

Table S2 Changes in participants' cognitive performance domains during the *Efficacy Study* and during/after the *Empowerment Study*

Outcome metrics	Assessments: Mean \pm SD (N)	Efficacy Study: Intervention for 12 months				Assessments at baseline, 6 & 12 months				Empowerment Study: Intervention for 6 months				Assessments at baseline, 6 & 9 months			
		Health education		Standard multidomain		Interaction (95% CI) ^{a,b}		P-value		Standard multidomain		Enhanced multidomain		Interaction (95% CI) ^{a,b,c}		P-value	
		All	≥ 75 Y	All	≥ 75 Y	All	≥ 75 Y	All	≥ 75 Y	All	≥ 75 Y	All	≥ 75 Y	All	≥ 75 Y	All	≥ 75 Y
Cognition [MoCA _{adj}]	Baseline	19.83 \pm 5.50 (533)	17.84 \pm 5.56 (262)	20.51 \pm 5.83 (549)	18.59 \pm 5.86 (271)					20.41 \pm 6.51 (205)	18.23 \pm 6.65 (107)	19.37 \pm 6.36 (230)	18.03 \pm 6.38 (125)				
	6 months	19.74 \pm 6.00 (420)	17.71 \pm 5.90 (208)	20.70 \pm 5.95 (481)	18.55 \pm 6.05 (240)					21.26 \pm 6.42 (190)	18.86 \pm 6.50 (100)	20.37 \pm 6.11 (201)	18.60 \pm 6.02 (103)				
	6-month Δ (95% CI)	-0.29 (-1.05, 0.47)	-0.64 (-1.47, 0.19)	0.20 (-0.46, 0.87)	0.19 (-0.96, 1.33)	0.49 (-0.51, 1.50)	0.83 (-0.42, 2.08)	0.324	0.183	0.85 (0.22, 1.48)	0.43 (-0.44, 1.30)	1.39 (1.05, 1.73)	1.09 (0.53, 1.64)	0.54 (-0.18, 1.26)	0.66 (-0.37, 1.69)	0.135	0.209
	Study ends at 12 or 9 months	19.74 \pm 6.42 (374)	17.22 \pm 6.36 (179)	21.93 \pm 5.68 (408)	19.92 \pm 5.97 (196)					21.49 \pm 6.51 (189)	18.95 \pm 6.35 (97)	21.76 \pm 6.15 (209)	20.05 \pm 6.33 (107)				
	Study-end Δ (95% CI)	-0.19 (-1.12, 0.74)	-0.82 (-2.24, 0.59)	0.83 (0.05, 1.62)	1.14 (0.17, 2.11)	1.03 (-0.19, 2.24)	1.96 (0.25, 3.68)	0.094	0.027	1.05 (0.37, 1.73)	0.73 (-0.29, 1.76)	2.34 (2.02, 2.66)	1.97 (1.54, 2.41)	1.29 (0.54, 2.03)	1.24 (0.13, 2.35)	<0.001	0.029
Visuospatial Executive	Baseline	2.49 \pm 1.72 (533)	1.95 \pm 1.63 (262)	2.71 \pm 1.74 (549)	2.32 \pm 1.72 (271)					2.84 \pm 1.70 (210)	2.41 \pm 1.65 (111)	2.66 \pm 1.56 (230)	2.38 \pm 1.60 (125)				
	6 months	2.51 \pm 1.76 (421)	2.00 \pm 1.68 (208)	2.88 \pm 1.69 (484)	2.48 \pm 1.61 (240)					3.10 \pm 1.57 (190)	2.73 \pm 1.54 (100)	2.66 \pm 1.61 (201)	2.31 \pm 1.63 (103)				
	6-month Δ (95% CI)	-0.02 (-0.21, 0.17)	-0.04 (-0.26, 0.17)	0.16 (-0.05, 0.37)	0.19 (-0.88, 1.26)	0.18 (-0.10, 0.46)	0.23 (0.12, 0.58)	0.200	0.195	0.28 (-0.09, 0.66)	0.29 (-0.24, 0.81)	0.11 (-0.06, 0.27)	0.06 (-0.19, 0.31)	-0.18 (-0.58, 0.23)	-0.23 (-0.80, 0.34)	0.373	0.424
	Study ends at 12 or 9 months	2.55 \pm 1.78 (374)	1.99 \pm 1.68 (179)	3.00 \pm 1.71 (409)	2.63 \pm 1.70 (197)					3.12 \pm 1.59 (189)	2.68 \pm 1.49 (97)	2.91 \pm 1.58 (209)	2.62 \pm 1.66 (107)				
	Study-end Δ (95% CI)	0.07 (-0.34, 0.48)	0.02 (-0.44, 0.49)	0.11 (-0.24, 0.46)	0.22 (-0.09, 0.53)	0.04 (-0.49, 0.58)	0.20 (-0.36, 0.76)	0.877	0.476	0.28 (0.08, 0.49)	0.28 (0.05, 0.51)	0.23 (0.08, 0.39)	0.22 (0.02, 0.42)	-0.05 (-0.31, 0.20)	-0.06 (-0.36, 0.24)	0.694	0.694
Naming ^c	Baseline	2.32 \pm 0.94 (533)	2.13 \pm 1.01 (262)	2.39 \pm 0.92 (549)	2.20 \pm 1.01 (271)					2.16 \pm 1.03 (205)	1.91 \pm 1.15 (107)	1.91 \pm 1.12 (230)	1.73 \pm 1.13 (125)				
	6 months	2.34 \pm 0.95 (420)	2.18 \pm 1.01 (208)	2.36 \pm 0.94 (483)	2.13 \pm 1.02 (240)					2.15 \pm 1.03 (190)	1.90 \pm 1.06 (100)	2.00 \pm 1.04 (201)	1.83 \pm 1.10 (103)				
	6-month Δ (95% CI)	0.00 (-0.10, 0.09)	-0.01 (-0.22, 0.19)	-0.04 (-0.12, 0.05)	-0.05 (0.98, 0.88)	-0.03 (-0.16, 0.09)	-0.04 (-0.23, 0.16)	0.615	0.713	-0.02 (-0.18, 0.14)	-0.03 (-0.26, 0.21)	0.14 (0.02, 0.26)	0.18 (0.05, 0.31)	0.16 ^c (-0.04, 0.36)	0.21 ^c (-0.07, 0.48)	0.108	0.130
	Study ends at 12 or 9 months	2.34 \pm 1.00 (374)	2.19 \pm 1.06 (179)	2.56 \pm 0.80 (408)	2.37 \pm 0.95 (196)					2.18 \pm 1.00 (189)	1.88 \pm 1.03 (97)	2.15 \pm 1.00 (209)	2.06 \pm 1.04 (107)				

	Study-end Δ (95% CI)	0.01 (-0.10, 0.13)	0.07 (-0.10, 0.23)	0.11 (0.02, 0.19)	0.16 (0.02, 0.30)	0.09 (-0.05, 0.23)	0.09 (-0.12, 0.31)	0.193	0.396	0.04 (-0.13, 0.20)	0.01 (-0.25, 0.28)	0.20 (0.08, 0.33)	0.29 (0.19, 0.40)	0.17 ^c (-0.04, 0.38)	0.28 ^c (0.00, 0.56)	0.119	0.054
Concentration ^c	Baseline	4.39 ± 1.55 (533)	3.95 ± 1.60 (262)	4.38 ± 1.62 (549)	4.01 ± 1.72 (271)					4.57 ± 1.62 (210)	4.30 ± 1.73 (111)	4.22 ± 1.68 (230)	3.90 ± 1.80 (125)				
	6 months	4.38 ± 1.54 (420)	4.13 ± 1.59 (208)	4.56 ± 1.49 (486)	4.22 ± 1.64 (242)					4.65 ± 1.62 (190)	4.17 ± 1.78 (100)	4.33 ± 1.64 (201)	3.95 ± 1.66 (103)				
	6-month Δ (95% CI)	-0.06 (-0.15, 0.03)	0.05 (0.48, 0.58)	0.17 (0.00, 0.34)	0.24 (-0.55, 1.03)	0.23 (0.04, 0.42)	0.19 (-0.09, 0.46)	0.019	0.182	0.07 (-0.14, 0.27)	-0.18 (-0.53, 0.18)	0.18 (-0.06, 0.42)	0.16 (-0.05, 0.38)	0.11 ^c (-0.21, 0.43)	0.34 ^c (-0.08, 0.76)	0.489	0.108
	Study ends at 12 or 9 months	4.21 ± 1.65 (374)	3.77 ± 1.82 (179)	4.74 ± 1.43 (408)	4.45 ± 1.52 (196)					4.51 ± 1.65 (189)	4.08 ± 1.72 (97)	4.44 ± 1.72 (209)	4.09 ± 1.84 (107)				
	Study-end Δ (95% CI)	-0.19 (-0.31, -0.06)	-0.20 (-0.44, 0.03)	0.27 (0.06, 0.48)	0.44 (0.23, 0.65)	0.46 (0.22, 0.70)	0.64 (0.32, 0.95)	<0.001	<0.001	-0.05 (-0.33, 0.23)	-0.21 (-0.64, 0.23)	0.17 (-0.01, 0.35)	0.16 (-0.12, 0.43)	0.22 ^c (-0.11, 0.55)	0.36 ^c (-0.14, 0.87)	0.194	0.152
Language	Baseline	1.55 ± 1.02 (533)	1.33 ± 1.00 (262)	1.78 ± 0.99 (549)	1.55 ± 1.01 (271)					1.74 ± 1.02 (210)	1.49 ± 0.96 (111)	1.71 ± 0.94 (230)	1.48 ± 0.90 (125)				
	6 months	1.44 ± 1.07 (420)	1.21 ± 1.05 (208)	1.78 ± 1.01 (487)	1.45 ± 1.01 (242)					1.85 ± 0.96 (190)	1.47 ± 0.92 (100)	1.83 ± 0.94 (201)	1.59 ± 0.97 (103)				
	6-month Δ (95% CI)	-0.12 (-0.25, 0.02)	-0.16 (-0.54, 0.22)	-0.03 (-0.15, 0.10)	-0.10 (-0.26, 0.07)	0.09 (-0.10, 0.28)	0.07 (-0.20, 0.33)	0.337	0.623	0.10 (-0.07, 0.27)	-0.03 (-0.26, 0.20)	0.14 (-0.10, 0.37)	0.14 (-0.20, 0.48)	0.04 (-0.26, 0.33)	0.17 (-0.24, 0.58)	0.808	0.418
	Study ends at 12 or 9 months	1.56 ± 1.05 (374)	1.29 ± 1.06 (179)	1.91 ± 1.00 (409)	1.51 ± 1.03 (197)					1.85 ± 0.98 (189)	1.61 ± 1.01 (97)	1.95 ± 0.95 (209)	1.78 ± 0.92 (107)				
	Study-end Δ (95% CI)	-0.05 (-0.27, 0.17)	-0.09 (-0.32, 0.14)	0.07 (-0.07, 0.20)	-0.05 (-0.28, 0.17)	0.12 (-0.14, 0.37)	0.04 (-0.28, 0.36)	0.351	0.998	0.10 (-0.07, 0.28)	0.12 (-0.06, 0.30)	0.23 (-0.02, 0.47)	0.29 (0.03, 0.55)	0.12 (-0.17, 0.42)	0.17 (-0.14, 0.49)	0.412	0.286
Abstract Thinking ^c	Baseline	0.61 ± 0.76 (533)	0.49 ± 0.71 (262)	0.68 ± 0.78 (549)	0.57 ± 0.73 (271)					0.74 ± 0.83 (210)	0.57 ± 0.77 (111)	0.55 ± 0.74 (230)	0.51 ± 0.71 (125)				
	6 months	0.56 ± 0.78 (420)	0.40 ± 0.67 (208)	0.63 ± 0.77 (487)	0.49 ± 0.71 (242)					0.66 ± 0.82 (190)	0.48 ± 0.72 (100)	0.50 ± 0.72 (201)	0.36 ± 0.64 (103)				
	6-month Δ (95% CI)	-0.07 (-0.18, 0.03)	-0.13 (-0.40, 0.15)	-0.04 (-0.18, 0.10)	-0.05 (-0.37, 0.27)	0.04 (-0.14, 0.21)	0.08 (-0.09, 0.24)	0.691	0.367	-0.07 (-0.25, 0.12)	-0.10 (-0.28, 0.08)	0.00 (-0.08, 0.09)	-0.10 (-0.19, -0.01)	0.07 ^c (-0.13, 0.27)	0.00 ^c (-0.20, 0.20)	0.473	0.971
	Study ends at 12 or 9 months	0.55 ± 0.77 (374)	0.35 ± 0.63 (179)	0.70 ± 0.82 (409)	0.53 ± 0.78 (197)					0.66 ± 0.81 (189)	0.44 ± 0.75 (97)	0.59 ± 0.78 (209)	0.52 ± 0.76 (107)				
	Study-end Δ (95% CI)	-0.06 (-0.14, 0.02)	-0.15 (-0.26, -0.03)	-0.03 (-0.16, 0.11)	-0.07 (-0.18, 0.05)	0.04 (-0.13, 0.20)	0.08 (-0.08, 0.24)	0.669	0.332	-0.07 (-0.18, 0.05)	-0.10 (-0.26, 0.06)	0.03 (-0.02, 0.07)	0.00 (-0.09, 0.10)	0.09 ^c (-0.03, 0.21)	0.11 ^c (-0.08, 0.29)	0.137	0.256

Delayed Recall	Baseline	2.23 ± 1.64 (533)	1.86 ± 1.70 (262)	2.29 ± 1.72 (549)	1.81 ± 1.74 (271)					2.40 ± 1.89 (210)	1.86 ± 1.92 (111)	2.21 ± 1.74 (230)	2.05 ± 1.72 (125)				
	6 months	2.23 ± 1.82 (420)	1.74 ± 1.79 (208)	2.31 ± 1.76 (488)	1.88 ± 1.76 (242)					2.66 ± 1.78 (190)	2.11 ± 1.84 (100)	2.82 ± 1.58 (201)	2.47 ± 1.66 (103)				
	6-month Δ (95% CI)	-0.03 (-0.43, 0.37)	-0.20 (-0.48, 0.08)	-0.01 (-0.24, 0.22)	0.06 (-0.79, 0.92)	0.02 (-0.44, 0.49)	0.26 (-0.27, 0.79)	0.927	0.326	0.27 (-0.06, 0.61)	0.23 (-0.11, 0.58)	0.63 (0.41, 0.85)	0.46 (0.19, 0.74)	0.36 (-0.04, 0.76)	0.23 (-0.21, 0.67)	0.080	0.306
	Study ends at 12 or 9 months	2.33 ± 1.83 (374)	1.63 ± 1.71 (179)	2.71 ± 1.82 (409)	2.30 ± 1.89 (197)					2.96 ± 1.79 (189)	2.27 ± 1.76 (97)	3.41 ± 1.62 (209)	2.94 ± 1.76 (107)				
	Study-end Δ (95% CI)	0.07 (-0.27, 0.41)	-0.28 (-0.70, 0.13)	0.33 (-0.04, 0.70)	0.47 (0.03, 0.90)	0.26 (-0.24, 0.76)	0.75 (0.15, 1.35)	0.302	0.015	0.56 (0.16, 0.96)	0.42 (-0.03, 0.86)	1.19 (1.03, 1.35)	0.89 (0.67, 1.11)	0.63 (0.20, 1.06)	0.47 (-0.02, 0.97)	0.004	0.061
Orientation	Baseline	5.31 ± 1.10 (533)	5.16 ± 1.19 (262)	5.35 ± 1.11 (549)	5.15 ± 1.22 (271)					5.08 ± 1.32 (210)	4.76 ± 1.48 (111)	5.14 ± 1.23 (230)	5.02 ± 1.23 (125)				
	6 months	5.32 ± 1.09 (420)	5.09 ± 1.21 (208)	5.39 ± 1.00 (488)	5.11 ± 1.15 (242)					5.32 ± 1.12 (190)	5.03 ± 1.34 (100)	5.26 ± 1.02 (201)	5.12 ± 1.07 (103)				
	6-month Δ (95% CI)	0.00 (-0.12, 0.12)	-0.13 (-1.13, 0.87)	0.04 (-0.07, 0.16)	-0.01 (-0.90, 0.88)	0.04 (-0.12, 0.21)	0.12 (-0.11, 0.35)	0.622	0.316	0.25 (0.13, 0.37)	0.26 (-0.02, 0.53)	0.17 (-0.03, 0.37)	0.17 (-0.15, 0.49)	-0.08 (-0.31, 0.16)	-0.09 (-0.51, 0.33)	0.522	0.678
	Study ends at 12 or 9 months	5.30 ± 1.05 (374)	5.06 ± 1.15 (179)	5.44 ± 0.98 (409)	5.20 ± 1.11 (197)					5.35 ± 1.06 (189)	5.03 ± 1.25 (97)	5.38 ± 1.06 (209)	5.09 ± 1.26 (107)				
	Study-end Δ (95% CI)	-0.04 (-0.16, 0.09)	-0.14 (-0.29, 0.01)	0.00 (-0.09, 0.10)	0.01 (-0.15, 0.16)	0.04 (-0.12, 0.19)	0.15 (-0.07, 0.36)	0.633	0.177	0.28 (0.18, 0.38)	0.29 (0.09, 0.49)	0.23 (0.14, 0.32)	0.07 (-0.08, 0.22)	-0.05 (-0.19, 0.08)	-0.23 (-0.47, 0.02)	0.449	0.072

Y, years; MoCA_{adj}, Montreal Cognitive Assessment (adjusted); CI, Confidence interval.

^aContinuous variables expressed as coefficient (95% CI), binary variables as exp[coefficient] (95% CI).

^bLinear mixed model adjusted for intervention, time, intervention/time interaction, and for baseline sex, smoking habit, and MoCA_{adj} in the *Efficacy Study*, and for baseline education level in the *Empowerment Study*.

^cAnalysis of intervention effect adjusted for between-group differences in baseline naming, concentration, and abstract thinking in the *Empowerment Study*.