Supplementary Table 1 Cases of *FOXP2*-related disorder previously published in the literature ordered reverse chronologically

Author	Variant	N	**Age** (year range)	Sex	Speech	Oromotor	Language	Cognition	Physical features	Motor	Other	FOXP2-only or plus
Nagy *et al* 2021	7.87 Mb interstitial deletion 7q31.1q31.31	4	15-17	F	CAS, delayed speech	NR	Receptive language below average, social difficulties	Intellectual disability	Scoliosis, dysmorphic features, strabismus	Early motor development normal, walked 15 months, uncoordinated, walked with bent knees	MRI NAD	Plus
			27-29	F	CAS	NR	Some social difficulties	NR	Dysmorphic features	NR	NR	Plus
			24-26	F	Dyspraxia	NR	No social difficulties	Borderline IQ (81)	No dysmorphic features	NR	NR	Plus
			48-50	F	CAS	NR	No social difficulties	NR	Dysmorphic features	NR	NR	Plus
Rieger *et al* 2020	4.7 Mb deletion arr[GRCh37] 7q31.2q31.31 (downstream of *FOXP2*)	3	9-11	M	Spoke in full sentences with impaired articulation, delayed speech development	NR	Below average language, delayed language development	Hyperactivity, attention difficulties	Mild dysmorphic features	Motor milestones typical	MRI NAD	Plus
			NR *de novo*	F	Dysarthria	NR					Attended special school	Plus

			3-5	F	Far below average for speech production, speech delay, imprecise articulation	NR	Normal comprehension of sentences, only 25-word vocabulary, age-appropriate development on first words		Mild dysmorphic features	NR		Plus
Argyropoulos *et al* 2019	missense (p.Arg553His) **KE FAMILY**	10			Poor performance in non-word repetition	Poor performance non-speech oromotor tasks					fMRI: pronounced volume reduction right hemispheric & total cerebellar Crus I	Only
Akahoshi & Yamaoto 2018	*de novo* intersitial deletion 7q31.1q31.3	1	27-29	F	NR	Hypotonia & poor sucking in infancy	NR	Binet–tanaka test: 53 (mild ID)	Horizontal line in her palm, high-arched palate, mandibular protrusion	Gross motor delayed	Sleep difficulties, schizophrenia	Plus
Reuter *et al*, 2017	*de novo* 14kb deletion 7q31.1	2	9-11	F	Short sentences with slurred articulation	NR	Reading & spelling below average	FSIQ 78 VCI 77, PRI 86, WMI 82, PSI 88	Mild dysmorphic features	NR	Delayed, EEG NAD	Only

			9-11	F	Short sentences with slurred articulation	NR	Reading & spelling below average	FSIQ 79 VCI 67, PRI 88, WMI 82, PSI 103	Mild dysmorphic features	NR	Delayed, EEG NAD	Only
Reuter *et al*, 2017	nonsense (p.Arg353*)	2	12-14	M	Dyspraxia, slurred articulation	NR	Severely impaired expressive & receptive	FSIQ 72 VCI 57, PRI, WMI, PSI 77-96	Mild dysmorphic features	NR	Delayed, EEG NAD	Only
			33-35	F	Dyspraxia, slurred articulation, stuttering	NR	NR	Learning difficulties (self-reported)	NR	NR		Only
Reuter *et al*, 2017	missense (p.Arg561Pro)	2	9-11	F	Single words only	NR	Severely impaired	FSIQ 70	Mild hypotonia, no dysmorphic features	Delayed	Autistic features, pneumonia	Only
			NR	M	Delayed speech development	NR	NR	NR	NR	NR	NR	Only
Reuter et al, 2017	nonsense (p.Arg503*)	1	6-8	F	Persistent speech impairment, delayed speech development	Choking in infancy	NR	Average IQ, poor auditory memory	Mild dysmorphic features	NR	Strabismus, hyperopia, astigmatism possible seizure at 10m	Only
Reuter et al, 2017	*de novo* nonsense (p.Arg589*)	1	9-11	M	Vocabulary of 2 words	NR	Impaired expressive & receptive	NR	Mild dysmorphic features	Impaired fine motor skills	Delayed, ASD, left exotropia	Only
Reuter *et al*, 2017	*de novo* frameshift (p.Phe563Leufs*28)	1	18-20	M	Stuttering, slurred articulation, stilted intonation, delayed	NR	NR	Good verbal comprehension (not formally tested)	Mild dysmorphic features, 6cm café au lait macule	NR	ASD	Only

					speech development							
Reuter *et al*, 2017	nonsense (p.Arg503*)	3	6-8	M	Vocabulary of 5 words, delayed speech development	NR	NR	NR	Mild dysmorphic features	NR	Hyperactivity, tantrums	Only
			3-5	F	Three-word sentences	NR	NR	NR	Mild dysmorphic features	Walking at 18m due to hip dysplasia		Only
			36-38	M	Simple sentences with slurred pronunciation	NR	NR	NR	Mild dysmorphic features	Delayed		Only
Reuter *et al*, 2017	missense (p.Pro530Leu)	2	6-8	M	Slurred articulation, unintelligible, delayed speech development	NR	Average vocabular, below average receptive grammar	FSIQ 72	NAD	NR		Only
			39-41	M	Articulation disorder, delayed speech development	NR	NR	Average	NR	NR	Strabismus, right exotropia MRI NAD,	
Turner *et al*, 2013	*de novo* frameshift p.Gln415Val*5	1	6-8	M	CAS & dysarthria	Oral motor dyspraxia, mild oral dysphagia	Severely impaired expressive & receptive severe reading & spelling impairment	FSIQ 73 VCI 71, PRI 94, WMI 77, PSI 70	Submucous cleft palate (repaired)	Motor apraxia	Delayed, strabismus, MRI & EEG NAD	Only

Zilina *et al*, 2012	8.3Mb deletion 7q31.1-q31.31	2	3-5	F	CAS	Difficulty chewing, swallowing, drooling	Poor vocabulary	Moderate developmental delay	Dysmorphic	NR	Delayed, autistic features, kidney & eye abnormalities	Plus
			27-29	F	CAS	Difficulty chewing, swallowing, drooling	NR	Low average FSIQ 88	Dysmorphic	NR	Delayed, poor social skills, eye abnormalities	Plus
Zilina *et al*, 2012	6.5Mb deletion 7q31.1-q31.2	2	6-8	F	CAS	NAD	Poor vocabulary	Moderate ID	Dysmorphic, mild ataxia	Motor delayed	Aggressive	Plus
			NR	F	CAS	NAD	NR	Apparent ID	NR	Motor delayed	Aggressive	Plus
Palka *et al*, 2012	*de novo* 14.8Mb mosaic deletion 7q31.1-q31.3	1	9-11	F	CAS	NR	Impaired expressive & receptive	Borderline FSIQ 71, PIQ, 88, VIQ 57	High arched palate, lordosis	Fine motor praxis & balance problems	Delayed	Plus
Rice *et al*, 2012	1.57Mb deletion 7q31.1-q31.2	2	3-5	M	Severe CAS, delayed speech development	Messy bottle feeder, gagging & drooling	Severely impaired expressive, average receptive	Borderline FSIQ 71, PIQ 75, VIQ 77	NAD	Fine & gross motor planning difficulty	NR	Plus
			24-26	F	CAS, dysarthria, delayed speech development	Gagging & drooling as infant, delayed swallow	Severely impaired	Low average FSIQ 89, PIQ 92, VIQ 87	Surgery for L esotropia	Motor NAD	PPD-NOS	Plus
Roll *et al*, 2010	missense (p.Met406Thr)	4	NR	2F 2M	NR	NR	Impaired (proband)	Cognitive impairment (proband)	NR	NR	Polymicrogyria (proband)	Only

Tomblin *et al*, 2009 Shriberg *et al*, 2006	balanced translocation t(7;13)(q31.1;q13.2) disrupting *FOXP2*	2	50-52	F	CAS & spastic dysarthria	No orofacial apraxia	Impaired expressive & receptive	Low average FSIQ 88, PIQ 95 VIQ 81	NAD	NR		Plus
			18-20	F	CAS & spastic dysarthria	No orofacial apraxia	Impaired expressive & receptive	Low average FSIQ 81, PIQ 8D, VIQ 81	NR	NR		Plus
Lennon *et al*, 2007	9.1Mb deletion 7q31.1–7q31.31	1	6-8	M	CAS	Drooling, low oral-motor tone	Severely impaired expressive & receptive	Moderate ID	Dysmorphic		Global delay	Plus
Zeesman *et al*, 2006	*de novo* 16Mb deletion 7q31.2-q32.2	1	3-5	F	Verbal dyspraxia	Oromotor dyspraxia	Severely impaired expressive & receptive	Below average-average	Dysmorphic		Delayed	Plus
Feuk *et al*, 2006	*de novo* deletion 7q31.1-q31.3 (15Mb Patient 1; 11Mb Patient 3); 7q31.2-q32 (13Mb Patient 2; 15Mb Patient 4); 7q22-q31.3 (15Mb Patient 5)	5		NR	CAS	Oromotor difficulties	Impaired expressive & receptive	Cognitive impairment	NR	NR	Delayed, patient 3: ASD	Plus
Feuk *et al*, 2006	translocation t(3;7)(q23;q31.2)	1	NR	NR	CAS	Oromotor difficulties	Impaired expressive & receptive	Cognitive impairment	NR	NR	Delayed	Plus

	disrupting *FOXP2*											
Feuk *et al*, 2006	*de novo* deletion 7q31.2-q32 (26Mb Patient 18; 14Mb Patient 20); 7q22-q31.33 (22Mb Patient 19); q31.1-q33 (30Mb Patient 21 & 22)	5	NR	NR	Severe dyspraxia	NR	Language delay	NR	NR	NR	Patient 18: ASD, global delay (patients 18, 21 & 22)	Plus
Feuk *et al*, 2006	maternal uniparental disomy of chromosome 7 that reduces *FOXP2* expression	7	NR	NR	CAS, delayed speech development	Oromotor dyspraxia	Impaired expressive, average receptive	NR	NR	NR	Silver-Russell Syndrome Patient 13: ASD	Plus
MacDermot *et al*, 2005	nonsense (p.Arg328*)	3	3-5	M	CAS	NR	Impaired expressive & receptive	NR	NR	NR	Delayed	Only
			0-2	F	Minimally verbal	Oropharyngeal dyspraxia	Impaired expressive & receptive	NR	NR	Motor dyspraxia	Delayed	Only
			NR	F	Poor clarity, delayed	NR	Simple grammar	Comprehension difficulties	NR	NR		Only

					speech development							
MacDermot *et al*, 2005	Heterozygous insertion of CAGCAGCAACAA into exon 5	1	NR	NR	CAS	NR	NR	NR	NR	NR		Only
Vargha-Khadem *et al*, 1995; Lai *et al*, 2001	missense (p.Arg553His) **KE FAMILY**	15	mean 24		CAS, delayed speech development	Orofacial dyspraxia	Impaired expressive & receptive, reading/spelling impairments	Borderline VIQ (mean 75), average PIQ (mean 86)	NAD	Motor NAD	Impaired performance on phonological loop working memory assessment (Schulze *et al* 2017)	Only
Lai *et al*, 2000	*de novo* balanced translocation t(5;7)(q22;q31.2) disrupting *FOXP2*	1	3-5	M	Verbal dyspraxia	Severe orofacial dyspraxia	Impaired expressive & receptive	Normal non-verbal skills	NAD	Delayed		Plus

ASD = autism spectrum disorder, CAS = childhood apraxia of speech, EEG = electroencephalogram, FSIQ = full scale intelligence quotient, ID = intellectual disability, m = months, MRI = magnetic resonance imaging, NAD = no abnormalities detected, NR = not reported, PIQ = performance intelligence quotient, VIQ = verbal intelligence quotient, y = years

Note: A further 15 cases with pure interstitial deletions of chromosome 7 are reviewed in Palka *et al* 2012, however speech and language data were not reported. Zhao *et al* 2016 published one case of a female child with a *de novo* 3.2 Mb sub microscopic deletion 7q31.2–7q31.31 (downstream of *FOXP2*) and Sangu *et al* 2017 reported one case of a male child with

a *de novo* de novo 1.9-Mb microdeletion in 7q31.33q32.1 (*FOXP2* is not within deletion region). Adgebola *et al* 2014 also report an individual with a deletion 3Mb away from *FOXP2*.