Erratum

Erratum: Ben-Yakov and Henson, “The Hippocampal Film Editor: Sensitivity and Specificity to Event Boundaries in Continuous Experience”

In the article “The Hippocampal Film Editor: Sensitivity and Specificity to Event Boundaries in Continuous Experience,” by Aya Ben-Yakov and Richard N. Henson, which appeared on pages 10057–10068 of the November 21, 2018 issue, there was an error in the code used for analysis. Ben-Yakov notes, “There was a mistake in the code that aggregates boundaries over subjects. The aggregation is done in two iterations: the first iteration results in sets of boundaries, identified by different participants, that are up to 1 TR (time unit) from one another; and the second iteration calculates the average time of each set and combines sets up to 2 TRs from one another. The code mistakenly took the first boundary of the set and not the average when determining whether to combine sets. In the Cam-CAN dataset, this resulted in a shift of one boundary (of 19) by 300 ms. In the *studyforrest* dataset, this resulted in 7 of 161 boundaries shifting around 1–1.5 s in time, one boundary that existed in the original calculation no longer existing, and two boundaries being split into two.

“This change had very little impact on the results, except from one result that changed meaningfully: The hippocampus is no longer significantly modulated by nObservers when accounting for all perceptual factors ($p = 0.1$). However, because the modulation by boundary salience remains, this does not affect the conclusions of the paper.”

As a result of this change, Results have been updated in the Cam-CAN, *studyforrest*, Both hippocampal activity and AG patterns are driven by event boundaries, and Specificity of hippocampal response to event boundaries sections. On page 10063, in the Selectivity of hippocampal modulation by boundary salience section, the text beginning with “Of the 55 homologous regions in the atlas...” has been updated to read “Of the 55 homologous regions in the atlas, four showed a significant modulation by boundary salience (when correcting for multiple comparisons using Holm–Bonferroni) in both experiments (Table 2)—the hippocampus, posterior cingulate cortex (PCC), posterior parahippocampal cortex and lingual gyrus. Of these, the effect remained significant only in the hippocampus and PCC when adding the perceptual and objective-shift predictors in *studyforrest*.” Additionally, Tables 1 and 2, and Figures 1–4 have been adjusted to reflect the corrected values. The online version has been updated.

Table 1. Significance of mixed-effects models when separately accounting for each covariate

Predictor	Salience		nObservers	
	$F_{(1,16)}$	p value	$F_{(1,16)}$	p value
isLocTemp	4.6	0.05	5.3	0.04
visDist	13.6	0.002	17.9	0.0006
visCorr	17.2	0.0008	20.1	0.0004
visHistDist	15.6	0.001	18.6	0.0005
lumDiff	16.6	0.0009	21	0.0003
DCNN[1...6]	minF = 14	maxP = 0.002	minF = 16.2	maxP = 0.0009
psdCorr	14.7	0.001	17.4	0.0007
psdDist	17.6	0.0007	21.1	0.0003
absVolDiff	17.7	0.0007	20.7	0.0003
V1Betas	9.3	0.008	11.3	0.004
A1Betas	16.1	0.001	18.7	0.0005
isAG	16.6	0.0009	16.8	0.0008

Table 2. Regions demonstrating a significant modulation by boundary salience

Regions modulated by salience	Cam-CAN			<i>studyforrest</i>			<i>studyforrest</i> (with covariates)	
	$F_{(1,17)}$	p value	R^2	$F_{(1,145)}$	p value	R^2	$F_{(1,126)}$	p value
Hippocampus	18	0.0006	0.04	18.4	3.3×10^{-5}	0.01	9.1 5.5	0.02
Cingulate gyrus, posterior division	30.4	3.8×10^{-5}	0.1	18.2	3.5×10^{-5}	0.01	5	0.03
Parahippocampal gyrus, posterior division	15.9	0.001	0.09	12.9	0.0005	0.01	0.8	0.4
Lingual gyrus	16.9	0.0007	0.15	12.5	0.0005	0.02	0.2	0.7

Figure 1. Hippocampal response to event boundaries. **A**, The average amplitude of the canonical response to an event boundary (brown lines) relative to the distribution of responses when randomly shuffling event order. Shown for Cam-CAN (top) and *studyforrest* (bottom). **B**, **C**, Average response, across participants, to event boundaries, binned by boundary salience, in Cam-CAN (**B**) and *studyforrest* (**C**). The per-participant time course was calculated using an FIR, and error bars reflect the SEM at each time point. The vertical black line represents the event boundary.

Figure 2. Sensitivity of hippocampal response to boundary salience. The average magnitude of the canonical response to event boundaries (averaged over participants), by the number of observers that marked them (nObservers). Each dot represents the average response to a single boundary, while its color reflects its salience level. **A**, **B**, Results are presented for Cam-CAN (**A**) and *studyforrest* (**B**).

Figure 3. Hippocampal response to AG pattern shifts. The average zscored (zs) hippocampal response at AG pattern shifts that match/do not match annotated event boundaries. Time zero (vertical lines) represent the time of the pattern shift, uncorrected for hemodynamic delay. Error bars represent standard error of the mean (across pattern shifts). **A**, **B**, Results are shown for Cam-CAN (**A**) and *studyforrest* (**B**).

Figure 4. Specificity of hippocampal events (data-driven) to predefined event boundaries. **A**, The average hippocampal time course in Cam-CAN plotted together with the fitted model. The vertical lines indicate the hippocampal events estimated from the data—the set of events that minimized the residual error of the model when fitting to the hippocampal time course. The model was created by convolving each of these events with an HRF as a separate predictor, yielding the fitted model plotted. The hippocampal events were then divided into those matching a predefined boundary (up to 1 TR from a boundary, in orange, 58% of hippocampal events) and nonmatching ones (gray). **B**, The hippocampal events in each of the 8 runs of *studyforrest*, divided into matching (38%) and nonmatching events.

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