

## Supplementary Materials Table S1

### Wireless EEG system for neurofeedback training

Tsvetalin Totev <sup>1</sup>, Tihomir Taskov <sup>1</sup> and Juliana Dushanova <sup>1,\*</sup>

<sup>1</sup>Institute of Neurobiology, Bulgarian Academy of Sciences, Acad. G. Bonchev Str., bl. 23, 1113 Sofia and Bulgaria

**Table S1.** Psychological results of the groups in standard scores.

<b>1. DDE-2 Test</b>	<b>Dyslexics mean ± s.d</b>	<b>Controls mean ± s.d</b>
<b>1.1. Word reading</b>		
Accuracy	90.6 ± 4.5	106 ± 5.58
time	91.7 ± 4.8	132 ± 0.76
<b>1.2. Pseudo-word reading</b>		
Accuracy	88.3 ± 4.4	102 ± 4.65
time	96.7 ± 4.1	118 ± 0.68
<b>1.3 Homonyms</b>		
Accuracy	98.5 ± 2.4	112 ± 4.82
<b>1.4 Spelling</b>		
Accuracy	112 ± 4.45	112 ± 1.82
<b>1.5 Word writing</b>		
Accuracy	85.7 ± 4.4	115 ± 6.49
<b>1.6 Pseudo-word writing</b>		
Accuracy	91.9 ± 3.9	104 ± 4.25
<b>1.7 Dictation</b>		
Accuracy	89.5 ± 3.4	112 ± 4.82
<b>2. Psychometric tests</b>	<b>Dyslexics mean ± s.d</b>	<b>Control mean ± s.d</b>
<b>2.1 Dictation</b>		
Correct sentences	10.94 ± 4.51	21.00 ± 5.85
<b>2.2. Text reading</b>		
Correct answers	119.75 ± 7.88	129.41 ± 3.43
time (s)	191.56 ± 149.55	104.77 ± 29.00
<b>2.3 Phological task</b>		
Without the first sound		
Correct	5.52 ± 2.04	9.20 ± 1.87
time (s)	62.5 ± 29.4	34.86 ± 10.57
<b>2.4 Phological task</b>		
Without the last syllable		
Correct answers	6.15 ± 2.38	8.05 ± 2.08
time	64.84 ± 30.5	37.50 ± 8.81
<b>3. Girolami-Bolinier</b>		
Correct answers	50.9 ± 9.2	
<b>4. Raven test</b>		
	> 98	> 98

Data are expressed as the mean ± SD. One hundred-eight children: 72 children with dyslexia (52 boys and 20 girls, age 8.76 ± 0.53 years) and 36 normal children (26 boys and 10 girls, age 8.8 ± 0.36 years) from a

second grade of four primary schools located in the urban community of middle-level socio-economic status in Sofia, Bulgaria. The study was conducted in the schools. The children had a normal or corrected-to-normal vision after an examination by an ophthalmologist. All participants in the study spoke Bulgarian as their first language and were right-handed.

The school children pass through neuropsychological tests [1]. Psychological test battery DDE-2 was applied to examine developmental dyslexia [2,3]. Psychometric tests were used to assess reading, writing skills and phonological awareness [4]. For the children with learning difficulties, not only the Raven test for nonverbal intelligence "Progressive Matrices" [5] but also the Girolami-Boulinier test for non-verbal perception "Differently Oriented Marks" [6,7] was applied.

The first language of the participants was Bulgarian. The classification of hand preference [8] showed that all children had right-hand preferences. They were with normal or adjusted to normal vision. They scored  $\geq 98$  points in their nonverbal intelligence test [5]. Children who had difficulty reading, along with accuracy or speed in reading subtests of the DDE-2 battery and the "Reading Abilities" battery below the norm with a standard deviation of standardized data of normally reading children were included in the dyslexic group [4]. Children, participating in the study as controls, were recruited from the schools of the dyslexics. They were of the same age and socio-demographic background as the dyslexic group. They did not have dyslexia and concomitant language disorders, according to the accuracy and speed of reading in DD2 tests.

1. Raichev, P.; Geleva, T.; Valcheva, M.; Rasheva, M.; Raicheva, M. Protocol on neurological and neuropsychological studies of children with specific learning disabilities. In the "Integrated Learning and Resource Teacher" journal; Ed. "Dr. Ivan Bogorov" - Sofia. 2005 (in Bulgarian).
2. Matanova, V.; Todorova, E. DDE-2 Test Battery for evaluation of dyslexia of development - Bulgarian adaptation; OS Bulgaria Ltd. 2013, <https://www.giuntipsy.bg/bg/prod-19-testova-bateriq-za-ocenka-nadisleksiq-na-razvitiето.htm>.
3. Sartori, G.; Remo, J.; Tressoldi, P.E. Updated and revised edition for the evaluation of dyslexia. In *DDE-2, Battery for the Developmental Dyslexia and Evolutionary Disorders-2, 1995*, Giunti, O.S.: Florence, Italy, 2007.
4. Kalonkina, A.; Lalova, Y. Normative indicators for the test battery for a written speech assessment. In *Logopedical Diagnostics (30-38)*; Tyubele, S., Iossifova, R., Eds.; Rommel Publishing House: Sofia, Bulgaria, 2016.
5. Raven, J.; Raven, J.C.; Court, J.H. *Manual for Raven's Progressive Matrices and Vocabulary Scales. Section 2: The Coloured Progressive Matrices*; Oxford Psychologists Press: Oxford, UK, 1998.
6. Girolami-Boulinier, A. *Contrôle des Aptitudes à la Lecture et à l'Écriture (CALE)*; CALE: Paris, Masson, 1985; (In French).
7. Yakimova, R. *Narusheniya na Pismenata rech. Abnormalities of Written Speech*; Rommel Publishing House: Sofia, Bulgaria, 2004. (In Bulgarian)
8. Annett, A. A classification of hand preference by association analysis. *Br J Psychol* 1970, 61, 303-321.