

Table 1: Demographic, behavioural group data for I.Q., reading and phonological, “dorsal visual stream” tasks, and fMRI group data for motor/cerebellar and phonological tasks are reported (red bold: $p < .001$ uncorrected p-value; blue bold: $.001 < p < 0.01$ uncorrected p-value, green bold: $.01 < p < .05$ uncorrected p-value).

Moreover, raw data of each dyslexic are summarized. Black Bold: indicates raw data that showed a significant differences from the control group using the Crawford and Howell's method ($p < .05$ uncorrected threshold); Orange bold: indicates raw data that showed a significant differences from the control group using the Crawford and Howell's method (FWE corrected value; see correlation analyses in section 2.5 for details).

	Controls	Dyslexics	OF (f)	EC (f)	DF (f)	IB (f)	AB (f)	NB (m)	MG (m)	MK (m)	MM (m)	DC (m)	DG (m)	ODA (m)	MB (m)	LB (m)	CV (m)	FS (m)	FD (m)	LDP (m)	TDP (m)	PN (m)
Age	21 (2.3)	21 (5.2)	25	17	20	39	19	22	27	27	18	18	18	20	24	19	18	19	18	18	18	20
Education	14 (2)	13 (2)	13	12	13	18	13	13	18	13	12	12	12	14	17	13	13	12	12	12	12	14
Verbal I.Q.	120 (7.2)	112 (8)	113	WISC	115	122	113	125	122	112	115	105	116	122	124	108	101	99	102	108	107	107
Performance I.Q.	122 (8.6)	121 (9.7)	115	WISC	128	<i>144</i>	126	131	119	127	126	113	111	120	132	115	114	103	130	123	110	120
Voice-Onset Time (msec)	375 (59)	376 (83.5)	427	301	485	360	328	273	351	296	320.5	235.5	407	390	500	309	359	578	453	359	407	375
Pseudo-word reading (msec)	536 (67)	876 (135.7)	772	942	1141	898.5	563	839	795	923.5	821	781.5	812	867	1141	945.5	875	992	921	742.5	719	960.5
Pseudo-word reading (errors)	0.5 (0.8)	1.3 (1.4)	0	2	0	0	1	1	0	0	2	4	2	0	0	0	2	2	1	4	2	4
Word reading (msec)	472 (51.2)	656 (115.6)	716	620	906	742.5	531	504	623	654.5	656	591	539	578	836	617	578	672	641	547	562	890
Word reading (errors)	0.1 (0.3)	0.4 (0.6)	0	0	0	0	1	0	0	0	1	1	0	0	1	1	0	0	0	2	1	1
Spoonerism (seconds)	54 (25.8)	141 (81.5)	86	88	92	86	85	166	118	272	206	106	62	87	86	260	171	68	371	99	152	168
Spoonerism (errors)	2 (1.7)	6 (4)	4	2	1	2	13	9	10	0	3	8	5	6	5	6	9	4	4	1	15	7
Digit naming (seconds)	14 (3.7)	20 (4.8)	21	22	14.5	20	15.5	14.5	16.5	20.5	21	18	15	13	19	24.5	17.5	22	31.5	17.5	24.5	28.5

Picture naming (msec)	636 (63.4)	740 (88)	826	691	781	812	688	553	680	640	691	686	<i>n.e.</i>	781	820	812	703	921	766	656	719	843
Contrast sensitivity with low-frequency Gabor (% of increased contrast)	3 (1.7)	5 (5.7)	<i>n.e.</i>	<i>n.e.</i>	1	7	1	<i>n.e.</i>	5	2	7	1	1	2	<i>n.e.</i>	22	6	<i>n.e.</i>	1	10	<i>n.e.</i>	8
Contrast sensitivity with high-frequency Gabor (% of increased contrast)	19 (46.6)	47 (65)	<i>n.e.</i>	<i>n.e.</i>	125	0	143	<i>n.e.</i>	0	0	0	144	109	0	<i>n.e.</i>	0	4	<i>n.e.</i>	130	0	<i>n.e.</i>	0
Speed discrimination with low-frequency Gabor (% of increased speed)	133 (7.6)	135 (5.2)	<i>n.e.</i>	<i>n.e.</i>	141	130	141	<i>n.e.</i>	140	142	138	137	129	130	<i>n.e.</i>	129	140	<i>n.e.</i>	132	135	<i>n.e.</i>	130
Speed discrimination with high-frequency Gabor (% of increased speed)	230.6 (27.7)	225 (23.8)	<i>n.e.</i>	<i>n.e.</i>	242	242	200	<i>n.e.</i>	242	229	242	203	242	242	<i>n.e.</i>	242	165	<i>n.e.</i>	202	217	<i>n.e.</i>	231
Coherent motion perception (% of increased proportion of moving dots)	35 (5.9)	35 (4.6)	<i>n.e.</i>	<i>n.e.</i>	40	32	40	<i>n.e.</i>	33	31	31	39	40	40	<i>n.e.</i>	40	<i>n.r.</i>	<i>n.e.</i>	31	29	<i>n.e.</i>	32
Motor learning (correct taps/40 trials)	26 (4.8)	25 (7)	29	18	<i>n.r.</i>	26	<i>n.r.</i>	31	30	29	27	<i>n.r.</i>	24	30	23	8	27	10	15	20	25	28
Motor learning (lack of corrections /40 trials)	5 (5.9)	6 (6.9)	3	10	<i>n.r.</i>	1	<i>n.r.</i>	4	3	0	2	<i>n.r.</i>	5	1	7	26	2	17	13	7	4	1
Tone discrimination (d-prime)	4 (0.7)	3 (1.2)	3.8	<i>n.r.</i>	1.7	4.6	4.6	4	2.8	<i>n.r.</i>	<i>n.r.</i>	1.6	4.6	4	2.4	3.2	4.6	1.4	1.7	4	2.6	1.7
Syllable rhyming (d-prime)	4 (1.4)	3 (1.3)	4.6	<i>n.r.</i>	4.6	4.6	0.6	2.8	4.6	<i>n.r.</i>	<i>n.r.</i>	1.7	3.2	2.5	4.6	1.9	2.8	4.6	1.7	4	3.6	1.9
Tone discrimination (reaction times)	1.3 (.12)	1.4 (.04)	1.3	<i>n.r.</i>	1.6	1.1	1.2	1.2	1.3	<i>n.r.</i>	<i>n.r.</i>	1.2	1.4	1.3	1.6	1.6	1.4	1.4	1.6	1.4	1.3	1.5
Syllable rhyming (reaction times)	1.4 (.16)	1.5 (.12)	1.5	<i>n.r.</i>	1.5	1.4	1.4	1.3	1.3	<i>n.r.</i>	<i>n.r.</i>	1.4	1.7	1.4	1.8	1.4	1.5	1.5	1.6	1.6	1.5	1.5

CS: contrast sensitivity. SD: Speed discrimination. *n.e.*: not executed (the subject did not performed the task). *n.r.*: not recorded (the subject performed the fMRI task, but the behavioral response was not recorded because of a response box malfunction).

Table 2. Whole-brain analyses: (1) brain areas hypo-activated in dyslexics during pseudo-word reading (between-group comparisons at $p < .05$ FWE-corrected at voxel-level), and (2) brain areas that showed a group-by-task interaction effects ($p < .05$ FWE-corrected at cluster-level after a voxel-wise threshold of $p < 0.001$ uncorrected). The two most significant local-maxima in SPM are reported for each anatomical area. The number of voxels in the cluster is also reported.

	MNI Coordinates								
	<i>x</i>	<i>y</i>	<i>z</i>	<i>Z score</i>	<i>Cluster-size</i>	<i>x</i>	<i>y</i>	<i>z</i>	<i>Z score</i>
Brain regions	Left hemisphere				Right hemisphere				
	1. Between-group comparisons								
	<i>a. Pseudo-word reading</i>								
Fusiform gyrus	-42	-50	-16	5.4	279				
	-40	-54	-10	5.2	279				
	2. Group-by-task interactions								
	<i>a. (reading – rhyming)controls > (reading-rhyming)dyslexics</i>								
Inf. temporal gyrus+	-42	-46	-14	4.0	383				
Fusiform gyrus+	-42	-52	-10	4.1	383				
	-38	50	14	5.2	383				
	<i>b. (reading – visual motion perception)controls > (reading - visual motion perception)dyslexics</i>								
Mid. temporal gyrus+	-46	-64	-2	3.7	733				
	-42	-60	-2	3.5	733				
Inf. temporal gyrus	-54	-60	-12	3.6	733				
	-58	-60	-10	3.5	733				
Fusiform gyrus	-44	-46	-22	4.4	733				

Table 3. Small-volume corrected analyses: (1) between-group and (2) higher-order group-by-task comparisons were tested on the 9 clusters identified in a recent meta-analysis by Paulesu *et al.* (2014). Here, we report the results that survive at $p < .05$ FWE corrected in the Small-Volume-Correction analyses. The p-values are corrected. All local-maxima in SPM are reported.

Brain regions	MNI Coordinates					# Cluster (see Paulesu <i>et al.</i> , 2014)
	<i>x</i>	<i>y</i>	<i>z</i>	<i>Z score</i>	<i>p-value</i>	
1. Between-group comparisons						
<i>controls > dyslexics for reading</i>						
Inf. temporal gyrus	-46	-60	-8	4.4	.001	L6 (x=-50; y=-61; z=-9)
Fusiform gyrus	-42	-50	-16	5.4	<.001	L23 (x=-45; y=-49; z=-15)
	-42	-56	-18	5.0	<.001	L5 (x=-41; y=-60; z=-18)
Inf. occipital gyrus	-48	-58	-14	4.3	.001	L6 (x=-50; y=-61; z=-9)
2. Group-by-task interactions						
<i>a. (reading – rhyming)_{controls} > (reading-rhyming)_{dyslexics}</i>						
Inf. parietal lobule	-40	-44	42	3.4	.039	L30 (x=-43; y=-40; z=46)
Inf. temporal gyrus	-42	-46	-14	4.0	.005	L23 (x=-45; y=-49; z=-15)
Fusiform gyrus	-42	-50	-12	4.0	.005	L23 (x=-45; y=-49; z=-15)
<i>b. (reading – motion perception)_{controls} > (reading-motion perception)_{dyslexics}</i>						
Inf. parietal lobule	-38	-42	42	3.3	.050	L30 (x=-43; y=-40; z=46)
Inf. temporal gyrus	-54	-60	-12	3.6	.025	L6 (x=-50; y=-61; z=-9)
	-50	-64	-4	3.5	.029	L6 (x=-50; y=-61; z=-9)
Fusiform gyrus	-42	-48	-18	4.3	.002	L23 (x=-45; y=-49; z=-15)
	-42	-56	-20	3.6	.025	L5 (x=-41; y=-60; z=-18)
Inf. occipital gyrus	-48	-58	-14	3.4	.045	L6 (x=-50; y=-61; z=-9)

Table 4. In depth functional analyses (1): normal organization of the left occipito-temporal region according to the methodology of Danelli *et al.* (2013). This region is hypoactive for reading in the present sample of dyslexics.

Brain regions	MNI Coordinates			
	x	y	z	Z score
<i>Controls > Dyslexics in reading</i>				
<i>a. Reading & Rhyming</i>				
Inf. temporal gyrus	-48	-50	-22	4.8
<i>b. Reading & Visual Motion Perception</i>				
Fusiform gyrus	-42	-54	-18	5.2
	-42	-54	-10	5.2
<i>c. Reading per se</i>				
Inf. temporal gyrus	-40	-46	-16	7.2*
Fusiform gyrus	-34	-46	-22	6.1*
	-40	-50	-20	5.8^

*: This effect was calculated on the reading data exclusively masked on the other three tasks data thresholded at 0.05 uncorrected.

^: This region was identified in the controls by comparing the reading task with all the other tasks with the linear contrast “3 -1 -1 -1” for reading, rhyming, visuo-motion perception and motor learning respectively.

Table 5. In depth functional analyses (2): functional characterization of the regions hypo-activated by dyslexics during reading.

Brain regions	MNI Coordinates								
	<i>x</i>	<i>y</i>	<i>z</i>	<i>Z score</i>	<i>x</i>	<i>y</i>	<i>z</i>	<i>Z score</i>	
<i>Left occipito-temporal activations</i>									
	Controls					Dyslexics			
<i>a. Pseudo-word reading</i>									
Fusiform gyrus	-42	-56	-20	>8		-----			
	-38	-48	-24	>8		-----			
<i>b. Auditory rhyming</i>									
Inf. temporal gyrus	-52	-48	-20	4.7		-50	-50	-12	5.83
						-48	-44	-14	5.54
<i>c. Visual motion perception</i>									
Fusiform gyrus	-42	-64	-18	6.36		-----			
Inf. occipital gyrus	-50	-74	-4	>8		-48	-72	-4	>8
	-----					-48	-68	-2	>8