

Supplementary Table S1. Between-group comparison on comprehensive cognitive and behavioral measures at pre-treatment evaluation via Kruskal-Wallis test (H) and Chi-Square test (χ^2); post-hoc analyses were executed by Mann-Whitney test.

Variable	MCI-TMS (<i>n</i> = 11)	MCI-C (<i>n</i> = 16)	HC (<i>n</i> =13)	<i>H</i> / χ^2	<i>p</i> -value	Adj- <i>p</i>	Benjamini-Hochberg adjusted post-hoc analyses		
							MCI-TMS	MCI-TMS	MCI-C
							vs MCI-C	vs HC	vs HC
<i>Cognitive assessment:</i>									
<i>RBANS subtests:</i>									
List Learning	21.00 (16.00, 24.00)	17.50 (15.25, 21.50)	26.00 (23.00, 28.50)	15.01	0.001	0.001	0.250	0.010	<0.001
Story Memory-IR	15.00 (14.00, 17.00)	13.00 (9.25, 14.50)	20.00 (18.00, 22.50)	20.61	<0.001	<0.001	0.050	<0.001	<0.001
Figure Copy	15.00 (12.00, 17.00)	12.00 (10.25, 13.75)	15.00 (12.50, 16.00)	6.48	0.039	0.053	-	-	-
Line Orientation	14.00 (11.00, 17.00)	14.00 (11.25, 16.50)	17.00 (14.50, 18.50)	4.13	0.126	0.135	-	-	-
Picture Naming	10.00 (10.00, 10.00)	9.00 (9.00, 10.00)	10.00 (10.00, 10.00)	12.03	0.002	0.135	-	-	-
Semantic Fluency	13.00 (10.00, 15.00)	15.00 (13.25, 17.00)	19.00 (16.50, 21.00)	16.96	<0.001	<0.001	0.044	<0.001	0.001
Digit Span	6.00 (6.00, 8.00)	8.00 (6.00, 9.75)	9.00 (8.00, 11.50)	6.70	0.035	0.052	-	-	-
Coding	25.00 (16.00, 33.00)	20.00 (14.75, 29.75)	39.00 (30.50, 45.50)	13.00	0.001	0.003	0.543	0.010	<0.001
List Recall	1.00 (0.00, 3.00)	0.50 (0.00, 1.00)	4.00 (2.50, 6.50)	12.76	0.002	0.003	0.511	0.032	<0.001
List Recognition	13.00 (13.00, 18.00)	16.00 (15.00, 16.75)	18.00 (17.50, 20.00)	17.07	<0.001	<0.001	0.250	0.002	<0.001
Story Recall-DR	1.00 (0.00, 7.00)	5.00 (3.25, 7.00)	10.00 (9.00, 11.50)	22.69	<0.001	<0.001	0.317	<0.001	<0.001
Figure Recall	3.00 (0.00, 7.00)	3.50 (2.00, 5.00)	10.00 (7.50, 11.50)	15.75	<0.001	0.001	0.511	0.002	<0.001

To be continued

Supplementary Table S1. Continued.

Variable	MCI-TMS (<i>n</i> = 11)	MCI (<i>n</i> = 16)	HC (<i>n</i> =13)	<i>H</i> / χ^2	<i>p</i> -value	Adj- <i>p</i>	Benjamini-Hochberg adjusted post-hoc analyses		
							MCI-TMS	MCI-TMS	MCI
							vs MCI	vs HC	vs HC
<i>Behavioural measures:</i>									
Beck Depression Inventory-II	15.00 (3.00, 21.00)	12.00 (6.50, 16.50)	6.00 (2.00, 9.50)	5.14	0.077	0.095	-	-	-
Beck Anxiety Inventory	3.00 (2.00, 10.00)	6.50 (2.75, 13.75)	6.00 (2.50, 6.50)	0.78	0.675	0.675	-	-	-
Apathy Evaluation Scale	38.00 (33.00, 42.00)	35.50 (28.50, 40.00)	31.00 (24.50, 32.50)	8.61	0.013	0.022	0.394	0.009	0.060

Note. MCI-TMS, patient with Mild Cognitive Impairment and underwent to TMS; MCI-C, patients with Mild Cognitive Impairment and not underwent to TMS; HC, healthy controls; Adj-*p* represents *p*-value corrected for multiple comparisons using Benjamini–Hochberg procedure; statistically significant differences are shown in **bold**.

Supplementary Table S2. Between-group comparison on comprehensive cognitive and behavioral measures at post-treatment evaluation (using pre-treatment scores as covariates) via Quade's rank analysis.

Variable	MCI-TMS (n=11)	MCI (n= 12)	HC (n=12)	Quade's test	p-value	Adj-p	Benjamini-Hochberg adjusted post-hoc analyses		
							MCI-TMS	MCI-TMS	MCI
							vs MCI	vs HC	vs HC
<i>Cognitive assessment:</i>									
<i>RBANS subtests:</i>									
List Learning	22.00 (19.00, 28.00)	20.00 (17.25, 22.25)	25.00 (22.00, 28.50)	0.06	0.935	0.957	-	-	-
Story Memory-IR	14.00 (9.00, 17.00)	11.00 (9.25, 14.50)	17.00 (15.00, 19.50)	0.20	0.814	0.957	-	-	-
Figure Copy	14.00 (10.00, 16.00)	11.00 (10.00, 12.00)	14.00 (13.00, 16.00)	1.60	0.214	0.459	-	-	-
Line Orientation	15.00 (14.00, 16.00)	12.00 (10.00, 14.00)	18.00 (14.50, 20.00)	7.27	0.002	0.031	0.014	0.521	0.002
Picture Naming	10.00 (9.00, 10.00)	9.00 (9.00, 10.00)	10.00 (10.00, 10.00)	3.87	0.030	0.148	-	-	-
Semantic Fluency	10.00 (6.00, 13.00)	8.00 (6.25, 8.75)	13.00 (10.50, 15.50)	6.35	0.004	0.031	0.026	0.487	0.005
Digit Span	8.00 (6.00, 10.00)	8.00 (6.00, 9.75)	9.00 (7.50, 11.50)	0.22	0.800	0.957	-	-	-
Coding	28.00 (16.00, 35.00)	27.00 (16.00, 31.00)	42.00 (31.00, 47.50)	0.30	0.737	0.957	-	-	-
List Recall	0.00 (0.00, 3.00)	2.00 (0.00, 3.00)	5.00 (2.00, 5.00)	1.63	0.209	0.459	-	-	-
List Recognition	16.00 (13.00, 17.00)	16.00 (14.25, 17.75)	18.00 (16.00, 19.00)	0.11	0.890	0.957	-	-	-
Story Recall-DR	3.00 (0.00, 7.00)	5.00 (5.00, 6.00)	8.00 (7.50, 10.50)	1.23	0.302	0.567	-	-	-
Figure Recall	1.00 (0.00, 10.00)	6.00 (4.00, 9.00)	9.00 (6.50, 12.00)	2.69	0.081	0.243	-	-	-

To be continued

Supplementary Table S2. Continued.

Variable	MCI-TMS (<i>n</i> = 11)	MCI (<i>n</i> = 12)	HC (<i>n</i> =12)	Quade's test	<i>p</i> -value	Adj- <i>p</i>	Benjamini-Hochberg adjusted post-hoc analyses		
							MCI-TMS	MCI-TMS	MCI
							vs MCI	vs HC	vs HC
<i>Behavioural measures:</i>									
Beck Depression Inventory-II	10.00 (4.00, 15.00)	9.00 (8.00, 16.25)	4.50 (3.00, 9.25)	0.40	0.669	0.957	-	-	-
Beck Anxiety Inventory	3.00 (2.00, 25.00)	3.50 (3.00, 12.75)	3.50 (2.00, 9.25)	0.04	0.957	0.957	-	-	-
Apathy Evaluation Scale	37.00 (35.00, 39.00)	35.00 (29.50, 39.50)	28.00 (24.00, 31.50)	3.09	0.057	0.213	-	-	-

Note. MCI-TMS, patient with Mild Cognitive Impairment and underwent to TMS; MCI, patients with Mild Cognitive Impairment and not underwent to TMS; HC, healthy controls; Adj-*p* represents *p*-value corrected for multiple comparisons using Benjamini–Hochberg procedure; statistically significant differences are shown in **bold**.