# ***Supplementary material***

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

Alba Peris-Yague1, Darya Frank1, Bryan Strange1

1 Laboratory for Clinical Neuroscience, Centro de Tecnología Biomédica, Universidad Politécnica de Madrid, Madrid, Spain

### **Conditional response probability curves are not modulated upon oddball recall**

We investigated whether CRP curves were modulated depending on whether oddballs were remembered or forgotten. A 4-way RM ANOVA (oddball type [emotional, perceptual] x lag [1-5] x direction [backwards, forwards] x recall [oddball recalled, oddball forgotten]) showed a significant main effect of lag (F(3.24, 220.23)=96.75, p<0.0001) as well as lag x direction (F(3.24, 220.34)=10.20, p<0.0001). Post-hoc uncorrected t-tests showed that contiguity effect was preserved (specially at lags 1 and 2) as well as a forward effect at lags 1 (t(279)=-4.70, p<0.0001) and 5 (t(278)=3.64, p<0.001). Furthermore, we found a significant main effect of recall (F(1,68)=43.33, p<0.0001) which showed overall enhanced CRP curves for lists where oddballs were recalled (Fig. 7). We found no significant main effects of oddball types (F(1, 68)=0.91, p=0.35), direction (F(1, 68)=0.34, p=0.56), oddball x lag (F(4, 272)=1.51, p=0.20), oddball x direction (F(1, 68)=0.55, p=0.46), oddball x recall (F(1, 68)=0.77, p=0.38), lag x recall (F(4,272)=1.09, p=0.36) nor a significant direction x recall (F(1, 68)=1.19, p=0.28).

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| **Figure 1.** CRP curves showed a preserved forward-contiguity effect both when items were recalled as well as forgotten. Lists in which emotional oddballs were recalled showed overall enhanced CRP curves compared to those that were not. |

### **Conditional response probability curves modulation by SOA**

We evaluated whether the CRP enhancement in transitions from emotional oddballs was modulated by timing (SOA) (Fig. S2). Grouping the data by SOA led to an increase at random in the number of missing values in the CRP analysis, therefore, we used a linear mixed effects model to investigate how the factors oddball list type [emotional, perceptual] x lag [1-5] x direction [forwards, backwards] x transition type [ to vs. from oddballs] x SOA [1, 2, 3, 4, 6] predicted CRP (Fig S3). We did not conduct further follow-up statistical analyses due to a lack of statistical power to avoid misinterpretation. However, we conducted visual exploration of the significant main effects and interactions (see supplementary material) which showed that overall, emotional oddball lists showed enhanced CRP compared to perceptual oddball lists as well as that perceptual oddball lists showed an enhanced CRP in backwards transitions compared to forwards transitions (Fig S4). Contiguity effects were present throughout most SOAs (Fig S7) and strengthened in emotional oddball lists, even more so in forward transitions in emotional oddball lists (Fig. S5) and at short SOAs (Fig. S7).

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| **Figure 2.** Stimulus onset asynchronies (SOA) modulate CRP curves in transitions to and from emotional and perceptual oddballs. |

A linear mixed effects model showed a significant interaction of oddball type x direction (p=0.002), oddball type x lag x direction (p=0.004), oddball type x direction x SOA (p=0.022), oddball type x lag x direction x SOA (p=0.015). No further statistical tests were conducted to evaluate these significant interactions due to the fact that with an increasing number of factors and decreasing number of observations per group the model lost statistical robustness, instead, plots of the interaction effects were conducted.

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| Analysis of Deviance Table (Type III Wald chisquare tests)   Response: CRP  Chisq Df Pr(>Chisq)  (Intercept) 17.4235 1 2.991e-05 \*\*\* oddballtype 0.5594 1 0.454516  wordposition 0.0366 1 0.848332  direction 2.7240 1 0.098851 .  transition 0.7371 1 0.390582  SOA 0.3463 1 0.556220  oddballtype:wordposition 1.0952 1 0.295318  oddballtype:direction 9.3925 1 0.002179 \*\*  wordposition:direction 2.3718 1 0.123543  oddballtype:transition 0.3512 1 0.553454  wordposition:transition 0.2257 1 0.634700  direction:transition 0.0003 1 0.987187  oddballtype:SOA 0.2443 1 0.621088  wordposition:SOA 0.0063 1 0.936489  direction:SOA 0.6665 1 0.414261  transition:SOA 1.3865 1 0.239000  oddballtype:wordposition:direction 8.1723 1 0.004253 \*\*  oddballtype:wordposition:transition 0.0711 1 0.789736  oddballtype:direction:transition 1.0471 1 0.306182  wordposition:direction:transition 0.0092 1 0.923743  oddballtype:wordposition:SOA 0.1277 1 0.720876  oddballtype:direction:SOA 5.2205 1 0.022322 \*  wordposition:direction:SOA 1.3069 1 0.252954  oddballtype:transition:SOA 0.6426 1 0.422765  wordposition:transition:SOA 0.7671 1 0.381119  direction:transition:SOA 0.6865 1 0.407361  oddballtype:wordposition:direction:transition 1.6726 1 0.195915  oddballtype:wordposition:direction:SOA 5.8152 1 0.015888 \*  oddballtype:wordposition:transition:SOA 0.4280 1 0.512962  oddballtype:direction:transition:SOA 0.0655 1 0.798013  wordposition:direction:transition:SOA 0.0000 1 0.995077  oddballtype:wordposition:direction:transition:SOA 0.8388 1 0.359735  --- Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1 |
| **Figure 3.** ANOVA results for the linear model where the factors to predict CRP are oddball type [emotional, perceptual], word position (lag) [1-5], transition [to vs. from oddballs], direction [forwards, backwards], SOA [1, 2, 3, 4, 6]. |

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| **Figure 4.** Significant effect of oddball type [emotional, perceptual] x direction [backwards, forwards]. Emotional lists’ CRP was enhanced compared to perceptual oddball lists. |

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| **Figure 5.** Significant oddball type [emotional, perceptual] x word position (lag) [1-5], direction [backwards, forwards] interaction. Overall, contiguity was preserved, as lags of 1 showed enhanced CRPs. |

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| **Figure 6.** Significant oddball type [emotional, perceptual], direction [backwards, forwards], SOA [1, 2, 3, 4, 6] interaction. CRP at shorter lags were enhanced, particularly in forward-transitions in emotional oddball lists. |

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| **Figure 7.** Significant oddball type [emotional, perceptual], word position (lag) [1-5], direction [backwards, forwards], SOA [1, 2, 3, 4, 6] interaction. |

### **Enhanced forward-contiguity transitions from emotional oddballs does not account for reduced memory for E-1 items**

We correlated E-1 normalized recall values with lag +1 transitions from emotional oddballs to evaluate whether enhanced transitions from emotional oddballs explained reduced memory for E-1 items, however this did not seem to be the case (Spearman’s rho=-0.04, p=0.76).

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| **Figure 8.** Spearman’s correlation between normalized recall values of E-1 items and CRP values at lag +1 in transitions from emotional oddballs. |