

Context Dependent Differences in Working Memory Related Brain Activity in Heavy Cannabis Users

Emese Kroon^{1,2}, Lauren Kuhns^{1,2}, Janna Cousijn^{1,2,3}

¹Neuroscience of Addiction (NofA) Lab, Department of Psychology, University of Amsterdam, Amsterdam, The Netherlands

²The Amsterdam Brain and Cognition Center (ABC), University of Amsterdam, Amsterdam, The Netherlands

³Department of Psychology, Education & Child Studies, Erasmus University Rotterdam, Rotterdam, The Netherlands

*Correspondence: Emese Kroon, e.kroon@uva.nl, P.O. box 15916, 1001 NK Amsterdam, The Netherlands

Model		Model coefficients					Model comparison			
		Fixed effects			Random effects		AIC	χ^2	p	
Accuracy	B	95% CI (B)	SE (B)	t	p	SD				
0	(Intercept)	92.50	91.58 : 93.43	.47	196.64	<.001	2.61	2646.391	-	-
	WM-load	-	-	-	-	-	3.98			
	Flanker Type	-	-	-	-	-	3.99			
1	<i>(Intercept)</i>	<i>92.28</i>	<i>94.03 : 96.52</i>	<i>.63</i>	<i>150.83</i>	<i><.001</i>	<i>3.03</i>	2604.738	45.62	<.001
	<i>WM-load: 1-back</i>	<i>-3.00</i>	<i>-4.43 : -1.57</i>	<i>.73</i>	<i>-4.12</i>	<i><.001</i>	2.95			
	<i>WM-load: 2-back</i>	<i>-5.32</i>	<i>-6.75 : -3.88</i>	<i>.73</i>	<i>-7.31</i>	<i><.001</i>				
	<i>Flanker Type</i>	-	-	-	-	-	4.04			
2	(Intercept)	95.50	94.19 : 96.81	.67	143.01	<.001	3.03	2605.676	1.06	.30
	WM-load: 1-back	-3.00	-4.43 : -1.57	.73	-4.12	<.001	2.96			
	WM-load: 2-back	-5.31	-6.75 : -3.88	.73	-7.30	<.001				
	Flanker Type: neutral	-0.44	-1.28 : 0.40	.43	-1.03	0.31	4.03			
3	(Intercept)	95.06	94.48 : 96.63	.80	118.27	<.001	3.00	2606.725	0.95	.33
	WM-load: 1-back	-3.00	-4.43 : -1.57	.73	-4.11	<.001	2.96			
	WM-load: 2-back	-5.32	-6.75 : -3.88	.73	-7.29	<.001				
	Flanker Type: neutral	-0.44	-1.28 : 0.40	.43	-1.03	.31	4.03			
	Group: control	0.91	-0.95 : 2.78	.94	0.97	.33	-			
4	(Intercept)	95.79	93.90 : 97.85	1.02	94.39	<.001	3.03	2614.568	6.16	.52
	WM-load: 1-back	-3.34	-5.76 : -0.92	1.24	-2.69	0.008	2.86			
	WM-load: 2-back	-7.35	-9.77 : -4.93	1.24	-5.93	<.001				
	Flanker type: neutral	-1.35	-3.36 : 0.66	1.03	-1.31	.19	4.02			
	Group: control	-0.34	-3.23 : 2.54	1.47	-0.23	.82	-			
	WM-load: 1-back * Flanker Type: neutral	0.96	-1.88 : 3.81	1.46	0.66	.51	-			
	WM-load: 2-back * Flanker Type: neutral	1.60	-1.24 : 4.45	1.46	1.10	.27	-			
	WM-load: 1-back * Group: control	0.10	-3.40 : 3.59	1.79	0.05	.96	-			
	WM-load: 2-back * Group: control	3.51	0.01 : 3.91	1.79	1.96	.05	-			
	Flanker type: neutral * Group: control	1.00	-1.90 : 3.91	1.50	0.67	.50	-			
	WM-load: 1-back * Flanker Type: neutral * Group: control	-0.79	-4.90 : 3.32	2.12	-0.37	.71	-			
	WM-load: 2-back * Flanker Type: neutral * Group: control	-1.88	-5.99 : 2.23	2.12	-0.89	.38	-			

Mixed model results using random intercept and maximum likelihood estimation; CI: Confidence Interval; SE: Standard Error; SD: Standard deviation; AIC: Akaike information criterion.
Note: final models as presented in the manuscript are presented in italic.

Table S1 Continued										
Model		Model coefficients					Model comparison			
		Fixed effects			Random effects					
Reaction Time		B	95% CI (B)	SE (B)	t	p	SD	AIC	χ^2	P
0	(Intercept)	505.70	483.16 : 528.24	11.45	44.18	<.001	82.11	4819.618	-	-
	WM-load	-	-	-	-	-	76.49			
	Flanker Type	-	-	-	-	-	37.75			
1	<i>(Intercept)</i>	<i>454.36</i>	<i>428.86 : 479.87</i>	<i>12.98</i>	<i>35.00</i>	<i><.001</i>	<i>88.05</i>	4742.542	81.08	<.001
	<i>WM-load: 1-back</i>	<i>44.50</i>	<i>23.76 : 65.24</i>	<i>10.53</i>	<i>4.23</i>	<i><.001</i>	53.07			
	<i>WM-load: 2-back</i>	<i>109.52</i>	<i>88.78 : 130.26</i>	<i>10.53</i>	<i>10.40</i>	<i><.001</i>				
	<i>Flanker Type</i>	-	-	-	-	-	38.66			
2	(Intercept)	454.63	428.77 : 480.49	13.18	34.49	<.001	88.05	4744.526	0.02	.90
	WM-load: 1-back	44.50	23.76 : 76.24	10.54	4.22	<.001	53.07			
	WM-load: 2-back	109.52	88.78 : 130.26	10.54	10.39	<.001				
	Flanker Type: neutral	-0.54	-9.10 : 8.03	4.37	-0.12	.90	38.66			
3	(Intercept)	450.19	416.54 : 483.84	17.17	26.22	<.001	87.93	4746.362	0.16	.68
	WM-load: 1-back	44.50	23.76 : 65.24	10.55	4.22	<.001	53.07			
	WM-load: 2-back	109.52	88.78 : 130.26	10.55	10.38	<.001				
	Flanker Type: neutral	-0.54	-9.10 : 8.03	4.37	-0.12	.90	38.66			
	Group: control	9.29	-36.34 : 54.91	23.00	0.40	.69	-			
4	(Intercept)	458.64	421.96 : 495.33	18.88	24.29	<.001	87.99	4754.888	5.47	.60
	WM-load: 1-back	42.73	10.71 : 74.75	16.43	2.60	.01	52.94			
	WM-load: 2-back	94.52	62.50 : 126.55	16.43	5.75	<.001				
	Flanker type: neutral	-7.39	-27.73 : 12.95	10.47	-0.71	.48	38.23			
	Group: control	-12.18	-65.88 : 41.51	27.30	-0.45	.66	-			
	WM-load: 1-back * Flanker Type: neutral	-4.62	-33.39 : 24.14	14.80	-0.31	.76	-			
	WM-load: 2-back * Flanker Type: neutral	7.99	-20.78 : 36.75	14.80	0.54	.59	-			
	WM-load: 1-back * Group: control	15.73	-30.57 : 62.03	23.76	0.66	.51	-			
	WM-load: 2-back * Group: control	30.70	-15.60 : 77.00	23.76	1.29	.20	-			
	Flanker type: neutral * Group: control	21.91	-7.50 : 51.33	15.14	1.45	.15	-			
	WM-load: 1-back * Flanker Type: neutral * Group: control	-14.40	-55.99 : 27.20	21.41	-0.67	.50	-			
	WM-load: 2-back * Flanker Type: neutral * Group: control	-15.39	-56.99 : 26.20	21.41	-0.72	.47	-			

*Mixed model results using random intercept and maximum likelihood estimation; CI: Confidence Interval; SE: Standard Error; SD: Standard deviation; AIC: Akaike information criterion.
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Table S2 Activation overview for the flanker and working memory (WM) contrasts

		MNI coordinates					
	Cluster size (voxels)	Brain regions	Hemisphere	X	Y	Z	Zmax
Flanker							
c > n	469	IFG	Left	-50	26	12	4.17
n > c	44257	Intracalcerine cortex	Left	-18	-86	4	5.46
		Frontal pole	Right	36	58	-2	5.40
		Lingual gyrus	Right	10	-84	-4	5.36
		Lingual gyrus	Left	-6	-84	-6	5.34
		Occipital Pole	Left	-10	-94	2	5.21
	1363	Frontal pole	Left	-30	58	-10	4.57
WM							
2 > 1	38581	MFG	Left	-30	4	58	7.13
		Insula	Right	30	20	8	6.24
		SFG/Paracingulate gyrus	Left	-8	16	48	6.08
	13625	Precuneus	Left	-6	-68	50	6.37
		Lateral occipital	Left	-30	-70	34	6.36
		SPL	Left	-32	-50	42	5.89
		SMG	Left	-38	-48	40	5.86
1 > 2	10178	MFG/Paracingulate gyrus	Left	-8	40	-10	5.66
	1160	Central operculum	Right	42	-14	16	4.17
	1139	Cingulate gyrus	Left	-2	-48	30	5.62
	606	Central operculum	Left	-44	0	14	4.11

MNI = Montreal Neurological Institute; MNI coordinates and Z-scores of separate local maxima for each cluster (whole-brain cluster-corrected at $p < 0.05$, $Z > 2.3$); c = cannabis flanker, n = neutral flanker; 1 = 1-back, 2 = 2-back; IFG = Inferior Frontal Gyrus, MFG = Medial Frontal Gyrus, SFG = Superior Frontal Gyrus, SPL = Superior Parietal Lobe, SMG = Supramarginal Gyrus.