

## ***Supplementary material***

### **Emotional salience modulates the forward flow of memory**

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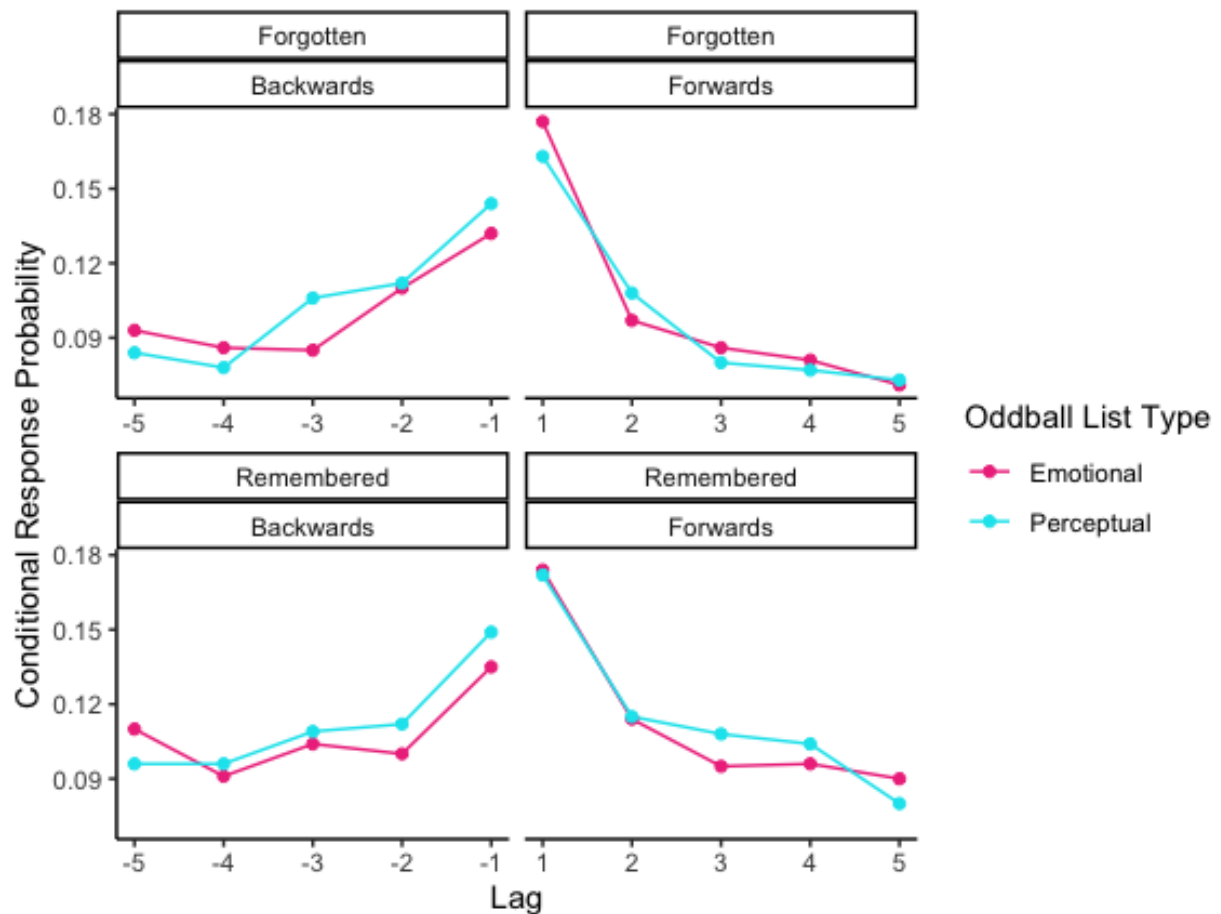
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Direction	Lag n	Lag n+	t- statistic	p.adj	Cohen's d
Backwards	1	2	5.97	$2.3 \times 10^{-7}$	0.71
Backwards	1	3	6.33	$6.97 \times 10^{-8}$	0.76
Backwards	1	4	9.00	$2.98 \times 10^{-12}$	1.08
Backwards	1	5	6.74	$1.96 \times 10^{-8}$	0.81
Backwards	2	3	0.86	0.436	0.10
Backwards	2	4	3.24	0.004	0.39
Backwards	2	5	1.36	0.224	0.16
Backwards	3	4	2.19	0.054	0.26
Backwards	3	5	0.57	0.568	0.07
Backwards	4	5	-1.99	0.072	-0.24
Forwards	1	2	8.96	$8.9 \times 10^{-13}$	1.07
Forwards	1	3	11.7	$2.47 \times 10^{-17}$	1.40
Forwards	1	4	11.1	$1.82 \times 10^{-16}$	1.33
Forwards	1	5	13.0	$2.88 \times 10^{-19}$	1.56
Forwards	2	3	3.83	$4.01 \times 10^{-4}$	0.46
Forwards	2	4	4.18	$1.39 \times 10^{-4}$	0.50
Forwards	2	5	7.07	$1.98 \times 10^{-9}$	0.85
Forwards	3	4	0.46	0.644	0.06
Forwards	3	5	3.42	0.001	0.41
Forwards	4	5	2.89	0.006	0.35

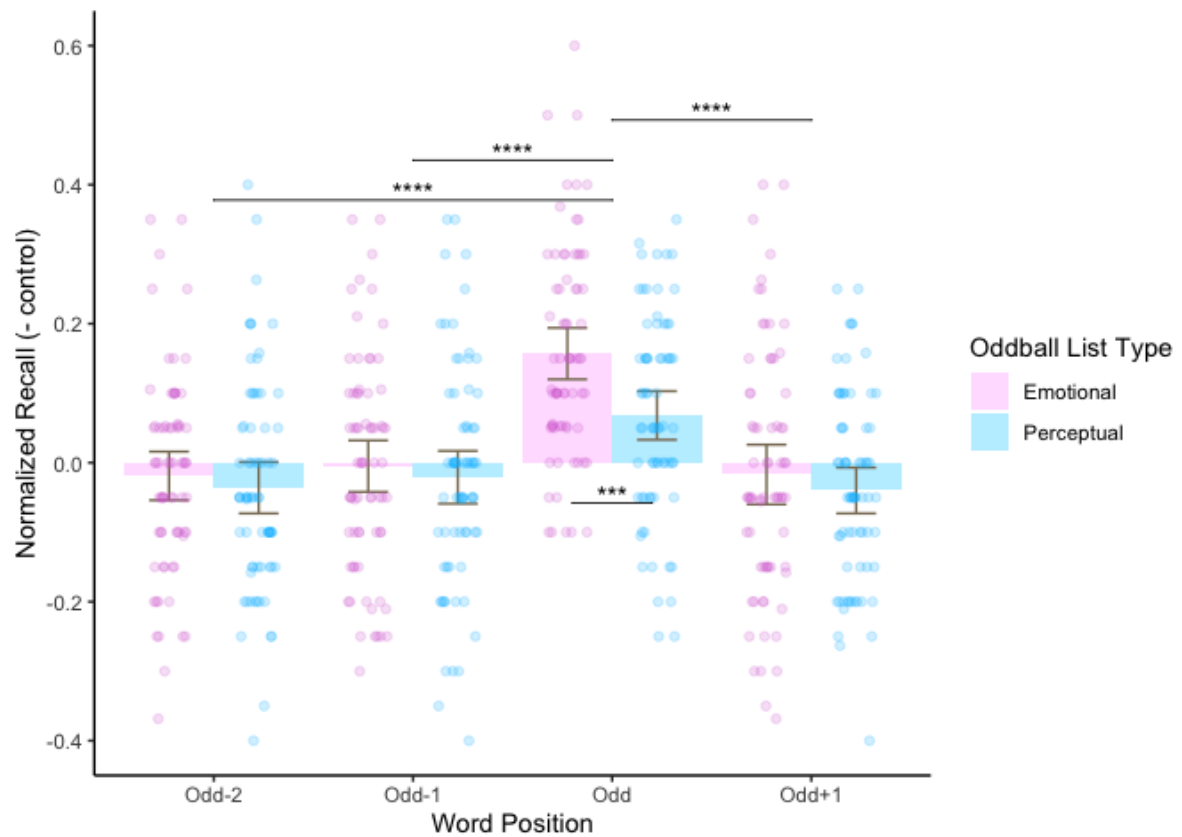
**Table S1. Forward-contiguity was present in the current dataset.** Results of the post-hoc pairwise t-tests (N = 70 subjects, df = 69, for all tests) as a follow up to the significant word position x direction interaction in figure 2A. Conditional response probability curves were enhanced at lag 1 in both the backwards and forwards direction. This enhancement also extended to lag 2 in the forwards direction, confirming a forward-contiguity effect. P.adj: FDR-corrected p values.

SOA	SOA	t-statistic	p.adj	Cohen's d
1	2	-5.18	$4.14 \times 10^{-6}$	-0.62
1	3	-5.68	$9.83 \times 10^{-7}$	-0.68
1	4	-7.68	$3.82 \times 10^{-10}$	-0.92
1	6	-10.8	$1.76 \times 10^{-15}$	-1.29
2	3	-0.44	0.66	-0.05
2	4	-1.97	0.066	-0.24
2	6	-5.24	$4.1 \times 10^{-6}$	-0.63
3	4	-1.50	0.152	-0.18
3	6	-4.70	$2.12 \times 10^{-5}$	-0.56
4	6	-3.51	0.001	-0.42

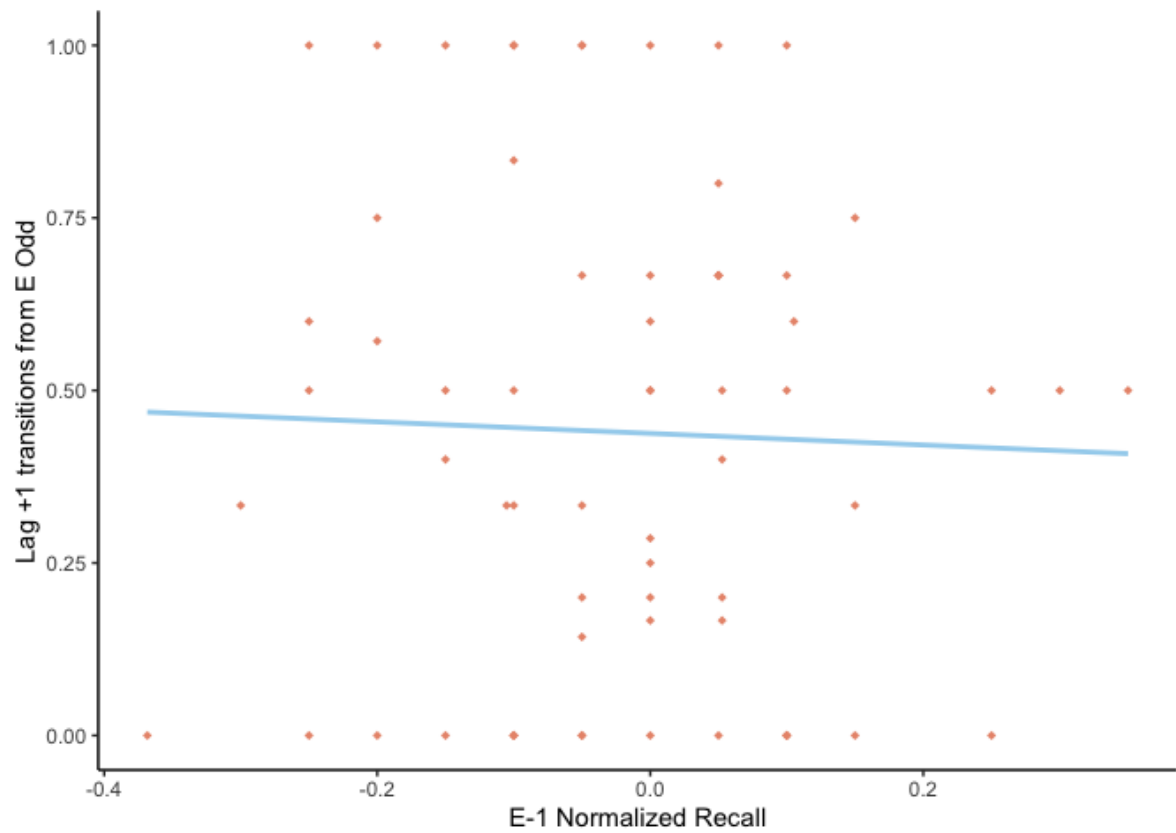
**Table S2. Conditional response probability (CRP) values in the forwards direction are lower for short stimulus onset asynchronies (SOAs).** Results of post-hoc pairwise t-tests (N = 70 subjects, df = 69, for all tests) as a follow up to a significant main effect of SOA in figure 2B. Overall CRP values collapsed for lags 1-5, in the forwards direction, show significant lower CRP values at SOA compared to all other SOAs. CRP values at SOA 2, 3 and 4 were also lower than those at SOA 6. P.adj: FDR-corrected p values.



**Figure S1. Conditional response probability curves for all list items do not differ as a function of oddball recall.** CRP curves showed a preserved forward-contiguity effect both when oddballs were forgotten (top panel) as well as recalled (bottom panel).



**Figure S2. Oddballs were better recalled than their surrounding items.** Normalized recall was calculated by subtracting the percentage of recalled control items from the percentage of recalled items of interest separately for emotional and perceptual lists for each subject. The proportion of normalized recalled words items across word positions i.e -2 (item presented two serial positions preceding the oddball at encoding), -1 (item presented one serial position preceding the oddball at encoding), +1 (item presented one serial position after the oddball at encoding) was lower than for oddballs (odd). Bars show mean  $\pm$  95% confidence intervals. A repeated measures two-way ANOVA (word position [odd-2, odd-1, odd, odd+1] x oddball type [emotional, perceptual]) showed a significant main effect of word position ( $F(3,207)=55.10$ ,  $p<0.001$ ) and a trend towards significance in oddball type ( $F(1, 69)=3.48$ ,  $p=0.07$ ) as well as significant interaction between the two factors ( $F(3, 207)=3.61$ ,  $p=0.01$ ). Post-hoc t-tests showed a significant enhancement in oddball recall compared to its nearby items (vs. odd-1  $t(69)=-10.3$ ,  $p<0.001$ , *Cohen's d*=- 1.23; vs. odd-2  $t(69)=-9.61$ ,  $p<0.001$ , *Cohen's d*= -1.15; vs. odd+1  $t(69)=11.2$ ,  $p<0.001$ , *Cohen's d*=1.34). Furthermore, emotional oddballs were significantly better recalled than perceptual oddballs ( $t(69)=3.93$ ,  $p<0.001$ , *Cohen's d*=0.47). To specifically test for emotion-induced retrograde amnesic effects, a paired t-test between raw recall of odd-1 (emotional, i.e E-1) and control nouns was performed. We found that items encoded right before emotional oddballs were recalled as well as control nouns ( $t(69)=-1.07$ ,  $p=0.29$ , *Cohen's d*=-0.13), indicating that the present, Spanish language version of this task did not induce the emotion-induced retrograde amnesic effect previously described in other language versions of this task.



**Figure S3. Enhanced forward-contiguity transitions from emotional oddballs does not account for reduced memory for E-1 items.** There is no correlation between normalized recall values of E-1 items and CRP values at lag +1 in transitions from emotional oddballs (Spearman's  $\rho = -0.04$ ,  $p = 0.76$ ).