SUPPLEMENTARY MATERIAL

Mindfulness-training Affects Attention – Or is it Attentional Effort?

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Supplementary Table I. Descriptives and pre-post effect sizes (*d*s) from the DART, the Stroop Color-Word task, the D2 test, and the TVA-test (main results in bold).

Test paradigm	Test time	No incentive (n = 8)			Incentive (n = 8)			Non-mindfulness course (n = 15)			Mindfulness course (n = 16)		
Outcome		*M*	*SD*	*d*	*M*	*SD*	*d*	*M*	*SD*	*d*	*M*	*SD*	*d*
Dual Attention to Response Task													
White digit RT (ms)	1	172	(44)		252	(78)		227	(57)		208	(65)	
	2	139	(38)	1.42**	174	(38)	1.30**	194	(44)	.97**	170	(50)	.81**
Commission Error RT (ms)	1	214	(102)		253	(84)		300	(156)		253	(100)	
	2	206	(79)	.18	196	(83)	.49	233	(142)	.42	218	(95)	.33
Grey digit RT (ms)	1	376	(65)		419	(60)		413	(63)		383	(77)	
	2	341	(63)	.61*	331	(51)	**1.44****	375	(69)	.59*	395	(86)	-.21
Coefficient of Variation (see text)	1	0.53	(.09)		0.42	(.12)		0.49	(.09)		0.48	(.13)	
	2	0.56	(.07)	-.26	0.45	(.14)	-.26	0.45	(.05)	.86	0.46	(.12)	.21
Stroop Color-Word Task													
Congruent Block time (s)	1	48	(10)		52	(8)		57	(11)		51	(6)	
	2	46	(8)	.40	46	(8)	.92*	52	(6)	.51	48	(5)	.62*
Incongruent block time (s)	1	93	(19)		87	(10)		100	(15)		97	(13)	
	2	88	(18)	.77	82	(8)	**1.21***	95	(12)	.47	90	(12)	**1.18*****
Incongruent block error rate	1	3.8	(3.0)		2.3	(1.8)		2.7	(2.7)		2.8	(2.5)	
	2	3.6	(1.7)	.06	1.9	(1.6)	.17	2.3	(1.8)	.13	2.1	(1.5)	.21
D2 test of attention													
Total score, *TN*	1	552	(44)		525	(52)		505	(49)		538	(63)	
	2	588	(45)	1.34**	563	(57)	1.92***	558	(45)	1.78***	574	(62)	1.45***
Total score – errors, *TN-E*	1	524	(58)		500	(43)		480	(52)		517	(61)	
	2	562	(60)	2.09**	543	(54)	2.10***	536	(43)	2.12***	559	(59)	1.81***
Spread, *S*	1	13	(3)		14	(2)		13	(4)		12	(3)	
	2	10	(4)	1.15*	10	(4)	.84 (*)	11	(4)	.54 (*)	10	(5)	.66*
Total error rate, *E*	1	28	(21)		26	(28)		25	(22)		21	(14)	
	2	26	(21)	.20	21	(17)	.63	22	(22)	.28	15	(22)	**.93****
Error percentage, *E%*	1	5.3	(4.2)		4.7	(4.9)		4.9	(4.4)		3.9	(2.5)	
	2	4.7	(3.7)	.38	3.6	(2.8)	.69	3.9	(3.9)	.62*	2.5	(1.9)	**1.14*****
Theory of Visual Attention Test													
Perceptual Threshold, t_0 (ms)	1	10	(6)		14	(8)		11	(7)		15	(11)	
	2	9	(5)	.42	12	(5)	.27	8	(6)	.45	9	(9)	**1.14****
Processing Speed, *C* (letters / s)	1	35	(12)		38	(10)		36	(12)		39	(13)	
	2	40	(14)	.86*	40	(10)	.37	40	(14)	.70*	41	(11)	.35
Capacity of Visual STM, *K* (letters)	1	3.54	(.90)		3.59	(.45)		3.35	(.78)		3.46	(.78)	
	2	3.46	(.64)	-.16	3.56	(.55)	-.21	3.56	(.82)	.42	3.74	(.68)	**.64***
Attentional selectivity, α (see text)	1	0.53	(.15)		0.61	(.26)		0.64	(.31)		0.69	(.29)	
	2	0.48	(.33)	.29	0.48	(.18)	.93	0.52	(.27)	.47	0.61	(.32)	.30

* / ** / ***. Pre-post change significant at the 0.05 level / 0.01 level / 0.001 level (2-tailed, uncorrected for multiple tests).

Supplementary Table II. Mean reaction times (ms) per trial type in the Spatial & Temporal Attention Network task (STAN).

Cue Type	Field / CTI	Session	No incentive[a]		Incentive[a]		Non-mindfulness course[b]		Mindfulness course[c]	
Temporal cues			*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Temporal invalid	750	1	276	(26)	282	(49)	300	(38)	288	(32)
Temporal invalid	750	2	274	(41)	262	(44)	274	(44)	271	(39)
Temporal valid	750	1	259	(22)	257	(14)	275	(35)	281	(37)
Temporal valid	750	2	252	(32)	239	(30)	256	(30)	260	(33)
Neutral cues										
Neutral	750	1	285	(45)	286	(29)	293	(33)	291	(32)
Neutral	750	2	275	(51)	251	(24)	282	(39)	273	(33)
Neutral mean	–	1	269	(43)	277	(22)	282	(36)	277	(30)
Neutral mean	–	2	265	(55)	243	(22)	269	(35)	263	(35)
Neutral	Left	1	268	(44)	283	(25)	287	(34)	279	(31)
Neutral	Left	2	266	(58)	248	(25)	270	(37)	263	(32)
Neutral	Right	1	271	(45)	279	(26)	277	(39)	276	(32)
Neutral	Right	2	264	(52)	238	(20)	266	(39)	263	(39)
Spatial cues										
Spatial valid	Left	1	266	(49)	273	(21)	280	(40)	269	(35)
Spatial valid	Left	2	240	(28)	235	(40)	262	(32)	252	(34)
Spatial valid	Right	1	254	(47)	267	(27)	271	(41)	262	(29)
Spatial valid	Right	2	247	(43)	240	(26)	259	(32)	249	(31)
Spatial invalid	Left	1	296	(49)	284	(55)	315	(54)	299	(36)
Spatial invalid	Left	2	284	(32)	272	(39)	301	(51)	274	(31)
Spatial invalid	Right	1	302	(53)	289	(57)	308	(60)	295	(41)
Spatial invalid	Right	2	286	(55)	270	(44)	296	(36)	282	(36)

[a]$n = 8$. [b]$n = 15$. [c]$n = 16$.

Note. CTI = Cue-Target Interval (ms; see Figure 2).

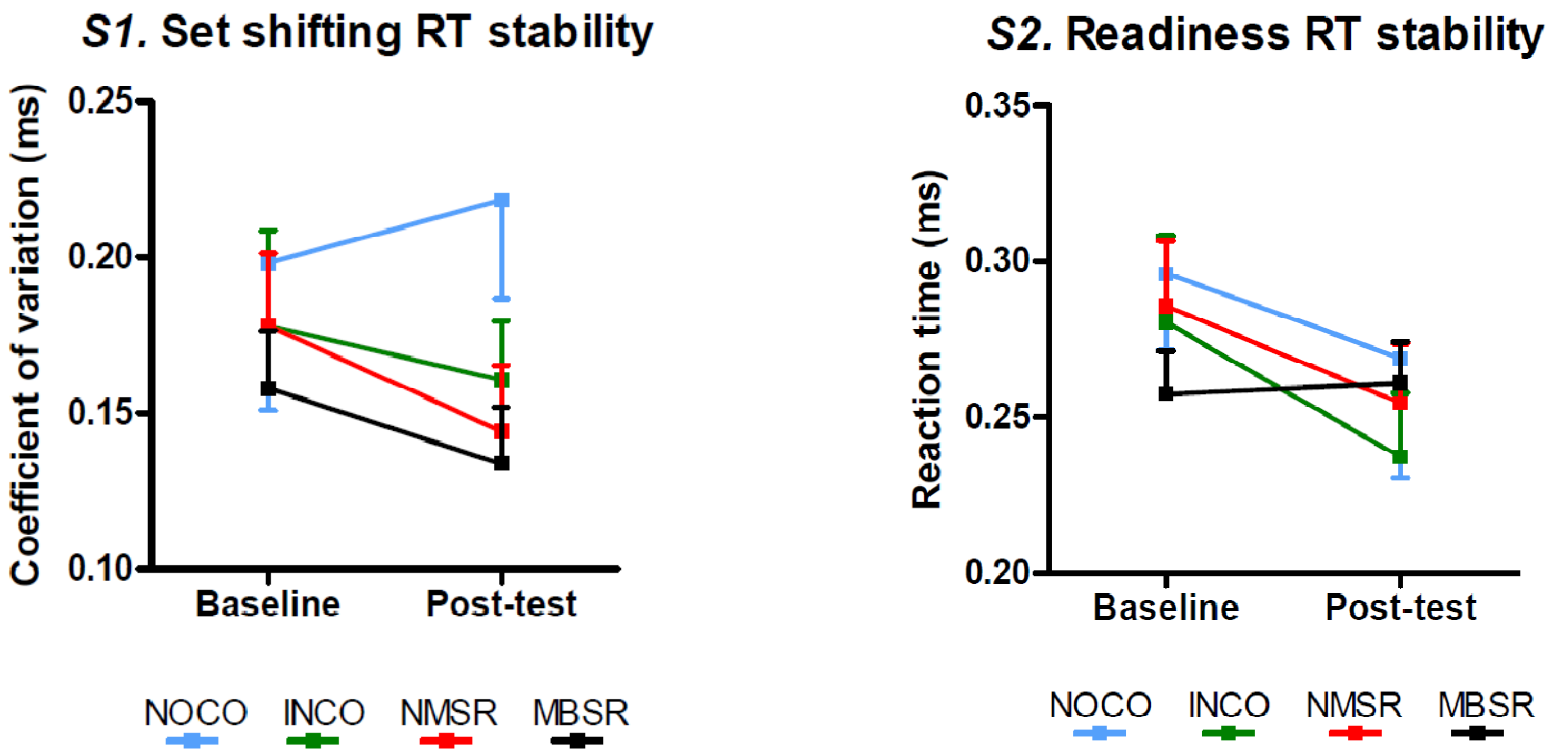
Supplementary Table III. Significant Time × Group interactions.

Paradigm	Test	Comparison	*F*	*df*	*p*	ω^2	Interpretation
Dual Attention to Response Task (DART)							
Grey digit RT	ANCOVA	MBSR *vs.* NOCO *vs.* INCO *vs.* NMSR	4.77	46	.006	.14	Group changes differed overall
Grey digit RT	ANCOVA	MBSR *vs.* INCO	12.70	24	.002	.24	INCO improved more than MBSR.
Spatial and Temporal Attention Network task (STAN)							
Neutral trials RT	ANCOVA	MBSR *vs.* (NMSR + MBSR)	5.94	39	.016	.05	INCO improved more than the stress reduction groups combined.
Temporal invalid trials	ANOVA	NMSR *vs.* NOCO	5.28	23	.032	.13	NMSR improved more than NOCO
D2-test of attention							
Error distribution[a]	ANOVA	MBSR *vs.* NOCO *vs.* INCO *vs.* NMSR	2.73	92	.028	-	Group changes differed overall
Error distribution[a]	ANOVA	MBSR *vs.* NOCO	3.21	46	.050	-	MBSR improved Section 2 more than NOCO.
Error distribution[a]	ANOVA	MBSR *vs.* CICO	3.13	62	.051	-	MBSR improved Section 2 more than CICO.
Error distribution[a]	ANOVA	MBSR *vs.* NMSR	7.03	62	.004	-	MBSR improved Section 2 more than NMSR.
Theory of Visual Attention test (TVA)							
Perceptual threshold	ANCOVA	MBSR *vs.* NOCO	4.95	24	.037	.04	MBSR improved more than NOCO.
Perceptual threshold	ANCOVA	MBSR *vs.* CICO	6.21	32	.019	.04	MBSR improved more than CICO.
Working memory capacity	ANCOVA	MBSR *vs.* CICO	5.11	32	.032	.05	MBSR improved more than CICO.
Cortisol secretion							
AUC – Ground	ANCOVA	MBSR *vs.* CICO	7.50	26	.012	.14	MBSR decreased more than CICO.
Mindfulness Attention and Awareness Scale (MAAS)							
Overall mindfulness	ANCOVA	MBSR *vs.* CICO	6.81	29	.015	.09	MBSR increased more than CICO.
Cohen's Perceived Stress Scale (PSS)							
Overall stress score	ANCOVA	MBSR *vs.* CICO	5.64	29	.025	.11	MBSR decreased more than CICO.

[a]. Time × Group × Section interaction. No effect size is provided due to the complexity of interpreting such an effect (see "Data Analyses").

Note. *p*-values are two-tailed and uncorrected for multiple comparisons (see text for Bonferroni-corrected *p*-values).

SUPPLEMENTARY FIGURES



Supplementary Figures. *S1*. Pre-post group changes on the grey digit *CV* in DART. No groups improved significantly, and no Time × Group interactions were significant. *S2*. Pre-post group changes on the *CV* for neutrally cued trials in STAN. No groups improved significantly, and no Time × Group interactions were significant. Error bars represent one standard error of the mean.