# **Supplementary Material B**

# **Results Tables and Figures**

# Tapping measures across auditory cue type with and without cognitive load

# Table B1

Mixed Model Results for %CV by Condition and Trial

	<b>Box-Cox Transformed CV</b>					
Predictors	Estimates	std. Error	CI			
(Intercept)	0.70 ***	0.01	0.69 - 0.72			
Auditory Cue [2]	-0.00	0.01	-0.02 - 0.01			
Task [2]	0.03 ***	0.01	0.01 - 0.04			
Cue [2] <i>x</i> Task [2]	-0.00	0.01	-0.03 - 0.02			
Random Effects						
$\sigma^2$	0.00					
τ <sub>00</sub> ppt	0.00					
ICC	0.37					
N ppt	50					
Observations	178					
Marginal $\mathbb{R}^2$ / Conditional $\mathbb{R}^2$	0.077 / 0.4	-19				

Bonferroni corrected a-values  $p < 0.05 \quad p < 0.01 \quad p < 0.001$ 

	%Force						
Predictors	Estimates	std. Error	CI				
(Intercept)	50.74 ***	3.65	43.53 - 57.94				
Auditory Cue [2]	0.73	1.43	-2.11 - 3.56				
Task [2]	2.05	1.43	-0.78 - 4.88				
Cue [2] <i>x</i> Task [2]	-1.42	2.01	-5.40 - 2.55				
Random Effects							
$\sigma^2$	44.95						
$\tau_{00 PPT}$	551.92						
ICC	0.92						
N ppt	45						
Observations	178						
Marginal R <sup>2</sup> / Conditional R <sup>2</sup>	0.001 / 0.92	5					

Mixed Model Results for %Force by Condition and Trial

Bonferroni corrected p-values p<0.05 p<0.01 p<0.01

Smoothing terms			Edf	df	$\chi^2$	р	Bonferroni α	
s(RAVLT)			2.96	3.62	4.35	.363	.726	
s(Stroop)			4.80	5.85	16.58	.009**	.018*	
s(TMT B-A)			1.00	1.00	3.94	.062	.124	
s(D2)			1.00	1.00	0.46	.498	.996	
s(PPT)			0.61	1.00	1.58	.102	.204	
Parametric coeffici	ients	Estimate	SE	Z		р		
(Intercept)		69.93	9.91	6.96		<.001 ***	<.001***	
Auditory Cue		0.64	5.78	0.11		.911	1.00	
$R^2(adj.)$ 0	.193		Deviance explained 29.6%					

Results Summary GAM Single Task Cognition and Tapping Force

*Note.* RAVLT = Rey Auditory Verbal Learning Test calculated as 5<sup>th</sup> 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 = Participants. P-corrected represents Bonferroni corrected p-values.

# Figure B1

Partial Effect Plots GAM Single Task Cognition and Tapping Force



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

Smoothing terms		Edf	df	$\chi^2$	р	Bonferroni α
s(RAVLT)		1.34		1.03	.375	.750
s(Stroop)		1.54		2.06	.415	.830
s(TMT B-A)		1.39		0.85	.653	1.00
s(D2)		1.00		0.07	.792	1.00
s(PPT)		4.59x10 <sup>-6</sup>		0.00	.834	1.00
Parametric coefficients	Estimate	SE	Z		р	
(Intercept)	0.041	0.004	8.58		<.001 ***	< 0.001***
Auditory Cue	0.003	0.003	0.85		.394	.788
$R^2(adj.)$ -0.083	Deviance explained 4.21%					

Results Summary GAM Single Task Cognition and Tapping Consistency

*Note.* Results with residual outliers included. RAVLT = Rey Auditory Verbal Learning Test calculated as 5<sup>th</sup> 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 = Participants.

# Figure B2

Partial Effect Plots GAM Single Task Cognition and Tapping Consistency



Smoothing terms			Edf	df	$\chi^2$	р	Bonferroni α
s(GPT)			5.10		21.39	.002 **	.004 **
s(BBT)			4.85		64.06	<.001 ***	<.001 ***
s(PPT)			0.78		3.48	.031*	.062
Parametric coeffici	ents	Estimate	SE	Z		р	
(Intercept)		70.57	8.03	8.79		<.001 ***	<.001 ***
Auditory Cue		0.64	4.58	0.14		.888	1.00
$R^2(adj.)$ 0	.493		Dev	viance explaine	56%		

Results Summary GAM Single Task Motor Ability and Tapping Force

*Note.* Results with residual outliers included. 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.

# Figure B3

Partial Effect Plots GAM Single Task Motor Ability and Tapping Force



Smoothing terms		Edf	df	$\chi^2$	р	Bonferroni α
s(GPT)		2.42	2.99	7.23	.060	.120
s(BBT)		1.00	1.00	1.19	.276	.552
s(PPT)		0.07	1.00	0.08	.279	.558
Parametric coefficients	Estimate	SE	Z		р	
(Intercept)	0.043	0.005	8.99		<.001 ***	<.001 ***
Auditory Cue	0.001	0.003	0.45		.65	1.00
R <sup>2</sup> (adj.) -0.068		Deviance explained			6.47%	

Results Summary GAM Single Task Motor Ability and Tapping Consistency

*Note.* Results with residual outliers removed. 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.

#### Figure B4





# DTC – Cognition and Tapping Force

#### Table B7

Smoothing terms		Edf	df	$\chi^2$	р	Bonferroni α
s(RAVLT)		1.00	1.00	1.31	.252	.504
s(Stroop)		1.00	1.00	1.04	.307	.614
s(TMT B-A)		2.72	3.26	4.07	.298	.596
s(D2)		1.76	2.17	1.92	.406	.812
s(PPT)		0.510	1.00	1.15	.131	.626
Parametric coefficients	Estimate	SE	Ζ		р	
(Intercept)	-4.21	3.27	-1.29		.197	.394
Auditory Cue	2.29	1.92	1.19		.235	.470
$R^2(adj.)$ 0.031		Deviance explained 8.81%				

Results Summary GAM Dual Task Cognition and Tapping Force

*Note.* Results with residual outliers included. RAVLT = Rey Auditory Verbal Learning Test calculated as 5<sup>th</sup> 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 = Participants.

# Figure B5

Partial Effect Plots GAM Dual Task Cognition and Tapping Force



# DTC – Cognition and Tapping Consistency

# Table B8

Results Summary GAM Dual Task Cognition and Tapping Consistency

Smoothing terms		Edf	df	$\chi^2$	р	Bonferroni α	
s(RAVLT)		1.51	1.87	0.73	.624	1.00	
s(Stroop)		1.00	1.00	0.93	.334	.668	
s(TMT B-A)		2.76	1.31	5.30	.157	.314	
s(D2)		1.00	1.00	0.39	.532	1.00	
s(PPT)		3.47x10 <sup>-5</sup>	1.00	0.00	.671	1.00	
Parametric coefficients	Estimate	SE	Z		р		
(Intercept)	-0.012	0.006	-2.03		.043*	.086	
Auditory Cue	0.002	0.004	0.50		.616	1.00	
R <sup>2</sup> (adj.) -0.047		Deviance explained 6.18%					

*Note.* Results with residual outliers included. RAVLT = Rey Auditory Verbal Learning Test calculated as 5<sup>th</sup> 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 = Participants.

# Figure B6

Partial Effect Plots GAM Dual Task Cognition and Tapping Consistency



#### **DTC – Motor Ability and Tapping Force**

#### Table B9

Smoothing terms		Edf	df	$\chi^2$	р	Bonferroni α
s(GPT)		1.00	1.01	1.61	.206	.412
s(BBT)		1.99	2.48	4.77	.110	.220
s(PPT)		2.02x10 <sup>-5</sup>	1.00	0.00	.565	1.00
Parametric coefficients	Estimate	SE	Ζ		р	
(Intercept)	-5.70	2.94	-1.94		.052	.104
Auditory Cue	2.63	1.86	1.42		.157	.314
$R^2$ (adj.) 0.036		Dev	iance explai	6.94%		

Results Summary GAM Dual Task Motor Ability and Tapping Force

*Note.* Results with residual outliers included. 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.

#### Figure B7

# Partial Effect Plots GAM Dual Task Motor Ability and Tapping Force



#### DTC - Motor Ability and Tapping Consistency

#### Table B10

Smoothing terms		Edf	df	$\chi^2$	р	Bonferroni α
s(GPT)		1.00	1.00	2.88	.090	.180
s(BBT)		1.00	1.00	1.80	.179	.358
s(PPT)		3.43x10 <sup>-6</sup>	1.00	0.00	.745	1.00
Parametric coefficients	Estimate	SE	Ζ		р	
(Intercept)	-0.001	0.01	-1.82		.070	.140
Auditory Cue	0.00	0.003	0.29		.771	1.00
$R^2$ (adj.) 0.035		Dev	iance explain	2.9%		

Results Summary GAM Dual Task Motor Ability and Tapping Consistency

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

# Figure B8



