

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)		
Term		Log odds (SE)	Probability	z-value	Significance level	Intercept: ID	Slope: Intercept: Item; Time-by-ID; Corr
Intercept		0.22 (0.45)	0.55	0.49	N.S.	0.91	0.01
Timepoint		-0.08 (0.04)	0.48	-1.92	.055	(0.95)	(0.11); -0.24
SubDomain	Auditory						
	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- by-	Auditory						
	Comprehension	0.06 (0.03)	0.51	1.92	.05		

SubDomain interaction	Verbal Expression	0.17 (0.03)	0.54	6.03	***
	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.

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

cbind(obs_score, (poss_score - obs_score)) ~ timepoint_num *

SubDomain * Group + ET + (1 + timepoint_num | ID) + (1 | domainitem)

Random effects: Variance (SD)

Term		Log odds (SE)	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); -0.22
Timepoint		-0.10 (0.06)	0.48	-0.16	***			
Etiology		-0.08 (0.34)	0.48	-0.24	N.S.			
Group		0.30 (0.08)	0.57	4.00	***			
SubDomain	Auditory	2.39 (0.41)	0.92	5.82	***			
	Comprehension							
	Verbal Expression	2.01(0.42)	0.88	4.75	***			
	Reading	2.07 (0.42)	0.89	4.95	***			
	Comprehension							
	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- SubDomain interaction	Auditory	0.17 (0.08)	0.54	2.16	*			
	Comprehension							
	Verbal Expression	0.04 (0.7)	0.51	0.53	N.S.			
	Reading	0.01 (0.08)	0.50	0.08	N.S.			
	Comprehension							
	Written Expression	-0.04 (0.09)	0.49	-0.51	N.S.			
	Orientation	0.37 (0.35)	0.59	1.06	N.S.			

Timepoint- by-Group	Memory	0.05(0.07)	0.51	0.74	N.S.
	Problem Solving	0.26(0.13)	0.56	1.96	*
	Visuospatial/Construc tional	-0.08(0.09)	0.48	-0.94	N.S.
	Upper Limb/Facial/Instrumen tal Apraxia	-0.11(0.14)	0.47	-0.80	N.S.
		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	**
	Orientation	-0.08 (0.37)	0.48	-0.22	N.S.
SubDomain -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.
	Auditory Comprehension	-0.11(0.09)	0.47	-1.25	N.S.
	Verbal Expression	0.18 (0.08)	0.54	2.31	*
	Reading Comprehension	0.10 (0.09)	0.52	1.08	N.S.
	Written Expression	0.19 (0.10)	0.55	2.04	*
Timepoint- by- SubDomain -by-Group					

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/Instrumen tal Apraxia	0.19 (0.16)	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.

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

cbind(obs_score, (poss_score - obs_score)) ~ timepoint_num * Group*ET + (1 +
timepoint_num | ID) + (1 | domainitem)

Random effects: Variance (SD)

Term	Log odds (SE)	Probability	z-value	Significance level	Intercept: ID	Intercept: Item	Slope: Time-by- ID; Corr
Intercept	1.94 (0.27)	0.87	7.30	$p < .001$	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	$p < .011$			
Timepoint-by-Etiology	0.11 (0.07)	0.53	1.65	.098			
Group-by-Etiology	0.40 (0.08)	0.60	4.86	$p < .001$			
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.


```
`E vs C_RC` =c (rep(0,times=11),1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0),
`E vs C_VC` =c (rep(0,times=11),1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0),
`E vs C_VE` =c (rep(0,times=11),1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0),
`E vs C_WR` =c (rep(0,times=11),1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0),
`E vs C_AT` =c (rep(0,times=11),1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0))
```

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(
`E vs C_AC`      = c(rep(0, times=22), 1, rep(0, times=9), 1, 0, 0, 0, 0, 0, 0, 0, 0, 0),
`E vs C_AP`      = c(rep(0, times=22), 1, rep(0, times=9), 0, 1, 0, 0, 0, 0, 0, 0, 0, 0),
`E vs C_ME`      = c(rep(0, times=22), 1, rep(0, times=9), 0, 0, 1, 0, 0, 0, 0, 0, 0, 0),
`E vs C_OR`      = c(rep(0, times=22), 1, rep(0, times=9), 0, 0, 0, 1, 0, 0, 0, 0, 0, 0),
`E vs C_PS`      = c(rep(0, times=22), 1, rep(0, times=9), 0, 0, 0, 0, 1, 0, 0, 0, 0, 0),
`E vs C_RC`      = c(rep(0, times=22), 1, rep(0, times=9), 0, 0, 0, 0, 0, 1, 0, 0, 0, 0),
`E vs C_VC`      = c(rep(0, times=22), 1, rep(0, times=9), 0, 0, 0, 0, 0, 0, 1, 0, 0, 0),
`E vs C_VE`      = c(rep(0, times=22), 1, rep(0, times=9), 0, 0, 0, 0, 0, 0, 0, 1, 0, 0),
`E vs C_WR`      = c(rep(0, times=22), 1, rep(0, times=9), 0, 0, 0, 0, 0, 0, 0, 0, 1, 0),
`E vs C_AT`      = c(rep(0, times=22), 1, rep(0, times=9), 0, 0, 0, 0, 0, 0, 0, 0, 0, 0))
```

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