

## Supplemental materials

In order to examine whether our data analysis in the formal manuscript was appropriate or not, we would apply the normal time windows of 300-500 and 500-800 ms for FN400 and LPC respectively in this supplemental file. To be specific, on the basis of previous research (Li et al., 2017; Park & Donaldson, 2016; Wang et al., 2015; Wang, Li et al., 2018; Ye et al., 2019), time-windows of 300-500 and 500-800 ms were taken to indicate the FN400 and LPC respectively. Electrodes over frontal (F3, Fz, F4), central (C3, Cz, C4), and parietal (P3, Pz, P4) regions were regarded as representative electrodes.

To examine whether the old/new effects of FN400 and LPC were observed separately in every priming condition, we compared the waveforms of R response for old pictures (i.e., R-hits), K response for old pictures (i.e., K-hits), and new response for new pictures (i.e., correct-rejections). To be specific, for each component per priming condition, the average amplitudes of the ERP waveforms for the three responses were subjected to a 3 (response type: R-hits, K-hits, and correct-rejections)  $\times$  3 (scalp region: frontal, central, and parietal)  $\times$  3 (hemisphere: left, medial, and right) repeated-measures ANOVA.

The data were analyzed by IBM SPSS Statistics v22 (IBM Corporation, 2014). The Greenhouse-Geisser correction was applied in case of sphericity violation. *F* ratios were reported with adjusted *p* values and the Greenhouse-Geisser effect size of partial eta-squared ( $\eta_p^2$ ). Whenever necessary, the Bonferroni correction was used to counteract the problem of multiple comparisons. All inferential analyses adopted a two-tailed alpha level of 0.05. Only significant and concerned results were reported.

## **1 Old/new effects in the circumstance of repetition priming**

The three-way repeated-measures ANOVA for 300-500 ms revealed that there was a significant main effect of response type,  $F(2, 62) = 16.288, p < 0.001, \varepsilon = 0.945, \eta_p^2 = 0.326$ ; neither the two-way interactions between any two variables nor the three-way interaction were significant,  $ps > 0.05$ . The follow-up multiple comparison for response type indicated that, the waveforms of R-hits and K-hits were more positive-going than those of correct-rejections,  $ps < 0.001$ . Such results suggested that in repetition priming condition, both R-hits and K-hits elicited reliable FN400 over the frontal region, suggesting the involvement of familiarity-based process.

For 500-800 ms, the three-way repeated-measures ANOVA demonstrated a significant main effect of response type,  $F(2, 62) = 4.518, p = 0.015, \varepsilon = 0.978, \eta_p^2 = 0.131$ . Multiple comparison for this main effect confirmed that both K-hits and R-hits evoked more positive-going amplitudes than correct-rejections,  $p = 0.038$  and  $p = 0.004$ . Besides, response type interacted with hemisphere,  $F(4, 124) = 12.108, p < 0.001, \varepsilon = 0.698, \eta_p^2 = 0.288$ , no three-way or two-way interactions were significant. Subsidiary simple effect test for this interaction manifested that for R-hits, the waveforms were more positive-going than correct-rejections over left-central, left-frontal, medial-central, medial-front, right-central, and right-frontal sites, all  $ps \leq 0.046$ . These findings indicated that in repetition priming condition, R-hits elicited reliable LPC over the parietal region that reflected the recollection-driven process.

## **2 Old/new effects in the circumstance of thematic priming**

Within the interval of 300-500 ms, the three-way repeated-measures ANOVA for the waveforms identified a reliable main effect of response type,  $F(2, 62) = 11.561, p < 0.001, \varepsilon = 0.826, \eta_p^2 = 0.278$ ; response type interacted with scalp region,  $F(4, 124) =$

7.487,  $p < 0.001$ ,  $\varepsilon = 0.701$ ,  $\eta_p^2 = 0.200$ , and interacted with hemisphere,  $F(4, 124) = 2.815$ ,  $p = 0.028$ ,  $\varepsilon = 0.785$ ,  $\eta_p^2 = 0.086$ . Simple effect test for the first interaction revealed that R-hits elicited more positive-going amplitudes compared with correct-rejections over frontal, central, and parietal regions,  $p < 0.001$ ,  $p < 0.001$ , and  $p = 0.015$ . K-hits elicited more positive-going waveforms than correct-rejections over both frontal and central regions,  $p < 0.001$  and  $p = 0.008$ . Simple effect analyses for the latter interaction showed that, R-hits evoked more positive-going waveforms than correct-rejections over left, medial, and right hemispheres,  $ps < 0.001$ . K-hits also elicited more positive-going waveforms than correct-rejections at left, medial, and right hemispheres,  $p = 0.008$ ,  $p = 0.035$ , and  $p = 0.024$ . The waveforms of R-hits were more positive than K-hits over both left and medial hemispheres,  $p = 0.08$  and  $p = 0.03$ . Multiple comparison for the main effect of response type discovered that both R-hits and K-hits elicited more positive amplitudes than correct-rejections,  $p < 0.001$  and  $p = 0.005$ . These results demonstrated that in thematic priming condition, both R-hits and K-hits triggered the participation of the familiarity-based process reflected by FN400.

During 500-800 ms, the three-way repeated-measures ANOVA for the waveforms revealed a reliable main effect of response type,  $F(2, 62) = 10.717$ ,  $p < 0.001$ ,  $\varepsilon = 0.977$ ,  $\eta_p^2 = 0.263$ ; the three-way interaction was marginally significant,  $F(8, 248) = 2.102$ ,  $p = 0.062$ ,  $\varepsilon = 0.678$ ,  $\eta_p^2 = 0.065$ . Multiple comparison for the main effect indicated that R-hits evoked more positive-going waveforms compared with correct-rejections,  $p < 0.001$ . Simple effect test for the three-way interaction demonstrated that R-hits elicited more positive-going amplitudes than correct-rejections over all the concerned sites of frontal, central, and parietal regions,  $ps \leq 0.019$ . K-hits elicited more positive-going amplitudes than correct-rejections over both left-central and left-frontal sites,  $ps \leq 0.014$ . R-hits produced more positive ERPs than K-hits at left-frontal and medial-

central sites,  $ps \leq 0.043$ . To sum up, compared with correct-rejections, R-hits evoked more positive waveforms over parietal region which indexed the LPC, while K-hits failed to observe this component.

### **3 Old/new effects in the circumstance of taxonomic priming**

For the epoch of 300-500 ms, the three-way repeated-measures ANOVA showed a reliable main effect of response type,  $F(2, 62) = 3.690$ ,  $p = 0.042$ ,  $\epsilon = 0.794$ ,  $\eta_p^2 = 0.110$ ; the three-way interaction was marginally significant,  $F(8, 248) = 2.091$ ,  $p = 0.085$ ,  $\epsilon = 0.511$ ,  $\eta_p^2 = 0.065$ . Simple effect test for this interaction revealed that R-hits elicited more positive-going waveforms compared with correct-rejections at the left-parietal, medial-central, medial-frontal, medial-parietal, right-central, right-frontal, and right-parietal sites,  $ps \leq 0.032$ . These data suggested that in taxonomic priming condition, R-hits showed the familiarity reflected FN400 over frontal region, while this component was absent for K-hits.

Within 500-800 ms, the three-way repeated-measures ANOVA detected a reliable main effect of response type,  $F(2, 62) = 6.432$ ,  $p = 0.030$ ,  $\epsilon = 0.990$ ,  $\eta_p^2 = 0.177$ ; along with the three-way interaction,  $F(8, 248) = 3.488$ ,  $p = 0.006$ ,  $\epsilon = 0.605$ ,  $\eta_p^2 = 0.104$ . Simple effect test for this interaction showed that R-hits evoked more positive-going waveforms than correct-rejections over all analyzed sites,  $ps \leq 0.001$ . R-hits elicited more positive amplitudes than correct-rejections at the right-parietal, left-frontal, medial-frontal, right-frontal, and right-parietal sites,  $ps \leq 0.01$ , and elicited more positive-going amplitudes compared with K-hits at left-central, medial-central, medial-parietal, right-central, and right-frontal sites,  $ps \leq 0.048$ . Altogether, these findings indicated that in taxonomic priming condition, R-hits elicited LPC.

#### 4 Old/new effects in the circumstance of unrelated priming condition

Considering the interval of 300-500 ms, the three-way repeated-measures ANOVA confirmed a reliable main effect of response type,  $F(2, 62) = 4.626, p = 0.014, \varepsilon = 0.941, \eta_p^2 = 0.134$ ; the three-way interaction was marginally significant,  $F(8, 248) = 2.35, p = 0.053, \varepsilon = 0.542, \eta_p^2 = 0.073$ . Simple effect test for this interaction demonstrated that R-hits elicited more positive-going waveforms than correct-rejections at left-frontal, medial-frontal, right-frontal, left-central, and medial-central sites,  $ps \leq 0.033$ . K-hits elicited more positive-going waveforms compared with correct-rejections over the sites of left-frontal, right-central, right-frontal, and left-central,  $ps \leq 0.036$ . The waveforms of R-hits and K-hits did not differ reliably,  $p > 0.05$ . These results demonstrated that in the unrelated priming condition, both R-hits and K-hits elicited reliable FN400.

For the interval of 500-800 ms, the three-way repeated-measures ANOVA also confirmed a significant main effect of response type,  $F(2, 62) = 4.89, p = 0.011, \varepsilon = 0.922, \eta_p^2 = 0.14$ , and the three-way interaction,  $F(8, 248) = 2.84, p = 0.008, \varepsilon = 0.658, \eta_p^2 = 0.096$ . Simple effect test for this interaction demonstrated that R-hits elicited more positive-going waveforms compared with correct-rejections at left-central, left-frontal, medial-central, and medial-frontal sites,  $ps \leq 0.032$ . K-hits elicited more positive-going waveforms compared with correct-rejections at left-frontal, right-frontal, and left-central sites,  $ps \leq 0.046$ . Waveforms evoked by R-hits were more positive-going than those by K-hits at the site of left-frontal,  $p = 0.044$ . These findings showed that in the unrelated priming condition, only R-hits elicited the recollection reflected LPC.