

Language impairment in the genetic forms of behavioural variant frontotemporal dementia

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Supplementary Table 1. Neuropsychology assessment scores for the bvFTD groups and controls. Bold items are significantly different to controls; ^asignificantly impaired compared to *C9orf72* mutation carriers, ^bsignificantly impaired compared to *GRN* mutation carriers, ^csignificantly impaired compared to *MAPT* mutation carriers.

Supplementary Table 2. Correlations between the linguistic symptoms and left hemisphere regional brain volumes in each genetic group. Rho is shown for each correlation, with significant values shown highlighted and in bold. Abbreviations: comp = comprehension.

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	Controls		<i>C9orf72</i>		<i>GRN</i>		<i>MAPT</i>	
Trail Making Test Part A (max 150s)	30.8	(13.4)	60.4	(31.8)	84.1	(41.2)^c	45.1	(17.1)
Trail Making Test Part B (max 300s)	73.5	(34.7)	195.0	(89.3)	218.4	(112.8)	146.5	(88.3)
D-KEFS Color-Word Interference Test (max 180s)	52.4	(13.1)	110.0	(47.7)	88.7	(50.9)	79.5	(35.5)
Digit Symbol test (max in 90s)	51.8	(12.3)	27.8	(11.9)	22.6	(12.8)	33.2	(8.7)
Digit Span Forwards (/12)	7.8	(1.9)	6.3	(2.7)	6.2	(2.7)	7.8	(2.6)
Digit Span Backwards (/12)	6.4	(2.0)	4.3	(2.1)^c	4.3	(2.8)	6.5	(3.2)
Block Design (/71)	46.0	(14.2)	18.8	(14.5)^c	11.8	(9.8)^c	37.7	(14.9)
FCSRT - free recall (/48)	30.5	(7.1)	16.7	(7.4)	6.7	(10.0)^a	10.4	(7.3)^a
FCSRT - free + cued recall (/48)	45.3	(4.8)	39.5	(8.5)	18.3	(16.4)^a	28.3	(12.4)^a
FCSRT - free delayed recall (/16)	11.4	(2.8)	6.3	(3.8)	2.9	(4.3)	3.3	(4.2)
FCSRT - free + cued delayed recall (/16)	15.2	(1.7)	13.8	(2.6)	8.7	(7.0)	10.1	(4.5)^a
Mini-SEA: Faux-Pas test (/40)	34.7	(4.9)	26.7	(7.5)	21.8	(5.6)^c	30.6	(7.3)
Mini-SEA: Facial Emotion Recognition Test (/35)	28.2	(3.3)	20.9	(4.6)	17.1	(5.5)^c	23.4	(6.0)

Supplementary Table 2. Correlations between the linguistic symptoms and left hemisphere regional brain volumes in each genetic group. Rho is shown for each correlation, with significant values shown highlighted and in bold. Abbreviations: comp = comprehension.

		Impaired articulation	Decreased fluency	Impaired grammar	Impaired word retrieval	Impaired speech repetition	Impaired sentence comp	Impaired single word comp	Dyslexia	Dysgraphia	Impaired functional communication
Inferior frontal gyrus	<i>C9orf72</i>	-0.64	-0.26	0.21	-0.04	-0.39	0.14	0.16		-0.07	-0.11
	<i>GRN</i>	0.08	0.62	0.58	0.47	0.58	0.08		-0.25	0.25	0.20
	<i>MAPT</i>		-0.87		-0.56		-0.22	-0.79	-0.79	-0.45	-0.39
Insula	<i>C9orf72</i>	-0.45	-0.54	0.08	-0.39	-0.09	-0.07	0.21		0.46	-0.58
	<i>GRN</i>	-0.58	0.24	0.58	-0.17	0.58	-0.30		-0.25	0.25	-0.26
	<i>MAPT</i>		-0.58		-0.51		0.58	-0.16	-0.16	-0.40	-0.39
Motor Cortex	<i>C9orf72</i>	-0.59	-0.65	-0.29	-0.51	-0.30	-0.11	0.03		0.20	-0.26
	<i>GRN</i>	-0.41	0.24	-0.08	0.05	-0.08	-0.04		0.41	0.25	0.31
	<i>MAPT</i>		0.29		0.32		-0.22	0.63	0.63	-0.22	0.46
Temporal pole	<i>C9orf72</i>	-0.21	-0.36	-0.34	-0.38	0.26	0.05	0.34		0.30	0.01
	<i>GRN</i>	-0.58	-0.04	0.41	-0.13	0.41	-0.73		-0.41	0.00	-0.40
	<i>MAPT</i>		-0.14		0.09		0.76	0.16	0.16	-0.09	0.15
Superior temporal gyrus	<i>C9orf72</i>	-0.18	-0.42	-0.26	-0.27	0.09	-0.10	0.37		0.15	-0.13
	<i>GRN</i>	-0.41	0.01	0.58	0.13	0.58	-0.78		-0.25	0.25	-0.53
	<i>MAPT</i>		-0.14		-0.21		0.04	0.00	0.00	-0.45	-0.54
Supratemporal region	<i>C9orf72</i>	-0.40	-0.42	0.05	-0.12	-0.39	0.14	0.50		0.11	-0.42
	<i>GRN</i>	-0.08	0.03	0.58	0.33	0.58	-0.73		-0.41	0.25	0.31
	<i>MAPT</i>		-0.14		-0.09		0.76	0.32	0.32	-0.27	-0.08
Angular gyrus	<i>C9orf72</i>	-0.08	-0.03	0.08	0.37	0.30	0.40	0.24		0.13	-0.07
	<i>GRN</i>	-0.58	-0.11	0.41	-0.36	0.41	-0.54		-0.41	0.00	-0.50
	<i>MAPT</i>		0.29		0.30		-0.80	-0.16	-0.16	0.13	0.08