



Supplementary Material

1. Effects of LBN on Children with ASD

Table S1: ANCOVA and effect sizes for the Effect of LBN in children with ASD as evaluated by the BANFE-3 test.

Statistical Results	Subtotal OMC	Subtotal APC	Subtotal DLC	Total Executive Functions
F values	F = 3.220 df1=1, df2=18, p-value = 0.089	F = 0.019 df1=1, df2=18, p-value = 0.891	F = 26.974 df1=1, df2=18, p-value = 0.00006	F = 12.181 df1=1, df2=18, p-value = 0.0026
Emmeans	Post-Pre = 1.790 p-value = 0.089	Post-Pre = 0.139 p-value = 0.891	Post-Pre = 5.190 p-value = 0.00006	Post-Pre = 3.49 p-value = 0.0026
Effect size: partial eta squared (η^2)	$\eta^2 = 0.05$ (0.00, 1.00)	$\eta^2 = 0.0$ (0.00, 1.00)	$\eta^2 = 0.50$ (0.29, 1.00)	$\eta^2 = 0.34$ (0.08, 1.00)
95% CI	Magnitude= small	Magnitude= small	Magnitude= large	Magnitude= large
Effect sizes: epsilon squared (ϵ^2)	$\epsilon^2 = 0.09$ (0.00, 1.00)	$\epsilon^2 = 0.04$ (0.00, 1.00)	$\epsilon^2 = 0.53$ (0.28, 1.00)	$\epsilon^2 = 0.40$ (0.12, 1.00)
95% CI	Magnitude= small	Magnitude= small	Magnitude= large	Magnitude= large

Table S2: Model diagnostic metrics and statistical tests for the ANCOVA assumptions.

ANCOVA assumption Statistical Test	Subtotal OMC	Subtotal APC	Subtotal DLC	Total Executive Functions
Reset linearity test	R = 0.355 df1=2, df2=16 p-value = 0.706	R = 0.447 df1=2, df2=16 p-value = 0.647	R = 0.842 df1=2, df2=16 p-value = 0.449	R = 0.169 df1=2, df2=16 p-value = 0.846
Rainbow linearity test	Rain = 2.25 df1=11, df2=7 p-value = 0.145	Rain = 1.526 df1=11, df2=7 p-value = 0.195	Rain = 0.529 df1=11, df2=7 p-value = 0.834	Rain = 0.566 df1=11, df2=7 p-value = 0.809
Homogeneity of regression slopes	F = 0.190 df1=1, df2=17 p-value = 0.669 Homogeneity	F = 0.778 df1=1, df2=17 p-value = 0.390 Homogeneity	F = 3.570 df1=1, df2=17 p-value = 0.0760 Homogeneity	F = 0.980 df1=1, df2=17 p-value = 0.336 Homogeneity
Shapiro-Wilk normality test	S = 0.938 p-value = 0.196	S = 0.939 p-value = 0.206	S = 0.913 p-value = 0.063	S = 1.000 p-value = 0.330
Levene Homoscedasticity test	F = 0.197 df1=1, df2=19 p-value = 0.662	F = 0.426 df1=1, df2=19 p-value = 0.522	F = 0.011 df1=1, df2=19 p-value = 0.918	F = 1.0 df1=1, df2=19 p-value = 0.330
Influence/outlier diagnostics	No outliers	No outliers	No outliers	No outliers

2. Analysis of the Gain Score.

Table S3: Effect of LBN on the gain score of children with ASD, as evaluated by the BANFE-3 test.

Gain-scores	Subtotal OMC	Subtotal APC	Subtotal DLC	Total Executive Functions
Median (1 st , 3 rd quartiles)	CTRL: 0.0 (-28.0, 6.0) LBN: 8.0 (-0.5, 26.5)	CTRL: 0.0 (-13.0, 14.0) LBN: 8.0 (-20.0, 1.5)	CTRL: 0.0 (-1.0, 1.0) LBN: 17.0 (-12.0, 22.0)	CTRL: 0.0 (-4.0, 4.0) LBN: 8.0 (-9.0, 26.0)
Wilcoxon rank sum test with continuity correction	W = 35.5 p-value = 0.1794	W = 68 p-value = 0.3784	W = 9 p-value = 0.0013	W = 15 p-value = 0.0051
Wilcoxon rank sum test	W = 35.5 p-value = 0.1682	W = 68 p-value = 0.3597	W = 9 p-value = 0.0012	W = 15 p-value = 0.0046
Effectsize	effsize = 0.301 n1=10, n2=11 magnitude moderate	effsize = 0.200 n1=10, n2=11 magnitude = small	effsize = 0.709 n1=10, n2=11 magnitude = large	effsize = 0.619 n1=10, n2=11 magnitude = Large
R effectsize	0.76	-0.17	1.43	1.22
95% CI	(-0.10, 1.63)	(-1.1, 0.76)	(0.79, 2.07)	(0.48, 1.95)
Effectsize rc rank-biserial correlation	-0.35 (-0.70, 0.13)	0.24 (-0.26, 0.63)	-0.84 (-0.94, -0.61)	-0.73 (-0.89, -0.39)
95% CI				