Supplementary Material D

GAMs Dual Task Performance

Cognitive Predictors and Tapping Force in the Dual Task

Table D1. Results Summary GAM Cognitive Predictors and Tapping Force in the Dual Task

Smoothing terms		Edf	df	χ^2	р	Bonferroni α
s(RAVLT)		5.02	5.65	12.24	.025*	.050
s(Stroop)		4.79	5.83	19.27	.003**	.006**
s(TMT B-A)		1.00	1.00	4.09	.043*	.086
s(D2)		1.00	1.00	2.39	.122	.244
s(PPT)		0.71	1.00	2.48	.055	.110
Parametric coefficients	Estimate	SE	Ζ		р	Bonferroni α
(Intercept)	74.50	9.65	7.72		<.001 ***	<.001 ***
Auditory Cue	0.89	5.50	-0.16		0.872	1.00
R ² (adj.) 0.304		Dev	/iance explai	ined	41%	

Note. Results with residual outliers included. Signif. codes: '***' 0.001 '**' 0.01 '*' 0.05. RAVLT = Rey Auditory Verbal Learning Test calculated as 5^{th} Immediate Trial Recall – Delayed Recalled Items; Stroop = calculated as Incongruent – Congruent Trials Time in seconds; TMT = Trail Making Test calculated as Switching – Counting Time (B-A) in seconds; D2 calculated as corrected hit rate (correct hits – false positives); PPT = Participant.

Formula:

 $FORCE_DT \sim s(TMT_B_A_Time, k = -1) + s(STROOP_CWI, k$

 $s(D2_CHR, k = -1) + s(RAVLT_T5_DL, k = 7) + Condition + s(PPT, k = -1) + s(RAVLT_T5_DL, k = -1$

bs = "re")

Figure D1. Partial Effect Plots GAM Cognitive Predictors and Tapping Force in the Dual Task



Note. Graphs visualize results when residual outliers are included. The solid line represents the fitted relationship, and the shaded area represents the 95% confidence interval of the estimated smooth effect.

Cognitive Predictors and Tapping Consistency in the Dual Task

Smoothing terms		Edf	df	χ^2	р	Bonferroni α
s(RAVLT)		1.00	1.00	0.08	.775	1.00
s(Stroop)		1.64	2.04	4.84	.090	.180
s(TMT B-A)		3.01	3.65	8.81	.050	.100
s(D2)		1.00	1.00	0.01	.931	1.00
s(PPT)		2.12x10 ⁻⁵	1.00	0.00	.464	.928
Parametric coefficients	Estimate	SE	Ζ		р	Bonferroni α
(Intercept)	0.56	0.006	9.87		<.001 ***	<.001 ***
Auditory Cue	-0.00	0.004	-0.213		.832	1.00
R ² (adj.) -0.059		Deviance explained			10.9%	

Table D2. Results Summary GAM Cognitive Predictors and Tapping Consistency in the Dual Task

Note. Results with residual outliers included. Signif. codes: '***' 0.001 '**' 0.01 '*' 0.05. RAVLT = Rey Auditory Verbal Learning Test calculated as 5^{th} Immediate Trial Recall – Delayed Recalled Items; Stroop = calculated as Incongruent – Congruent Trials Time in seconds; TMT = Trial Making Test calculated as Switching – Counting Time (B-A) in seconds; D2 calculated as corrected hit rate (correct hits – false positives); PPT = Participant.

Formula:

 $CV_DT \sim s(TMT_BA_Time, k = -1) + s(STROOP_CWI, k = -1) + s(D2_CHR, k = -1) + s(D2_CH$

k = -1) + s(RAVLT_T5_DL, k = 7) + Condition + s(PPT, bs = "re")

Figure D2. Partial Effect Plots GAM Cognitive Predictors and Tapping Consistency in the Dual Task



Note. Graphs visualize results when residual outliers are included. The solid line represents the fitted relationship, and the shaded area represents the 95% confidence interval of the estimated smooth effect.

Motor Predictors and Tapping Force in the Dual Task

Smoothing terms		Edf	df	χ^2	р	Bonferroni α
s(GPT)		5.25	6.24	19.20	.005 **	.010 **
s(BBT)		4.50	5.40	39.86	<.001 ***	<.001 ***
s(PPT)		0.65	1.00	1.84	.085	.170
Parametric coefficients	Estimate	SE	Ζ		р	Bonferroni α
(Intercept)	72.79	8.93	8.15		<.001 ***	<.001 ***
Auditory Cue	-0.89	5.18	-0.17		.864	1.00
R ² (adj.) 0.384		De	viance expla	ined	46.3%	

Table D3. Results Summary GAM Motor Predictors and Tapping Force in the Dual Task

Note. Results with residual outliers included. Signif. codes: '***' 0.001 '**' 0.01 '*' 0.05. GPT = Grooved Pegboard Task calculated as time to complete in seconds; BBT= Box and Blocks Test calculated as total count of transferred blocks; PPT = Participants.

Formula:

 $FORCE_DT \sim s(GPT_TIME_DH, k = -1) + s(BBT_DH_COUNT, k = -1) + s(BBT_$

Condition + s(PPT, bs = "re")

Figure D3. Partial Effect Plots GAM Motor Predictors and Tapping Force in the Dual Task



Note. Graphs visualize results when residual outliers are included. The solid line represents the fitted relationship, and the shaded area represents the 95% confidence interval of the estimated smooth effect.

Motor Predictors and Tapping Consistency in the Dual Task

Smoothing terms		Edf	df	χ^2	р	Bonferroni α
s(GPT)		1.82	2.30	2.48	.417	.834
s(BBT)		1.00	1.00	2.31	.128	.256
s(PPT)		3.79x10 ⁻⁶	1.00	0.00	.570	1.00
Parametric coefficients	Estimate	SE	Ζ		р	Bonferroni α
(Intercept)	0.06	0.01	9.10		< .001 ***	< .001 ***
Auditory Cue	-0.00	0.00	-0.07		.943	1.00
R ² (adj.) -0.040		Deviance explained			2.78%	

Table D4. Results Summary GAM Motor Predictors and Tapping Consistency in the Dual Task

Note. Results with residual outliers included. Signif. codes: **** 0.001 *** 0.01 *** 0.05. GPT = Grooved Pegboard Task calculated as time to complete in seconds; BBT= Box and Blocks Test calculated as total count of transferred blocks; PPT = Participants.

Formula:

CV_DT ~ s(GPT_TIME_DH, k = -1) + s(BBT_DH_COUNT, k = -1) + Condition + s(PPT, bs = "re")





Note. Graphs visualize results when residual outliers are included. The solid line represents the fitted relationship, and the shaded area represents the 95% confidence interval of the estimated smooth effect.