Supplemental Material S4. Between-group analyses.

Full results of two-way interaction model between timepoint*subdomain accounting for group

Model syntax: cbind(points scored, points missed) ~ timepoint *(subdomain+group) +	
etiology + (timepoint participant) +(1 item)	Random effects: Variance (SD)
	Slope

								Slope:
Term		Log odds (S <i>E</i>)	Probability	z-value	Significance level	Intercept: ID	Intercept: Item	Time-by-ID; Corr
Intercept		0.22 (0.45)	0.55	0.49	N.S.	0.91	2.04	0.01
Timepoint		-0.08 (0.04)	0.48	-1.92	.055	(0.95)	(1.43)	(0.11);
SubDomain	Auditory							-0.24
	Comprehension	2.36 (0.40)	0.91	5.86	***			
	Verbal Expression	1.83 (0.42)	0.86	4.40	***			
	Reading							
	Comprehension	1.81 (0.41)	0.86	4.45	***			
	Written Expression	2.00 (0.47)	0.88	4.25	***			
	Orientation	2.83 (0.58)	0.94	4.90	***			
	Memory	-0.54 (0.40)	0.37	-1.32	N.S.			
	Problem Solving	2.84 (0.58)	0.94	4.90	***			
	Visuospatial/	. ,						
	Constructional	0.80 (0.46)	0.69	1.74	.08			
	Upper Limb/Facial/							
	Instrumental Apraxia	2.72 (0.50)	0.94	5.41	***			
Group		0.19 (0.04)	0.55	4.73	***			
Etiology		-0.08 (0.34)	0.48	-0.230	N.S.			
Timepoint-								
by-Group		0.096 (0.04)	0.52	2.69	**			
Timepoint-	Auditory							
by-	Comprehension	0.06 (0.03)	0.51	1.92	.05			

	Verbal Expression	0.17 (0.03)	0.54	6.03	***			
interaction	Reading							
	Comprehension	0.05 (0.03)	0.51	1.70	.09			
	Written Expression	0.10 (0.03)	0.52	2.99	**			
	Orientation	0.28 (0.14)	0.57	2.00	*			
	Memory	0.15 (0.03)	0.54	5.05	***			
	Problem Solving	0.23 (0.14)	0.56	4.27	***			
	Visuospatial/Construc							
	tional	0.13 (0.04)	0.53	3.58	***			
	Upper							
	Limb/Facial/Instrumen							
	tal Apraxia	0.04 (0.56)	0.51	0.784	N.S.			

Note. Timepoint was coded as a numeric predictor: Group was dummy-coded with control as the reference level. Pre-treatment = "0"; Post-treatment 1 = "1"; Post-treatment 2 = "2"; Post-treatment 3 = "3." Etiology (i.e., TBI, non-TBI) was dummy-coded with non-TBI as the reference level. SubDomain was dummy-coded with Attention as the reference level. The correlation value refers to the strength of association between the random slope of timepoint and the random intercept of participant. The negative value reflects participants with lower baseline accuracy have steeper slopes.

· —	· · · —	— //	os_score)) ~ timepoint_num * · timepoint_num ID) + (1 domainitem)			Random effects: Variance (SD)			
Term		Log odds (S <i>E</i>)	Probability	z-value	Significance level	Intercept: ID	Intercept: Item	Slope: Time-by- ID; Corr	
Intercept		0.14 (0.46)	0.53	0.31	N.S.	0.91 (0.95)	2.05 (1.43)	0.01(0.11);	
Timepoint		-0.10 (0.06)	0.48	-0.16	***			-0.22	
Etiology		-0.08 (0.34)	0.48	-0.24	N.S.				
Group		0.30 (0.08)	0.57	4.00	***				
SubDomain	Auditory Comprehension	2.39 (0.41)	0.92	5.82	***				
	Verbal Expression	2.01(0.42)	0.88	4.75	***				
	Reading Comprehension	2.07 (0.42)	0.89	4.95	***				
	Written Expression	2.20 (0.48)	0.90	4.56	***				
	Orientation	2.87 (0.62)	0.95	4.60	***				
	Memory	-0.49 (0.41)	0.38	-1.18	N.S.				
	Problem Solving	2.75 (0.44)	0.94	6.20	***				
	Visuospatial/ Constructional	0.58 (0.47)	0.64	1.24	N.S.				
	Apraxia	2.84 (0.52)	0.94	5.44	***				
Timepoint- by-	Auditory Comprehension	0.17 (0.08)	0.54	2.16	*				
SubDomain	¹ Verbal Expression	0.04 (0.7)	0.51	0.53	N.S.				
interaction	Reading Comprehension	0.01 (0.08)	0.50	0.08	N.S.				
	Written Expression	-0.04 (0.09)	0.49	-0.51	N.S.				
	Orientation	0.37 (0.35)	0.59	1.06	N.S.				

Full results of three-way interaction model between timepoint*subdomain*group

	Memory Problem Solving	0.05(0.07) 0.26(0.13)	0.51 0.56	0.74 1.96	N.S. *
	Visuospatial/Construc tional	x y	0.48	-0.94	N.S.
	Upper Limb/Facial/Instrumen tal Apraxia	-0.11(0.14)	0.47	-0.80	N.S.
Timepoint- by-Group		0.01 (0.07)	0.50	0.12	N.S.
	Auditory Comprehension	-0.08 (0.10)	0.48	-0.87	N.S.
	Verbal Expression	-0.27 (0.09)	0.43	-3.05	**
	Reading Comprehension	-0.40 (0.10)	0.40	-3.90	***
	Written Expression	-0.28(0.11)	0.43	-2.58	**
SubDomain	Orientation	-0.08 (0.37)	0.48	-0.22	N.S.
-by-Group	Memory	-0.06(0.09)	0.49	-0.62	N.S.
	Problem Solving	0.13 (0.15)	0.53	0.87	N.S.
	Visuospatial/Construc tional	0.44 (0.110	0.61	3.96	***
	Upper Limb/Facial/Instrumen tal Apraxia	-0.17(0.17)	0.46	-0.97	N.S.
Timepoint-	Auditory Comprehension	-0.11(0.09)	0.47	-1.25	N.S.
by-	Verbal Expression	0.18 (0.08)	0.54	2.31	*
SubDomain -by-Group	Reading Comprehension	0.10 (0.09)	0.52	1.08	N.S.
	Written Expression	0.19 (0.10)	0.55	2.04	*

Orientation	-0.10 (0.38)	0.48	-0.26	N.S.
Memory	0.11 (0.08)	0.53	1.37	N.S.
Problem Solving	-0.05(0.14)	0.49	-0.32	N.S.
Visuospatial/Construc tional	0.18(0.10)	0.54	1.86	N.S.
Upper Limb/Facial/Instrumer tal Apraxia	0.19 (0.16) n	0.55	1.24	N.S.

Note. Timepoint was coded as a numeric predictor: Pre-treatment = "0"; Post-treatment 1 = "1"; Post-treatment 2 = "2"; Post-treatment 3 = "3." Group was dummy-coded with control as the reference level. Etiology was dummy-coded (i.e., TBI and non-TBI with non-TBI as the reference level). SubDomain was dummy-coded with Attention as the reference level. The correlation value refers to the strength of association between the random slope of timepoint and the random intercept of participant. The negative value reflects participants with lower baseline accuracy have steeper slopes.

cbind(obs_score, (poss_score - obs_score)) ~ timepoint_num * Group*ET + (1 +	
timepoint_num ID) + (1 domainitem)	Random effects: Variance (SD)

Term	Log odds (S <i>E</i>)	Probability	z-value	Significance level	Intercept: ID	Intercept: Item	Slope: Time-by- ID; Corr
Intercept	1.94 (0.27)	0.87	7.30	р < .001	0.97	3.48	0.10
Timepoint	-0.01 (0.05)	0.50	-0.18	N.S.	(0.99)	(1.87)	(0.10);
Group	0.05 (0.05)	0.51	0.93	N.S.			-0.31
Etiology	-0.40 (0.36)	0.40	-1.11	N.S.			
Timepoint-by-Group	0.13 (0.05)	0.53	2.52	р < .011			
Timepoint-by-Etiology	0.11 (0.07)	0.53	1.65	.098			
Group-by-Etiology	0.40 (0.08)	0.60	4.86	р < .001			
Timepoint-by-Group-by-Etiology	-0.11 (0.07)	0.47	-1.50	N.S.			

Note. Timepoint was coded as a numeric predictor: Pre-treatment = "0"; Post-treatment 1 = "1"; Post-treatment 2 = "2"; Post-treatment 3 = "3." Group was dummy-coded with control as the reference level. Etiology was dummy-coded (i.e., TBI and non-TBI with non-TBI as the reference level). SubDomain was dummy-coded with Attention as the reference level. The correlation value refers to the strength of association between the random slope of timepoint and the random intercept of participant. The negative value reflects participants with lower baseline accuracy have steeper slopes.

Code for extracting domain-specific intercepts and slopes for the between-group GLMMs

These contrast matrices were developed based off of methods previously used for conducting multiple pairwise comparisons for categorical predictors (Mirman, 2013, 2014). Each column in the matrices below (created using the "rbind" function in base R) refers to an estimate from the generalized linear mixed effects model, in this case the between group subdomain model with intercepts and slopes (BG 3). Each row reflects the contrast comparison that is being tested. The "1" and "0" values reflect the weight being assigned to each element of the contrast.

For the domain-specific intercept estimates, a "1" is in the group column and a "1" is in the subdomain*group interaction column for the domain of interest (e.g., auditory comprehension). Otherwise, all the other elements are "0." The intercept reflects the estimate of attention (i.e., subdomain reference level) for the experimental group. The subdomain*group interaction column reflects the interaction estimate for the subdomain of interest (e.g., auditory comprehension) relative to attention in the experimental group relative to the control group (group reference level). Combining them while canceling out other terms in the model provides the intercept for the subdomain of interest in the experimental relative to the control group (e.g., baseline auditory comprehension in the experimental group versus the control group).

For the domain-specific slope estimates, "1" is in the timepoint*group estimate column and a "1" is in the subdomain of interest* timepoint*group interaction column. Otherwise, all the other elements are "0." The timepoint*group column reflects the estimate of attention (subdomain reference level) over time for the experimental group relative to the control group (group reference level). The subdomain of interest*timepoint*group interaction column reflects the interaction estimate for the subdomain of interest relative to the attention subdomain for the experimental group relative to the control group over time. Combining them while canceling out other terms in the model provides the slope for the subdomain of interest in the experimental group versus the control group over time).

Domain-specific intercept contrast matrix

contrast.matrix.intercept.group<-rbind(

Key: AC = auditory comprehension; AP = apraxia; ME = memory; OR = orientation; PS = problem solving; RC = reading comprehension; VC = visuospatial/constructional; VE = verbal expression; WR = written expression

Code to extract the domain-specific intercepts

summary(glht(m_subdomain_group, contrast.matrix.intercept.group))

Domain-specific slope contrast matrix

contrast.matrix.slope.group<-rbind(

0, 0, 0),
0, 0, 0),
0, 0, 0),
0, 0, 0),
0, 0, 0),
0, 0, 0),
1, 0, 0),
0, 1, 0),
0, 0, 1),
0, 0, 0))
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Code to extract the domain-specific intercepts

summary(glht(m_subdomain_group, contrast.matrix.slope.group))

Key: AC = auditory comprehension; AP = apraxia; ME = memory; OR = orientation; PS = problem solving; RC = reading comprehension; VC = visuospatial/constructional; VE = verbal expression; WR = written expression