratic Use of Language, Use of Other’s Body to Communicate, and Pointing (Mod 1, No Words); Use of Other’s Body to Communicate, Response to Joint Attention (Mod 1, Some Words); Amount of Social Overtures/Maintenance of Attention, Conversation, Quality of Social Response (Mod 2 Younger and Older); Insight, Compulsions and Rituals (Mod 3).

Note. By developmental cell, the Social Affect and Restricted Repetitive domain items should be summed (after item scores of 3 have been converted to 2’s on the algorithm, and all other values outside of a 0-3 range converted to 0’s). This SA+RRB total is then compared to the relevant cut-offs by cell in order to receive an ADOS classification of ‘autism’ or ‘ASD.’

Supplementary Table B. CPEA/STAART Sample Description

DX		Module 1, No Words				Module 1, Some Words				Module 2, Younger than 5				Module 2, 5 or Older				Module 3			
		N	Mean	SD	Range	N	Mean	SD	Range	N	Mean	SD	Range	N	Mean	SD	Range	N	Mean	SD	Range
Autism	age	295	41.8	24.3	18-168	183	47.7	25.4	18-157	53	44.2	9.2	24-59	100	91.0	24.8	60-173	339	118.2	32.0	32-192
	viq	295	36.4	17.3	4-89	183	59.4	19.2	17-115	53	77.2	20.1	31-133	100	62.0	18.9	20-119	339	87.5	24.0	37-165
	nviq	295	60.4	22.7	11-143	183	71.4	20.1	13-134	53	85.4	21.5	36-131	100	81.9	24.5	32-144	339	97.9	25.1	47-197
	vma	295	14.0	10.2	2-72	183	26.3	11.9	10-79	53	33.3	8.8	11-71	100	54.7	16.4	24-123	339	103.2	39.7	20-215
	nvma	295	22.5	12.0	7-108	183	31.8	16.5	14-126	53	37.2	11.1	20-71	100	73.9	28.9	24-155	339	115.1	42.0	20-225
	ADI social	240	20.3	5.0	4-30	169	17.7	5.7	0-30	50	15.7	5.0	4-26	97	22.8	5.4	0-30	307	21.0	5.2	0-30
	ADI comm-V	18	17.8	3.6	11-23	59	16.0	4.0	4-25	47	14.8	4.1	5-22	89	17.9	4.0	4-26	304	16.9	4.7	4-26
	ADI comm-NV	208	11.7	2.1	2-14	109	10.1	2.8	0-14	2	11.5	3.5	9-14	10	11.2	2.4	8-14	0	.	.	.
	ADI-RR	240	5.0	2.1	0-12	169	5.2	2.3	0-12	50	6.3	2.3	2-12	97	6.9	2.6	0-12	307	6.5	2.7	0-12
	ADOS social	295	11.3	2.5	1-14	183	9.5	2.5	3-14	53	9.2	2.7	4-14	100	10.1	2.9	1-14	339	9.0	2.9	1-14
	ADOS comm.	295	5.7	1.7	0-10	183	5.0	2.1	0-10	53	6.6	1.9	1-10	100	6.8	2.0	0-10	339	4.1	1.8	0-8
	ADOS SA	295	16.1	3.6	1-20	183	13.8	3.6	2-20	53	12.4	3.9	4-20	100	13.3	4.2	1-20	339	11.4	4.3	0-20
	ADOS RR	295	4.2	2.3	0-8	183	3.3	1.9	0-8	53	3.5	1.9	1-8	100	3.4	1.8	0-8	339	2.3	1.8	0-8
PDD-NOS	age	6	58.0	28.3	34-96	21	47.7	23.5	34-148	17	44.7	5.3	34-54	9	84.4	20.2	64-119	45	117.5	28.3	50-174
	viq	6	40.3	15.7	16-63	21	59.0	21.2	17-104	17	85.2	16.1	60-109	9	65.8	23.3	48-107	45	101.0	24.4	50-139
	nviq	6	59.2	20.5	24-79	21	70.1	25.4	17-131	17	85.9	13.3	61-112	9	106.6	25.6	48-138	45	105.1	16.7	55-132
	vma	6	22.3	13.7	12-48	21	25.8	8.0	12-47	17	37.9	7.7	27-54	9	54.3	18.6	31-90	45	120.0	44.5	50-217
	nvma	6	30.1	9.1	22-48	21	30.8	10.6	13-60	17	38.3	6.7	27-47	9	90.9	30.5	31-135	45	124.0	38.3	62-207
	ADI social	6	19.5	6.6	11-27	19	13.3	6.2	0-28	16	10.7	4.9	4-20	9	15.2	9.0	0-26	44	16.0	6.9	2-27
	ADI comm-V	0	.	.	.	8	11.0	5.9	2-18	14	10.9	4.1	6-18	8	13.2	7.2	1-23	44	13.4	6.4	1-23
	ADI comm-NV	4	10.5	4.0	7-14	9	9.0	2.7	6-13	2	9.5	0.7	9-10	1	12.0	.	12-12	0	.	.	.
	ADI-RR	6	1.2	.7	0-2	18	5.2	2.9	0-10	16	4.0	3.0	1-10	9	3.4	1.9	1-6	44	5.4	2.8	0-12
	ADOS social	6	10.3	2.4	7-13	21	6.5	1.7	4-11	17	6.2	2.9	2-13	9	8.2	2.7	4-13	45	5.3	2.9	0-12
	ADOS comm.	6	6.0	1.8	3-8	21	4.3	1.5	2-7	17	4.6	1.5	1-7	9	3.8	1.9	2-8	45	2.7	1.5	0-7
	ADOS SA	6	15.2	2.9	11-19	21	10.3	2.9	6-18	17	8.4	4.1	4-19	9	9.7	2.5	6-15	45	6.6	3.8	2-16
	ADOS RR	6	1.7	1.5	0-4	21	2.1	1.8	0-6	17	1.3	1.4	0-5	9	1.8	1.4	0-4	45	1.4	1.3	0-5
Non-spectrum	age	51	36.6	14.5	18-82	64	44.4	22.9	20-170	18	50.1	5.6	37-59	8	74.5	7.3	61-85	73	115.4	32.3	50-179
	viq	51	48.7	17.8	14-92	64	66.9	17.6	29-121	18	76.1	14.8	52-118	8	76.6	18.7	56-113	73	98.5	21.2	50-151
	nviq	51	62.8	19.2	25-112	64	71.4	16.8	41-118	18	84.0	20.2	45-133	8	85.5	24.2	63-128	73	100.8	20.9	50-145
	vma	51	16.7	6.5	6-39	64	28.4	12.9	13-85	18	38.0	7.8	24-58	8	57.4	17.2	40-96	73	114.7	43.0	32-212
	nvma	51	21.4	5.9	12-37	64	30.6	13.9	14-85	18	41.8	9.8	21-65	8	64.3	22.1	43-109	73	117.1	42.0	36-207
	ADI social	43	9.4	7.4	1-26	53	6.8	7.3	0-29	12	2.8	2.4	0-7	4	5.5	1.3	4-7	59	4.2	4.4	0-19
	ADI comm-V	1	14.0	.	14-14	21	8.4	6.2	1-19	11	4.6	3.3	0-11	4	6.8	2.6	4-9	59	3.1	3.3	0-12
	ADI comm-NV	38	6.8	4.4	0-14	27	3.7	3.7	0-13	1	1.0	.	1-1	0	.	.	.	0	.	.	.
	ADI-RR	43	3.1	2.1	0-8	53	2.5	2.7	0-11	12	2.0	2.1	0-7	4	2.0	2.2	0-5	59	1.2	1.4	0-6
	ADOS social	51	5.4	4.1	0-14	64	2.7	2.8	0-13	18	1.5	1.0	0-3	8	3.6	3.5	0-10	73	2.4	2.5	0-14
	ADOS comm	51	3.1	2.3	0-8	64	1.5	1.8	0-8	18	2.2	1.2	0-4	8	3.0	2.5	0-7	73	1.4	1.4	0-7
	ADOS SA	51	7.9	5.6	0-20	64	3.9	4.0	0-18	18	2.6	1.1	0-5	8	5.3	4.9	0-13	73	2.8	3.2	0-15
	ADOS RR	51	2.2	2.1	0-7	64	1.5	1.7	0-6	18	0.3	0.5	0-1	8	1.1	1.6	0-4	73	0.2	0.7	0-4

Note. All ages in months. viq=Verbal IQ; nviq=Nonverbal IQ; vma=Verbal Mental Age; nvma=Nonverbal Mental Age; ADI social=ADI-R Social Total; ADI-R comm-V=ADI-R Communication Total for Verbal Subjects; ADI-R comm-NV=ADI-R Communication Total for Nonverbal Subjects; ADI-RR=ADI-R Restricted, Repetitive Behaviors Total; ADOS social=ADOS Social Total; ADOS comm=ADOS Communication Total.; ADOS SA=revised algorithm Social Affect domain, ADOS RR=revised algorithm Restricted, Repetitive Behavior domain

Supplementary Table C. 2-factor solution loadings with all diagnoses combined in CPEA/STAART dataset

Domains	Mod 1, No Words N=352	Fctr Ldgs	Fctr Ldgs	Mod 1, Some Words N=268	Fctr Ldgs	Fctr Ldgs	Mod 2 Younger N=88	Fctr Ldgs	Fctr Ldgs	Mod 3 N=457	Fctr Ldgs	Fctr Ldgs
Social Affect	Unusual Eye Contact	0.76	0.30	Unusual Eye Contact	0.83	0.26	Unusual Eye Contact	0.73	0.08	Unusual Eye Contact	0.56	0.27
	Gaze and Other Behaviors	0.82	0.05	Gaze and Other Behaviors	0.81	-0.05	Amount of Social Communication	0.73	0.13	Amount of Social Communication	0.78	0.13
	Facial Expressions	0.83	0.04	Facial Expressions	0.84	0.05	Facial Expressions	0.82	0.02	Facial Expressions	0.64	0.19
	Frequency of Vocalization	0.82	0.05	Frequency of Vocalization	0.87	-0.05	Quality of Rapport	0.78	-0.01	Quality of Rapport	0.77	0.06
	Shared Enjoyment	0.76	-0.05	Shared Enjoyment	0.68	0.11	Shared Enjoyment	0.81	-0.06	Shared Enjoyment	0.84	-0.01
	Quality of Social Overtures	0.94	0.04	Quality of Social Overtures	0.83	0.15	Quality of Social Overtures	0.73	0.22	Quality of Social Overtures	0.72	0.21
	Response to Joint Attention	0.47	0.15	Pointing	0.62	0.13	Pointing	-0.06	1.02	Conversation	0.63	0.16
	Gestures	0.78	-0.30	Gestures	0.69	-0.12	Gestures	0.48	0.27	Gestures	0.66	-0.17
	Showing	0.72	0.14	Showing	0.77	0.05	Showing	0.56	0.14	Quality of Social Response	0.72	0.18
Initiation of Joint Attention	0.72	0.06	Initiation of Joint Attention	0.64	0.09	Initiation of Joint Attention	0.25	0.58	Reporting of Events	0.37	0.18	
Restricted Repetitive Behaviors	Intonation	0.54	0.20	Stereotyped Language	0.47	0.32	Stereotyped Language	0.57	-0.02	Stereotyped Language	0.66	0.66
	Unusual Sensory Interest	0.07	0.67	Unusual Sensory Interest	0.09	0.71	Unusual Sensory Interest	0.72	-0.10	Unusual Sensory Interest	0.43	0.43
	Repetitive Interests	0.03	0.66	Repetitive Interests	-0.05	0.55	Repetitive Interests	0.63	-0.01	Highly Specific Topics	0.54	0.54
	Hand Mannerisms	-0.06	0.68	Hand Mannerisms	0.01	0.51	Hand Mannerisms	0.53	-0.16	Hand Mannerisms	0.57	0.57
Eigenvalue		7.40			7.50			7.10	1.30		6.80	1.40
RMSEA	0.06			0.06			0.08			0.06		

Note. Item names have been abbreviated from the Western Psychological Services ADOS item names. Refer to the key from Figure 6 in the ADOS Manual (Lord et al., 1999) for complete names. Fctr Ldgs=Factor Loadings. RMSEA=Root Mean-Square Error Approximation (values 0.08 or less indicate a good fit).

Supplementary Table D. 3-factor solution loadings with all diagnoses combined in CPEA/STAART dataset

Domains	Mod 1, No Words N=352	Fctr Ldgs	Fctr Ldgs	Fctr Ldgs	Mod 1, Some Words N=268	Fctr Ldgs	Fctr Ldgs	Fctr Ldgs	Mod 2 Younger N=88	Fctr Ldgs	Fctr Ldgs	Fctr Ldgs	Mod 3 N=457	Fctr Ldgs	Fctr Ldgs	Fctr Ldgs
Social Affect	Unusual Eye Contact	0.67	0.25	0.20	Unusual Eye Contact	0.75	-0.01	0.37	Unusual Eye Contact	0.41	0.07	0.38	Unusual Eye Contact	0.07	0.22	0.67
	Gaze and Other Behaviors	0.49	0.04	0.43	Gaze and Other Behaviors	0.89	0.12	-0.18	Amount of Social Communication	0.57	0.12	0.21	Amount of Social Communication	0.67	0.09	0.20
	Facial Expressions	0.56	0.03	0.36	Facial Expressions	0.78	-0.03	0.16	Facial Expressions	0.81	-0.02	0.08	Facial Expressions	0.08	0.11	0.78
	Frequency of Vocalization	0.34	0.06	0.60	Frequency of Vocalization	0.86	0.01	-0.01	Quality of Rapport	1.02	-0.10	-0.15	Quality of Rapport	0.82	0.02	0.01
	Shared Enjoyment	0.62	-0.07	0.22	Shared Enjoyment	0.59	-0.09	0.27	Shared Enjoyment	0.92	-0.14	-0.02	Shared Enjoyment	0.49	-0.07	0.48
	Quality of Social Overtures	0.59	0.03	0.47	Quality of Social Overtures	0.73	-0.05	0.31	Quality of Social Overtures	0.61	0.20	0.17	Quality of Social Overtures	0.61	0.17	0.21
	Response to Joint Attention	0.48	0.13	0.04	Pointing	0.63	0.14	0.06	Pointing	-0.16	1.08	0.02	Conversation	0.72	0.14	-0.03
	Gestures	0.36	-0.29	0.50	Gestures	0.59	-0.23	0.15	Gestures	0.45	0.26	0.05	Gestures	0.40	-0.19	0.33
	Showing	0.93	0.08	-0.13	Showing	0.79	0.12	-0.01	Showing	0.38	0.14	0.21	Quality of Social Response	0.73	0.14	0.07
	Initiation of Joint Attention	0.73	0.02	0.06	Initiation of Joint Attention	0.65	0.10	0.04	Initiation of Joint Attention	0.23	0.60	-0.02	Reporting of Events	0.48	0.17	-0.09
Restricted Repetitive Behaviors	Intonation	-0.08	0.25	0.75	Stereotyped Language	0.26	-0.13	0.65	Stereotyped Language	-0.03	0.02	0.68	Stereotyped Language	0.21	0.63	0.02
	Unusual Sensory Interest	0.14	0.63	0.01	Unusual Sensory Interest	0.03	0.22	0.62	Unusual Sensory Interest	0.36	-0.09	0.43	Unusual Sensory Interest	-0.01	0.40	0.25
	Repetitive Interests	0.11	0.62	-0.01	Repetitive Interests	-0.06	0.25	0.40	Repetitive Interests	-0.20	0.03	0.97	Highly Specific Topics	0.02	0.53	-0.09
	Hand Mannerisms	-0.07	0.67	0.09	Hand Mannerisms	0.05	0.84	0.06	Hand Mannerisms	0.11	-0.14	0.49	Hand Mannerisms	-0.08	0.53	0.15
Eigenvalue		7.40	1.70	0.90		7.50	1.40	1.00		7.10	1.30	1.10		6.80	1.40	1.00
RMSEA	0.03				0.04				0.06				0.04			

Note. Item names have been abbreviated from the Western Psychological Services ADOS item names. Refer to the key from Figure 6 in the ADOS Manual (Lord et al., 1999) for complete names. Fctr Ldgs=Factor Loadings. RMSEA=Root Mean-Square Error Approximation (values 0.08 or less indicate a good fit).