

Supplementary Information

The Role of Inhibitory Control in Moderating Working Memory Training Transfer: Evidence from a Preregistered Trial with Older Adults

Anja Pahor^{1,2,3,4}, Morgan Gomez^{3,4}, Susanne M. Jaeggi^{3,4}, Aaron R. Seitz^{3,4}

Email of Corresponding Author: a.pahor@northeastern.edu

¹ University of Maribor, Faculty of Arts, Department of Psychology

² University of Maribor, Faculty of Education, Department of Preschool Education

³ Northeastern University, College of Science, Department of Psychology

⁴ Brain Game Center for Mental Health and Wellbeing, Northeastern University

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Inclusion Criteria

1. 50-85 years of age
 2. Able to understand and speak English and follow study procedures
 3. Does not have a psychological or neurological condition that would prevent being able to give consent to participate
 4. Not currently involved in any other cognitive or memory training studies
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Exclusion Criteria

1. Formal diagnosis of dementia or other neurological disease, including Mild cognitive impairment.
 2. A final total score below 17 on Montreal Cognitive Assessment - Blind (telephone) version.
 3. Score of 10 or more on the Generalized Anxiety Questionnaire (GAD7; Spitzer et al., 2006, Archives of Internal Medicine), indicating presence of moderate or severe anxiety.
 4. A score of 9 or more on Geriatric depression scale (GDS15; Sheikh & Yesavage, 1986, Clinical Gerontology: A Guide to Assessment and Intervention) indicating presence of moderate or severe depression.
 5. Abnormal visual acuity prohibitive of tablet-based training.
 6. Physical handicap (motor or perceptual) that would impede training procedures.
 7. Medical illness requiring treatment and/or significant absences during the study timeline.
 8. Current evidence or 2-yr history of seizures, focal brain lesion, or head injury with loss of consciousness.
 9. Current alcohol consumption exceeds 14 drinks per week.
 10. Self-reported illicit drug use.
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Supplementary Table 1: Inclusion and Exclusion Criteria for Study 2

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	Low IC			High IC		
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>
<i>Untrained N-back</i>						
Pre-test	37	3.11	.31	35	3.03	.17
Mid-test	37	3.54	.80	35	3.60	.74
Post-test	37	3.92	.80	35	3.83	.75
Follow-up	37	4.05	.94	35	3.91	.74
<i>Overall Span</i>						
Pre-test	34	9.65	1.52	34	10.24	1.95
Mid-test	34	9.94	1.81	34	10.29	1.8
Post-test	34	10.15	1.21	34	10.44	2.06
Follow-up	34	10.88	1.57	34	10.94	1.61
<i>EMQ</i>						
Pre-test	32	44.72	4.07	32	45.75	4.44
Mid-test	32	45.84	3.62	32	44.53	5.22
Post-test	32	46.75	3.82	32	46.81	3.72
Follow-up	32	47.25	4.37	32	47.03	4.00
<i>IC Composite</i>						
Pre-test	35	-0.78	0.72	35	0.78	0.53
Mid-test	35	0.09	0.74	35	0.38	0.81
Post-test	35	0.1	0.69	35	0.52	0.78
Follow-up	35	0.27	0.62	35	0.62	0.66
<i>Note.</i> IC = inhibitory control; M = mean; SD = standard deviation.						

Supplementary Table 2: Descriptive statistics of the Study 2 primary outcome measures stratified by baseline IC composite median split.

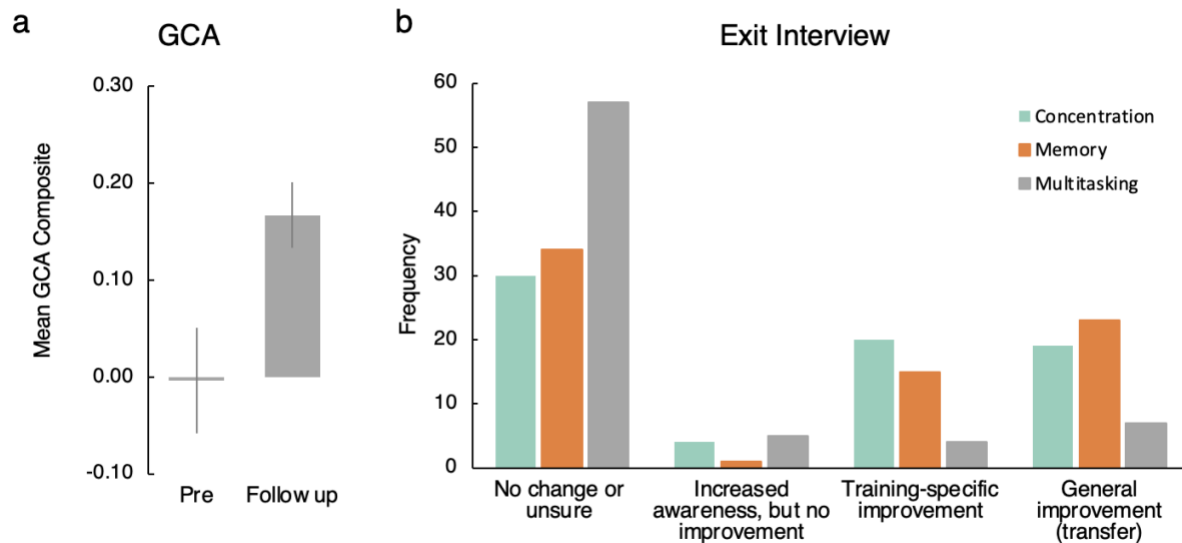
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Measure	Training: Before Crossover			Training: After Crossover		
	High IC M (SD)	Low IC M (SD)	BF ₁₀	High IC M (SD)	Low IC M (SD)	BF ₁₀
Enjoyment	3.40 (1.06)	3.54 (0.92)	0.29	3.56 (1.18)	3.69 (0.98)	0.28
Difficulty	8.17 (1.25)	8.23 (1.03)	0.25	8.06 (1.12)	8.42 (1.11)	0.55
Progress	3.80 (1.02)	3.91 (0.82)	0.28	4.00 (0.93)	4.08 (0.81)	0.26
Interface	4.51 (0.85)	4.20 (1.16)	0.50	4.44 (0.88)	4.31 (0.98)	0.29
Measure	Nongame-first M (SD)	Game-first M (SD)	BF ₁₀	Nongame-first M (SD)	Game-first M (SD)	BF ₁₀
Enjoyment	3.56 (1.05)	3.38 (0.92)	0.31	3.92 (0.91)	3.33 (1.17)	2.55
Difficulty	8.36 (1.17)	8.03 (1.09)	0.47	8.33 (1.17)	8.14 (1.07)	0.31
Progress	3.72 (0.94)	4.00 (0.89)	0.49	4.08 (0.87)	4.00 (0.86)	0.26
Interface	4.67 (0.79)	4.03 (1.14)	5.41	4.33 (0.99)	4.42 (0.87)	0.26

Note. BF₁₀ = Bayes factor comparing the alternative hypothesis to the null hypothesis. Values < 1 indicate evidence in favor of the null hypothesis. IC = inhibitory control. Part 1 included *N* = 35 participants in each IC group (High IC and Low IC). Part 2 included *N* = 36 participants in each IC group. Part 1 comprised *N* = 36 in the Nongame-first group and *N* = 34 in the Game-first group (due to missing data), whereas Part 2 comprised *N* = 36 in each group. Gray shading indicates gamified training.

Supplementary Table 3: Descriptive statistics for Training Experience Survey and results of uncorrected Bayesian independent-samples t-tests for group comparisons.

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Supplementary Figure 1: a Mean GCA composite at pre-test and follow-up irrespective of training condition (N = 72). Error bars represent SEM. * BF_{10} : 3.0-9.9; ** BF_{10} : 10.0-99.9; *** $BF_{10} \geq 100$. **b** Frequency of coded responses from the Exit Interview.

Note. A planned Bayesian Wilcoxon Signed-Rank Test was conducted to compare GCA Composite Scores between pre-test and follow-up irrespective of training condition. One outlier was removed from the sample at follow-up ($|z| > 3$). The results provided anecdotal evidence for an increase in GCA score at follow-up ($BF_{10} = 2.45$, $W = 936.00$).

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	Low IC Nongame First			Low IC Game First			High IC Nongame First			High IC Game First		
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>
<i>Near transfer</i>												
Pre-test	21	3.1	0.3	16	3.1	0.3	15	3.0	0.0	20	3.1	0.2
Mid-test	21	3.6	0.8	16	3.5	0.9	15	3.9	0.8	20	3.4	0.6
Post-test	21	3.9	0.8	16	3.9	0.9	15	4.0	0.8	20	3.7	0.7
Follow-up	21	4.0	0.8	16	4.2	1.1	15	4.0	0.8	20	3.9	0.8
<i>Overall Span</i>												
Pre-test	18	10.00	1.81	16	9.25	1.00	16	10.50	2.19	18	10.00	1.75
Mid-test	18	10.00	2.20	16	9.88	1.31	16	10.81	1.94	18	9.83	1.58
Post-test	18	10.22	1.31	16	10.06	1.12	16	10.69	2.02	18	10.22	2.13
Follow-up	18	10.89	1.49	16	10.88	1.71	16	11.31	1.54	18	10.61	1.65
<i>EMQ</i>												
Pre-test	17	43.65	4.33	15	45.93	3.49	14	46.57	3.25	18	45.11	5.19
Mid-test	17	44.65	4.12	15	47.2	2.43	14	44.36	5.12	18	44.67	5.43
Post-test	17	45.35	4.43	15	48.33	2.19	14	48.07	2.76	18	45.83	4.13
Follow-up	17	45.82	5.21	15	48.87	2.45	14	48.14	3.18	18	46.17	4.42
<i>IC Composite</i>												
Pre-test	21	-0.84	0.79	14	-0.70	0.62	16	0.82	0.66	19	0.74	0.40
Mid-test	21	-0.03	0.77	14	0.26	0.68	16	0.46	0.67	19	0.30	0.93
Post-test	21	0.13	0.71	14	0.06	0.68	16	0.55	1.05	19	0.49	0.49
Follow-up	21	0.37	0.59	14	0.12	0.65	16	0.70	0.54	19	0.55	0.75
<i>Note.</i> IC = inhibitory control; M = mean; SD = standard deviation.												

Supplementary Table 4: Descriptive statistics of the study 2 primary outcome measures stratified by baseline IC composite median split and group assignment (Nongame First vs. Game First).