

Supplementary Table 1. Spearman correlations between the linguistic symptoms from the GENFI symptom scale and left hemisphere regional brain volumes in each presymptomatic genetic group. Rho is shown for each correlation, with significant values shown highlighted and in bold. Abbreviations: comp = comprehension. A dot represents no correlation can be calculated due to lack of symptom data.

		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>	-0.04	0.09	0.14	0.11	-0.08	0.10	0.07	-0.04	-0.01	-0.05
	<i>GRN</i>	-0.04	-0.21	-0.12	-0.09	-0.14	-0.11	-0.18	-0.11	0.06	-0.20
	<i>MAPT</i>	-0.03	-0.17	.	-0.20	.	.	-0.13	.	.	.
Insula	<i>C9orf72</i>	-0.09	-0.03	-0.03	-0.08	-0.15	0.03	-0.09	-0.06	-0.20	-0.17
	<i>GRN</i>	-0.08	-0.18	-0.07	-0.14	-0.15	-0.07	-0.14	-0.10	0.04	-0.19
	<i>MAPT</i>	0.11	-0.06	.	-0.06	.	.	-0.23	.	.	.
Motor Cortex	<i>C9orf72</i>	-0.08	-0.07	-0.06	-0.05	-0.03	0.00	-0.17	-0.07	-0.12	-0.11
	<i>GRN</i>	-0.11	-0.11	-0.06	0.06	-0.14	-0.10	-0.04	-0.04	0.02	-0.07
	<i>MAPT</i>	-0.05	-0.12	.	0.20	.	.	0.05	.	.	.
Temporal pole	<i>C9orf72</i>	-0.07	-0.15	-0.08	-0.08	0.02	-0.07	-0.11	0.04	-0.09	-0.03
	<i>GRN</i>	0.02	0.01	0.01	0.05	-0.11	0.01	-0.06	0.04	-0.05	-0.15
	<i>MAPT</i>	-0.03	-0.11	.	-0.11	.	.	-0.23	.	.	.
Superior temporal gyrus	<i>C9orf72</i>	-0.03	-0.06	-0.06	-0.17	-0.08	0.02	-0.04	0.02	-0.09	-0.14
	<i>GRN</i>	-0.02	-0.05	-0.04	0.07	-0.14	0.01	0.04	0.04	0.00	-0.07
	<i>MAPT</i>	0.18	0.20	.	0.16	.	.	-0.12	.	.	.
Supratemporal region	<i>C9orf72</i>	-0.05	0.02	0.08	-0.05	-0.04	0.08	0.05	0.06	0.08	0.01
	<i>GRN</i>	-0.01	-0.15	-0.19	-0.11	-0.15	0.08	-0.02	-0.04	-0.07	-0.18

	<i>MAP T</i>	-0.07	-0.11	.	-0.20	.	.	-0.09	.	.	.
Angular gyrus	<i>C9orf 72</i>	-0.01	0.04	0.00	-0.02	-0.15	0.03	-0.01	-0.12	-0.19	-0.15
	<i>GRN</i>	-0.07	-0.17	0.00	-0.07	0.02	-0.14	-0.13	-0.17	0.03	-0.01
	<i>MAP T</i>	-0.06	0.16	.	0.04	.	.	0.00	.	.	.

Supplementary Table 2. Spearman correlations between the linguistic cognitive tasks and left hemisphere regional brain volumes in each presymptomatic genetic group. Rho is shown for each correlation, with significant values shown in bold. Abbreviations: BNT, Boston Naming Test; mCCT, modified Camel and Cactus Test; CF, category fluency.

		BNT	mCCT	CF
Inferior frontal gyrus	<i>C9orf72</i>	0.07	0.16	0.10
	<i>GRN</i>	-0.02	0.15	0.10
	<i>MAPT</i>	0.08	0.16	-0.01
Insula	<i>C9orf72</i>	-0.02	0.13	0.15
	<i>GRN</i>	0.04	0.03	0.21
	<i>MAPT</i>	0.20	0.29	0.00
Motor Cortex	<i>C9orf72</i>	-0.03	0.15	0.15
	<i>GRN</i>	0.04	0.16	0.13
	<i>MAPT</i>	-0.21	-0.07	-0.03
Temporal pole	<i>C9orf72</i>	-0.21	-0.07	0.01
	<i>GRN</i>	-0.03	-0.01	0.01
	<i>MAPT</i>	0.10	0.15	-0.16
Superior temporal gyrus	<i>C9orf72</i>	0.02	-0.02	0.17
	<i>GRN</i>	-0.16	0.06	-0.02
	<i>MAPT</i>	0.16	0.26	-0.06
Supratemporal region	<i>C9orf72</i>	0.06	0.14	0.12
	<i>GRN</i>	-0.03	0.15	0.11
	<i>MAPT</i>	-0.03	0.24	0.15

Angular gyrus	<i>C9orf72</i>	0.01	0.09	0.12
	<i>GRN</i>	-0.06	0.13	0.15
	<i>MAPT</i>	0.05	0.26	-0.03