

Running head: Prospective memory in the red zone
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SUPPLEMENTARY MATERIALS

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Table S1. Wald Chi-square test of ongoing task (feature classification) mean correct RT, showing significant (*) main effects of Stimulus (Stim), PM Condition (PM Cond), Trial Response Order (Order), and Session (Sess), significant two-way interactions between Stimulus and PM Condition, Stimulus and Trial Response Order, PM Condition and Trial Response Order, and a significant three-way interaction between Stimulus and PM Condition and Session.

<i>Factor(s)</i>	χ^2	<i>df</i>	<i>p</i>
Stim	319.52	1	<.001*
PM Cond	269.11	1	<.001*
Order	17399.16	2	<.001*
Sess	242.81	1	<.001*
Stim x PM Cond	76.35	1	<.001*
Stim x Order	31.59	2	<.001*
PM Cond x Order	21.53	2	<.001*
Stim x Sess	0.78	1	.38
PM Cond x Sess	1.79	1	.18
Order x Sess	1.07	2	.58
Stim x PM Cond x Order	0.83	2	.66
Stim x PM Cond x Sess	21.41	1	<.001*
Stim x Order x Sess	0.55	2	.76
PM Cond x Order x Sess	7.83	2	.02*
Stim x PM Cond x Order x Sess	2.01	2	.37

Table S2. Wald Chi-square test of ongoing task (feature classification) accuracy. All main effects and interactions were significant (*), with the exception of the three-way interaction between Stimulus, PM Condition and Trial Response Order, the three-way interaction between Stimulus, Trial Response Order and Session, and the three-way interaction between PM Condition, Trial Response Order, and Session.

<i>Factor(s)</i>	χ^2	<i>df</i>	<i>p</i>
Stim	309.94	1	<.001*
PM Cond	95.08	1	<.001*
Order	81.85	2	<.001*
Session	69.82	1	<.001*
Stim x Cond	18.64	1	<.001*
Stim x Order	27.63	2	<.001*
PM Cond x Order	6.24	2	.04*
Stim x Sess	7.38	1	<.01*
PM Cond x Sess	47.67	1	<.001*
Order x Sess	6.55	2	.04*
Stim x PM Cond x Order	0.54	2	.76
Stim x Cond x Sess	25.71	1	<.001*
Stim x Order x Sess	0.75	2	.68
PM Cond x Order x Sess	3.48	2	.18
Stim x PM Cond x Order x Session	6.78	2	.03*

Note: Stim = Stimulus, PM Cond = PM Condition, Order = Trial Response Order, Sess = Session.

Table S3. Wald Chi-square test of PM task mean correct RT, showing significant (*) main effects of Trial Response Order and Session.

<i>Factor(s)</i>	χ^2	<i>df</i>	<i>p</i>
Response Order	1449.54	2	<.001*
Session	27.92	1	<.001*

Table S4. Wald Chi-square test of PM task accuracy, showing significant (*) main effects of Stimulus (Stim) and Session (Sess), and a two-way interaction between Stimulus and Session.

<i>Factor(s)</i>	χ^2	<i>df</i>	<i>P</i>
Stim	131.7	1	<.001*
Sess	5.71	1	.017*
Stim x Sess	5.04	1	.025*

Table S5. Wald Chi-Square Table For 0.1 quantile RTs by Trial Response Order, showing a significant (*) main effect.

<i>Factor(s)</i>	χ^2	<i>df</i>	<i>p</i>
Response Order	28.26	2	<.001*

Table S6. Pairwise comparisons of ongoing task (feature classification) mean correct RT by Stimulus (target, non-target), PM Condition (control block, PM block), and Session (1,2) with Tukey adjusted p-values. All but five of the comparisons were significant (*): PM target:Control Non-Target, PM non-target:Control non-target, and PM target:PM non-target in Session one; PM target:Control Non-target in Session two; and Control target between session one and session two.

	CON TARGET		CON NON-TARGET		PM TARGET		PM NON-TARGET	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Session one								
CON TARGET	--							
CON NON-TARGET	-12.24	0.00*	--					
PM TARGET	13.15	0.00*	-0.49	1	--			
PM NON-TARGET	14.67	0.00*	0.86	0.99	-1.57	.77	--	
Session two								
CON TARGET	--							
CON NON-TARGET	-6.67	0.00*	--					
PM TARGET	7.57	0.00*	0.14	1.00	--			
PM NON-TARGET	11.82	0.00*	4.39	0.00*	-4.91	0.00*	--	
Session one (rows) vs 2 (columns)								
CON TARGET	-2.16	0.37	4.50	0.02*	5.15	0.00*	9.39	0.00*
CON NON-TARGET	-14.37	0.00*	-7.85	0.00*	-8.69	0.00*	-4.49	0.00*
PM TARGET	-15.54	0.00*	-8.28	0.00*	-9.36	0.00*	-4.61	0.00*
PM NON-TARGET	-17.86	0.00*	-9.75	0.00*	-11.09	0.00*	-6.28	0.00*

Note: CON TARGET / NON-TARGET = Control Condition Target / Non-Target trial; PM TARGET / NON-TARGET = PM condition target / non-target trial.

Table S7. Pairwise comparisons of ongoing task (feature classification) mean correct RT by Stimulus (T: target, NT: non-target) and Trial Response Order (1,2,3) with Tukey adjusted *p*-values. All comparisons were significant.

Order	Stim	1				2				3			
		T		NT		T		NT		T		NT	
		<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
1	T	--											
	NT	-9.08	.00	--									
2	T	-83.38	.00	-91.37	.00	--							
	NT	69.54	.00	-77.83	.00	-14.80	.00	--					
3	T	-77.84	.00	-85.81	.00	4.19	.00	-10.32	.00	--			
	NT	-9.00	.00	-81.17	.00	-11.47	.00	-3.37	.01	-7.04	.00	--	

Table S8. Pairwise comparisons of ongoing task (feature classification) mean correct RTs by session (1,2), PM condition (control blocks, PM blocks), and response order (response 1,2,3) with Tukey adjusted *p*-values. Cell values indicate *t*-values and *p*-values for comparison of pairs at the intersection of row and column. Within each session, all comparisons were significant except for response 2,3 in the control and PM conditions. Between sessions, all comparisons were significant except for control response 2 in session one and PM response 3 in session two, control response 3 in session one and PM response 2 in session two, and control response 3 in session one and PM response 3 in session two.

		CONTROL						PM					
Order		1		2		3		1		2		3	
		<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Session one													
CONT	1	--											
	2	-46.44	0.00	--									
	3	-43.97	0.00	2.20	0.55	--							
PM	1	11.10	0.00	-62.77	0.00	-59.88	0.00	--					
	2	-44.75	0.00	7.47	0.00	-4.95	0.00	-64.44	0.00	--			
	3	-46.20	0.00	5.84	0.00	3.34	0.04	-65.98	0.00	1.86	0.77		
Session two													
CONT	1	--											
	2	-48.52	0.00	--									
	3	-47.43	0.00	0.82	0.99	--							
PM	1	7.47	0.00	-61.77	0.00	-60.43	0.00	--					
	2	-49.23	0.00	5.67	0.00	-4.71	0.00	-65.95	0.00	--			
	3	-48.17	0.00	6.28	0.00	5.32	0.00	-64.48	0.00	0.77	1.00		
Session one (cols.) vs Session two (rows)													
CONT	1	-3.14	0.07	-43.48	0.00	-41.02	0.00	14.66	0.00	-41.44	0.00	-42.91	0.00
	2	-51.45	0.00	4.82	0.00	7.00	0.00	-68.48	0.00	12.93	0.00	11.28	0.00
	3	-50.36	0.00	3.98	0.00	6.15	0.00	-67.11	0.00	10.29	0.00	-11.92	0.00
PM	1	3.91	0.01	-56.04	0.00	-53.17	0.00	8.40	0.00	-56.66	0.00	-58.26	0.00
	2	-52.52	0.00	0.20	0.00	2.29	0.48	-73.67	0.00	-8.57	0.00	6.65	0.00
	3	-51.44	0.00	0.85	1.00	1.63	0.90	-72.14	0.00	-7.72	0.00	-5.82	0.00

Table S9. Pairwise comparisons for ongoing task (feature classification) accuracy by stimulus (T: target, NT: non-target) and response order (1,2,3) with Tukey adjusted p-values. All comparisons were significant (*) with the exception of Response 1 non-targets and response 2 targets, Response 1 non-targets and Response 3 non-targets, and Response 2 non-targets and Response 3 non-targets.

RESP. ORDER	STIM	1				2				3			
		T		NT		T		NT		T		NT	
		<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>P</i>	<i>t</i>	<i>p</i>
1	T	--											
	NT	-8.50	.00*	--									
2	T	-1.51	.66	-9.85	.00*	--							
	NT	-5.71	.00*	-3.04	.03*	-7.15	.00*	--					
3	T	-9.21	.00*	-16.67	.00*	-7.69	.00*	-14.48	.00*	--			
	NT	-6.06	.00*	-2.73	.07	-7.49	.00*	0.33	1.0	-14.83	.00*	--	

Table S10. Pairwise comparisons for ongoing task (feature classification) accuracy by stimulus (target, non-target), PM condition (control block, PM block), and session (1,2) with Tukey adjusted p-values.

	CONT TARGET		CONT NON-TARGET		PM TARGET		PM NON-TARGET	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Session one								
CONT TARGET	--							
CONT NON-TARGET	-0.44	1.0	--					
PM TARGET	-13.03	.00*	-13.42	.00*	--			
PM NON-TARGET	-2.66	.13	-3.14	.03*	-13.08	.00*	--	
Session two								
CONT TARGET	--							
CONT NON-TARGET	-8.33	.00*	--					
PM TARGET	-1.60	.74	-10.39	.00*	--			
PM NON-TARGET	7.94	.00*	-1.87	.56	-10.78	.00*	--	
Session one (rows) vs two (columns)								
CONT TARGET	-4.45	.00*	-4.89	.00*	8.76	.00*	-2.38	.24
CONT NON-TARGET	4.09	.00*	3.66	.01	16.24	.00*	6.97	.00*
PM TARGET	-6.43	.00*	-6.88	.00*	8.70	.00*	-4.62	.00*
PM NON-TARGET	2.80	.10	2.29	.29	18.58	.00*	6.34	.00*

Table S11. Pairwise comparisons of ongoing task (feature classification) accuracy by session (1,2) and response order (response 1,2,3) with Tukey adjusted *p*-values. Cell values indicate *t*-values and *p*-values for comparison of pairs at the intersection of row and column.

Trial Response Order	1		2		3	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Session one						
1	--					
2	-2.92	.04	--			
3	-2.27	.21	-5.16	.00	--	
Session two						
1	--					
2	-.86	.95	--			
3	-6.62	.00	-5.82	.00	--	
Session one (rows) vs Session two (cols)						
1	4.70	.00	7.58	.00	9.74	.00
2	3.88	.00	6.80	.00	8.99	.00
3	-1.94	.38	0.99	.92	2.35	.01

Table S12. Contrasts for PM task mean correct RT by response order (1,2,3) with Tukey adjusted *p*-values, showing significant difference in RT between first and second response, and first and third responses, but not between second and third responses.

Response Order	<i>t</i>	<i>p</i>
1 = 2	-32.06	.00*
1 = 3	-32.80	.00*
2 = 3	-1.02	.56

Table S13. Pairwise comparisons for PM task accuracy by stimulus type (target, non-target) and session (1,2) with Tukey adjusted p-values. All comparisons were statistically significant (*) with the exception of PM Non-Target, which did not significantly differ between sessions.

PM Target	<i>t</i>	<i>P</i>
Session one Target = Session one Non-Target	9.57	.00*
Session two Target = Session two Non-Target	6.86	.00*
Session two Target = Session one Non-Target	6.53	.00*
Session one Target = Session two Non-Target	-9.90	.00*
Session one Target = Session two Target	-3.26	.01*
Session one Non-Target = Session two Non-Target	-0.35	.98

Table S14. Chi-square tests on the frequency with which PM ships were responded to first, second, or third within a trial. Each row corresponds to one participant. The proportion calculated for the null was the total proportion of first, second, and third trial responses made (very close to one third for each, but not exactly equal due to non-responses). Four chi-squares were statistically significant (*) at the family wise alpha of .0014 (which is .05/35). All four of these participants had responded to PM ships first in at trial substantially more often than second or third.

PM ships Trial Response 1	PM ships Trial Response 2	PM ships Trial Response 3	χ^2	p
42	43	43	0.02	.99
42	45	41	0.20	.91
41	45	42	0.20	.91
45	40	43	0.30	.86
45	43	39	0.38	.83
44	45	39	0.47	.79
46	43	39	0.52	.77
46	40	40	0.53	.77
40	47	41	0.68	.71
38	46	44	0.82	.66
44	38	46	0.83	.66
48	41	38	1.02	.6
46	45	37	1.02	.6
48	41	38	1.02	.6
46	37	45	1.17	.56
47	36	45	1.67	.43
36	45	47	1.68	.43
49	39	38	1.70	.43
50	37	41	2.03	.36
47	35	45	2.05	.36
34	46	45	2.14	.34
46	48	33	2.40	.3
36	41	50	2.48	.29
50	34	44	2.72	.26
52	36	40	3.24	.2
43	34	51	3.46	.18
51	33	44	3.87	.14
53	35	39	4.17	.12
54	43	31	6.16	.05
51	28	49	7.63	.02
60	40	28	12.14	.002
70	31	27	26.18	.0000*
70	27	31	26.45	.0000*
77	32	19	41.84	.0000*
80	27	21	48.84	.0000*

Table S15. Posterior M (SD) of model parameters for an expanded model that includes an effect of session on mean non-PM accumulation rates. The statistics were calculated on the group-averaged posterior distribution, which is obtained by averaging each posterior sample across all participants.

Parameter	Posterior Mean (SD)	
	Session One	Session Two
A	2.76 (0.04)	
sv (match)	0.65 (0.008)	
PM Threshold	1.74 (0.03)	1.73 (0.04)
PM accumulation (PM ships, targets)	2.16 (0.03)	
PM accumulation (PM ships, non-targets)	1.72 (0.04)	
PM accumulation (non-PM ships)	-3.74 (0.11)	
Non-decision time (first ship on each trial)	0.77 (0.004)	
Non-decision time (other ships)	0.12 (0.003)	

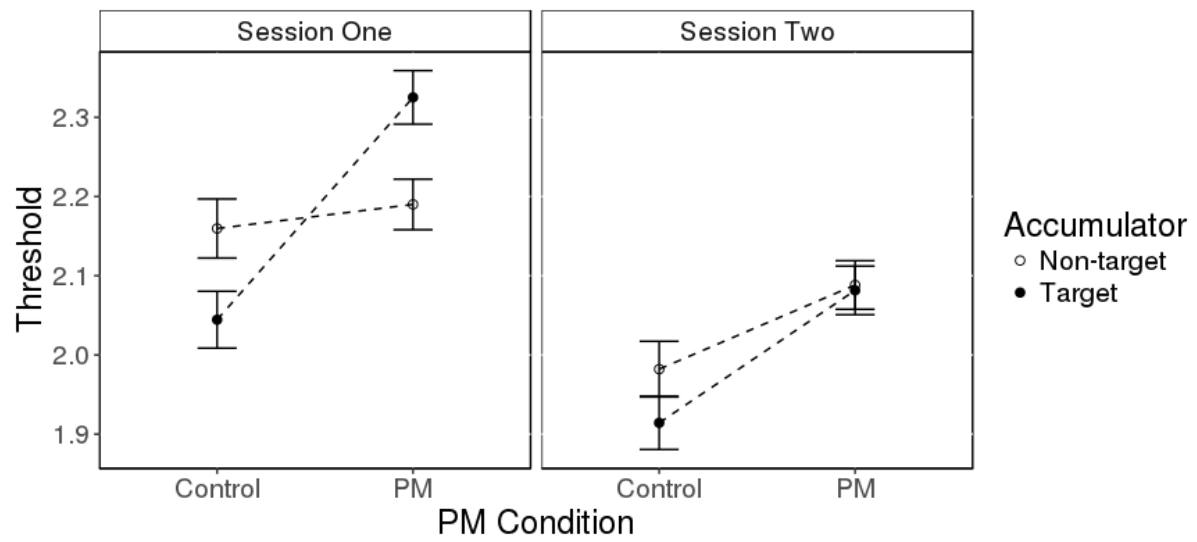


Figure S1. Ongoing task decision thresholds for an expanded model that includes effects of session on mean non-PM accumulation rates. The plot depicts the posterior mean (dots) and error bars are the mean plus or minus the posterior standard deviation. The statistics were calculated on the group-averaged posterior distribution, which is obtained by averaging each posterior sample across all participants. The patterns in thresholds are similar to those reported from the simpler model in text.

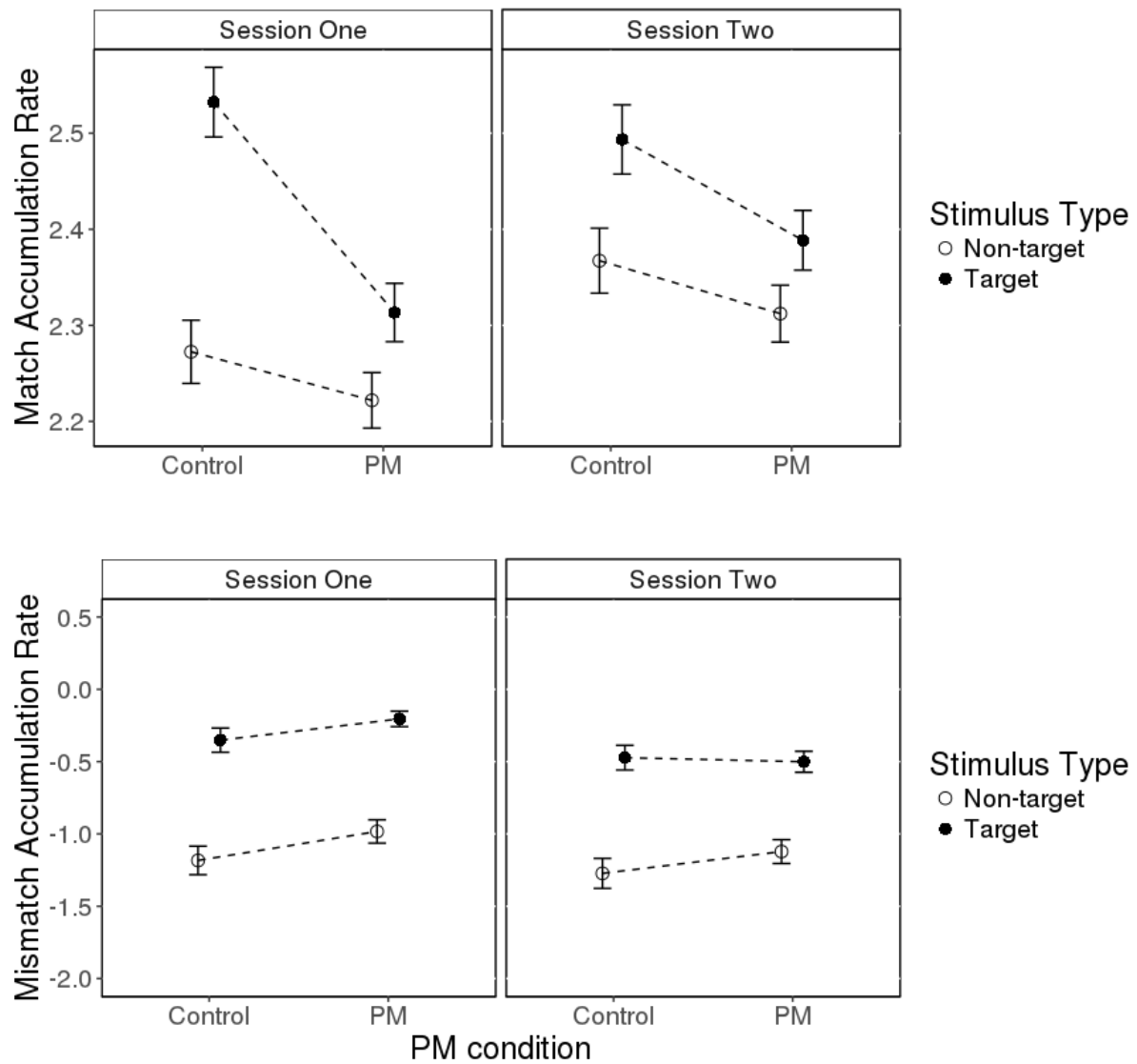


Figure S2. Non-PM accumulation rates for the expanded model that includes effects of session. The plot depicts the posterior mean (dots) and error bars are the mean plus or minus the posterior standard deviation. The statistics were calculated on the group-averaged posterior distribution, which is obtained by averaging each posterior sample across all participants. The patterns of differences in capacity between PM and control conditions look similar to the simpler model, except that evidence of capacity sharing is reduced on session two.

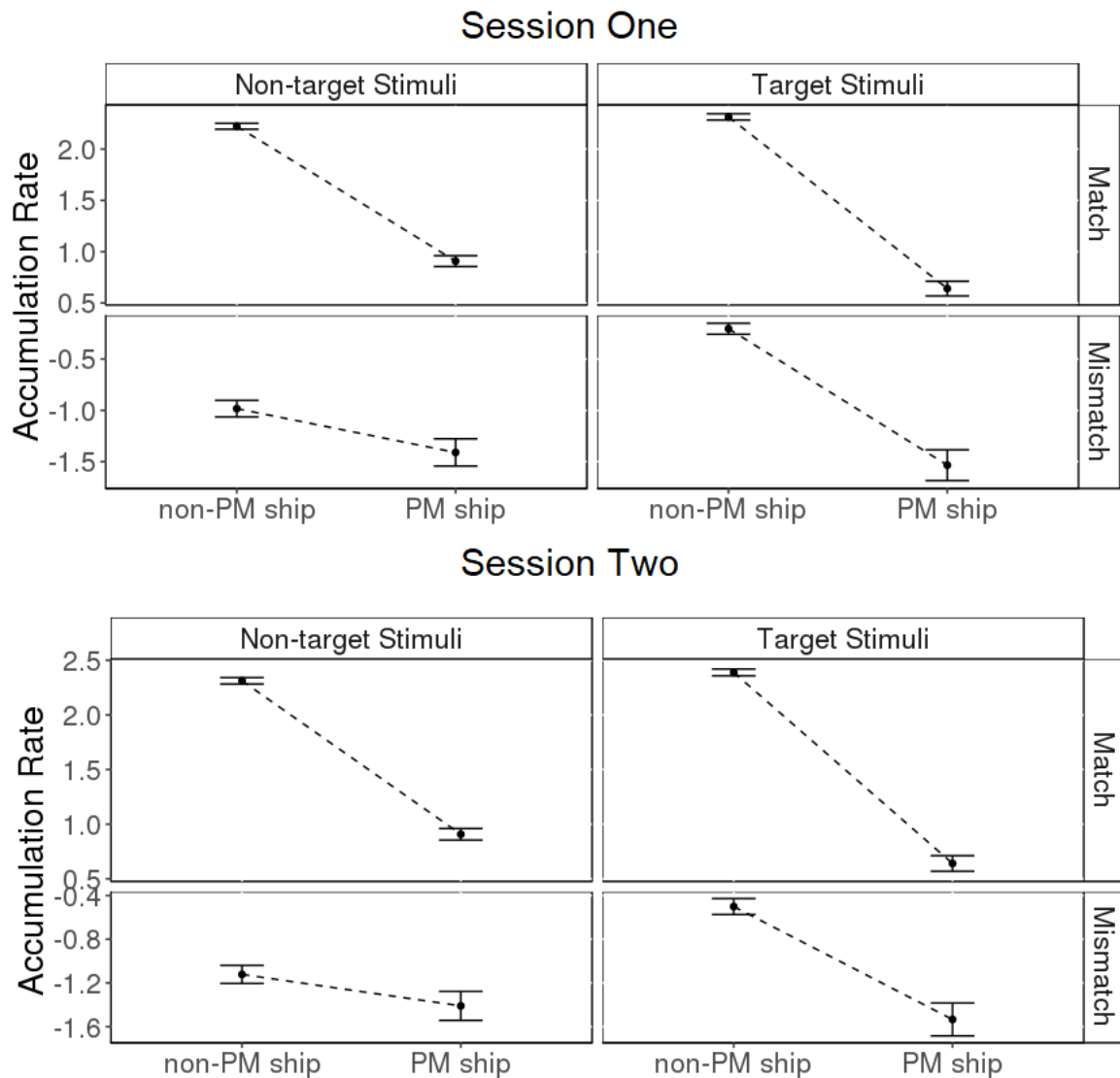


Figure S3. Ongoing task accumulation rates to non-PM ships compared with PM ships, for the expanded model that includes effects of session on mean non-PM accumulation rates. Plot depicts the posterior mean (dots) and error bars are the mean plus or minus the posterior standard deviation. The statistics were calculated on the group-averaged posterior distribution, which is obtained by averaging each posterior sample across all participants. Session one is depicted in the top group of panels, session two is depicted in the bottom group of panels. The patterns of reactive control are similar to the simpler model reported in text.