

Supplementary Table 2. Comparison of efficacy of DoBrain and general educational apps in children with normal development

Variable	DoBrain (N=53)			JNKK (N=51)			Group difference in Δ	
	Before	After	Δ^\dagger	Before	After	Δ^\dagger	p-value	Adjusted p-value [†]
PEP-R DQ	106.6±12.4	107.0±11.6	0.3±9.9	108.9±10.8	106.5±15.6	-2.4±12.5	0.725	>0.999
Imitation	104.2±19.0	98.5±15.2	-5.6±15.5*	108.0±16.9	99.9±18.1	-8.1±18.4*	0.495	>0.999
Perception	104.2±19.6	95.9±17.4	-8.3±13.2*	112.2±18.2	102.3±18.8	-9.9±16.2*	0.578	>0.999
Fine motor	104.2±13.6	100.6±14.3	-3.5±13.7	107.5±13.0	102.4±16.2	-5.1±17.6	0.304	>0.999
Gross motor	104.8±15.9	99.0±16.1	-5.8±8.9*	114.2±15.8	103.3±21.5	-10.9±17.3*	0.023	0.186
Eye-hand coordination	106.4±13.5	105.9±13.1	-0.5±13.7	109.3±13.8	105.1±12.0	-4.2±13.4	0.304	>0.999
Cognitive performance	111.4±11.6	111.3±14.2	-0.2±11.1	116.1±12.4	111.7±17.6	-4.4±19.1	0.282	>0.999
Cognitive verbal	103.1±16.1	104.8±14.5	1.7±12.2	103.9±15.3	103.8±17.2	-0.1±14.7	0.738	>0.999
VABS ABCS	92.2±13.8	96.2±13.1	4.0±9.4*	92.8±12.7	94.5±11.5	1.7±10.6	0.256	>0.999
Communication	92.1±14.9	98.4±15.0	6.3±12.0*	93.1±12.7	98.3±13.8	5.2±10.6*	0.613	>0.999
Daily living skills	97.0±14.6	99.8±12.5	2.8±12.0	99.2±10.7	99.5±10.5	0.3±11.7	0.210	>0.999
Socialization	95.1±16.9	98.5±12.1	3.4±15.2	93.9±14.6	95.6±13.0	1.7±14.4	0.562	>0.999
Motor skills	91.8±15.1	95.5±12.0	3.7±14.3	93.8±11.0	93.9±12.0	0.1±9.9	0.275	>0.999
K-CARS	15.9±1.4	15.9±1.8	0.0±1.5	16.3±1.5	16.1±1.6	-0.2±1.6	0.949	0.949
SRS total score	46.0±7.9	46.3±7.8	0.2±7.9	45.9±7.7	45.5±6.6	-0.5±5.0	0.590	0.590
CBCL								
Emotionally reactive	52.6±4.0	52.3±5.3	-0.3±3.9	52.1±3.8	52.1±4.1	0.1±4.7	0.225	>0.999
Anxious/depressed	52.5±5.3	52.4±5.7	-0.1±2.7	51.4±3.4	51.6±4.2	0.2±5.2	0.702	>0.999
Somatic complaints	52.8±4.5	52.1±3.8	-0.7±4.5	51.4±3.2	52.2±4.8	0.8±5.1	0.191	>0.999
Withdrawn	52.6±5.4	52.1±5.2	-0.6±3.8	51.8±4.1	51.8±4.2	0.0±4.9	0.209	>0.999
Sleep problems	52.9±4.6	52.9±4.5	0.0±5.0	54.4±7.2	53.2±7.0	-1.2±5.6	0.303	>0.999
Attention problems	52.3±3.8	52.1±4.3	-0.2±3.3	52.7±4.5	52.6±5.1	-0.1±4.5	0.847	>0.999
Aggressive behavior	52.0±3.7	51.2±3.5	-0.8±3.5	51.7±3.7	52.2±6.1	0.5±4.6	0.162	>0.999
ABC								
Irritability	1.9±2.3	1.5±2.3	-0.5±2.9	2.0±3.1	1.7±3.3	-0.4±2.6	0.858	>0.999
Lethargy/social withdrawal	0.9±2.7	0.9±2.9	0.0±3.8	0.8±1.9	0.7±1.8	-0.1±1.9	0.921	>0.999
Stereotypic behavior	0.1±0.4	0.3±1.3	0.2±1.1	0.2±0.5	0.1±0.5	-0.1±0.7	0.088	0.439
Hyperactivity/noncompliance	1.4±1.6	1.1±2.0	-0.3±2.0	1.8±2.7	1.6±3.4	-0.2±2.4	0.964	>0.999
Inappropriate speech	0.3±0.6	0.3±0.7	0.0±0.9	0.5±0.9	0.4±0.8	-0.1±0.8	0.595	>0.999
PSI								
Child characteristics	46.4±9.6	44.8±10.2	-1.7±5.3	46.8±9.7	46.7±11.1	-0.1±6.9	0.210	0.421
Parent characteristics	49.0±9.2	48.2±10.6	-0.8±6.4	48.1±9.7	49.2±10.1	1.1±7.5	0.259	0.518
Caregiver CESD-R	7.9±7.8	6.4±6.9	-1.5±7.1*	6.9±8.5	6.4±9.3	-0.5±9.7	0.799	0.799
SOS								
Self-control failure	5.5±1.8	5.2±1.8	-0.3±1.8	5.4±1.9	5.5±1.5	0.1±1.9	0.237	0.711
Salience	6.3±2.9	6.3±2.5	0.1±2.0	5.4±2.0	5.9±2.0	0.6±2.0	0.136	0.409
Problematic consequences	4.8±2.0	5.2±2.0	0.4±1.3	4.3±1.6	4.8±1.6	0.5±1.9	0.646	1.939

Values are presented as mean±standard deviation. *adjusted p<0.05, significant difference observed between before and after values; †subscales were adjusted for multiple comparison using Bonferroni's method. PEP-R DQ, Psychoeducational Profile-Revised Developmental Quotient; VABS ABCS, Vineland Adaptive Behavior Scale Adaptive Behavior Composite Score; K-CARS, Korean version of the Childhood Autism Rating Scale; SRS, Social Responsiveness Scale; CBCL, Child Behavior Checklist; ABC, Aberrant Behavior Checklist; PSI, Parenting Stress Index; CESD-R, Center for Epidemiologic Studies Depression Scale-Revised; SOS, Smartphone Overuse Scale; JNKK, Junior Naver and Kakao Kids