Familiarity does not inhibit image-specific encoding of faces

Supplementary Analysis: Response Latency

James D. Dunn, Kay L. Ritchie, Richard I. Kemp & David White

Corresponding author: david.white@unsw.edu.au

The following analysis compared participant's response latencies in each condition to rule out whether speed-accuracy trade-offs can explain the lack of differences between unfamiliar and familiar faces on these tasks. Full details of this analysis are reported below. For each experiment, log transformations were applied to the median response latency for correct trials in each condition (base 10) and then analysed using the same repeated measures ANOVA's used to analyse sensitivity and criterion in the main manuscript. For brevity, only the critical comparisons of this analysis that involve familiarity are reported.

To summarise, across 5 experiments we found some evidence of differences between unfamiliar and familiar faces in response latency. In Experiment 1, participants did take longer with familiar faces than unfamiliar faces. Consequently, we cannot rule out that the findings this experiment could be explained by a speed-accuracy trade-off. However, in Experiments 2 to 5 (Experiment 4 analysis reported in manuscript) we found no differences in response time between unfamiliar and familiar faces. Based on this analysis, we report mixed evidence of differences in the response speed for unfamiliar and familiar faces.

Experiment 1

There was a significant main effect of Familiarity, $F(1, 55) = 7.980$, $p = .007$, $\eta_p^2 = .127$, with participants taking longer on average with familiar faces than unfamiliar faces. The interaction between factors was not significant, $F(2, 110) = 1.203$, $p = .304$, $\eta_p^2 = .021$.

Experiment 2

The main effect of Familiarity, $F(1, 55) = 1.555$, $p = .218$, $\eta_p^2 = .027$, and interaction between factors, $F(2, 110) = 2.177$, $p = .118$, $\eta_p^2 = .038$, were both not significant.

Experiment 3

The main effect of Familiarity, $F(1, 50) = 0.010$, $p = .921$, $\eta_p^2 = .000$, and interaction between factors, $F(3, 150) = 1.413$, $p = .241$, $\eta_p^2 = .027$, were both not significant.

Experiment 5

There was a significant main effect of Familiarity, $F(1, 50) = 9.631$, $p = .003$, $\eta_p^2 = .162$, with follow up comparisons showing slower responses for unfamiliar faces than familiar faces. Critically, this effect was qualified by a significant interaction between Familiarity and Trial Type, $F(1, 50) = 22.611$, $p < .001$, $\eta_p^2 = .311$. Follow up comparisons show significantly slower responses for unfamiliar faces than familiar faces on the identity task, $t(50) = 4.846$, $p < .001$, Cohen's $d = 1.372$, but no significant differences in latency between familiar faces and unfamiliar faces on the image task, $t(50) = 0.737$, $p = .465$, Cohen's $d = 0.211$. The interaction between Familiarity and Instruction Timing, $F(1, 50) = 1.403$, $p = .242$, $\eta_p^2 = .027$, and three-way interaction between all factors, $F(1, 50) = 0.081$, $p = .777$, $\eta_p^2 = .002$, were not significant.