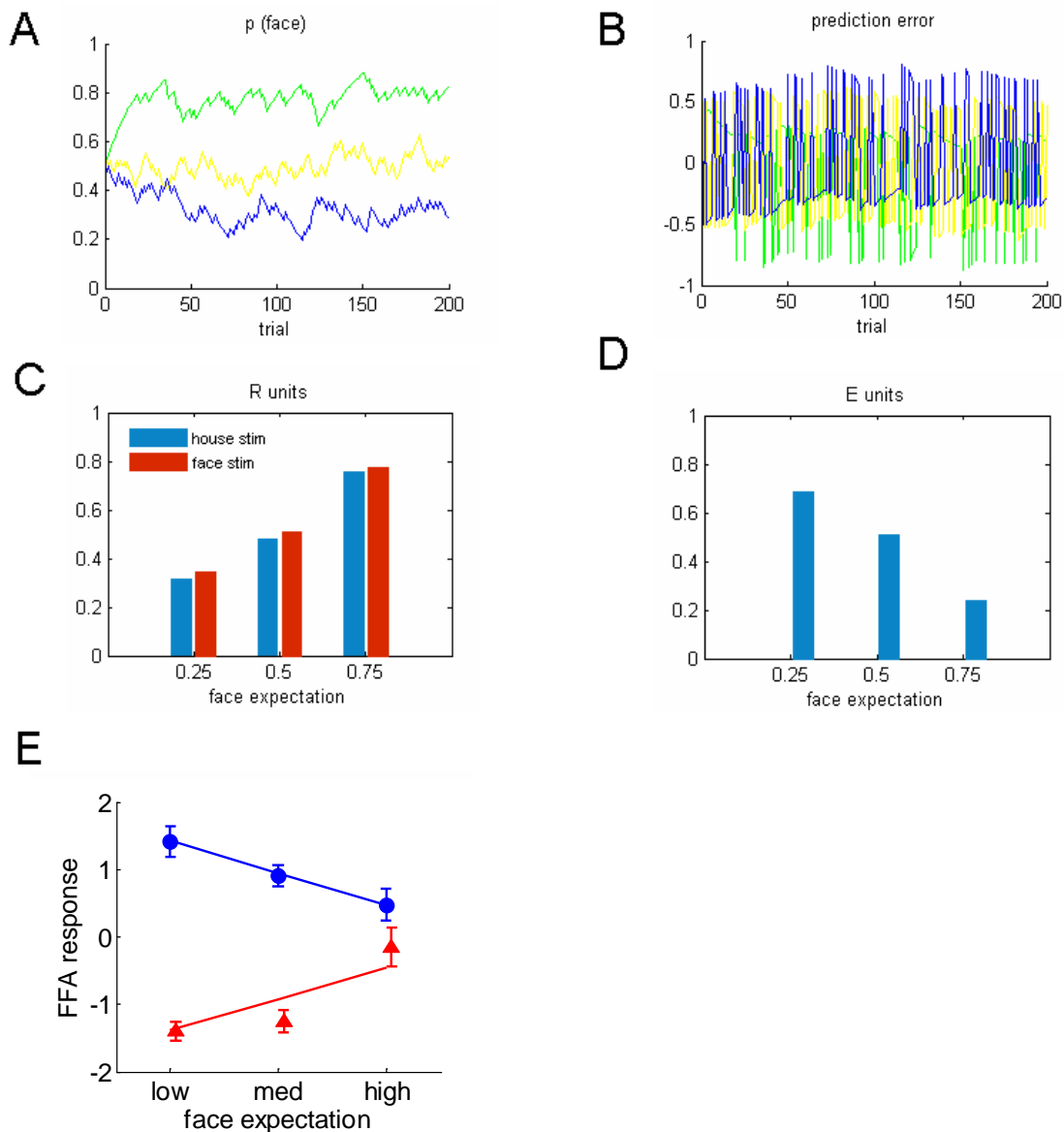
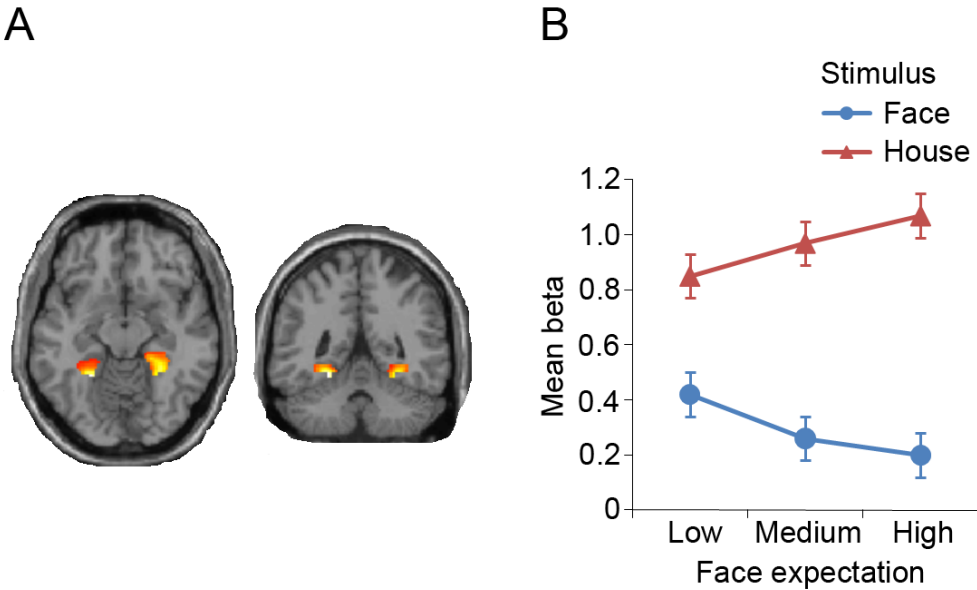


Supplemental Figure 1



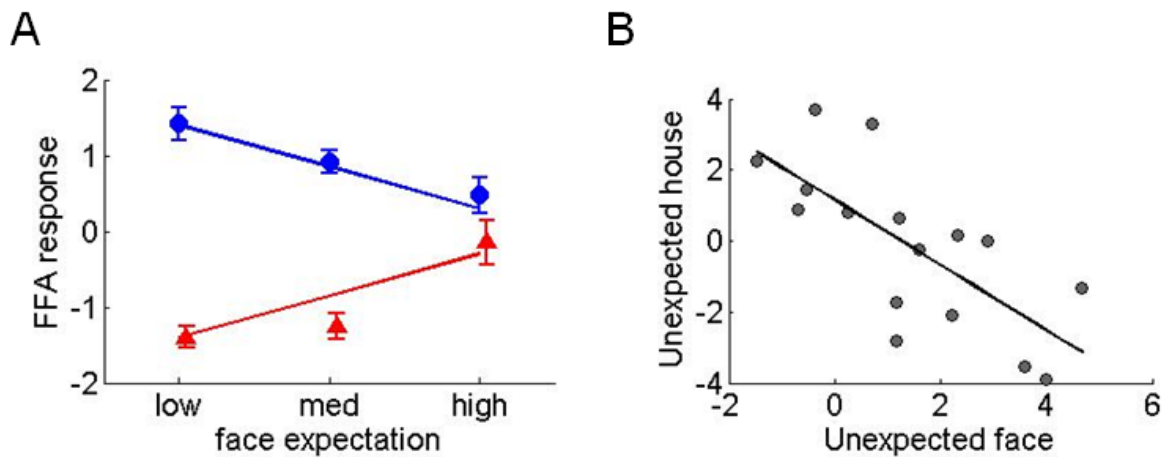
Supplemental Figure 1. Modeling predictive coding using a reinforcement learning algorithm. Estimating the output of E and R using a delta-minimization rule (such as a reinforcement learning [RL] model) yields very similar results to using the actual conditional face probability values [i.e. 0.25, 0.5, 0.75]. **A**, Conditional probability of the occurrence of a face for high (green line), medium (yellow line) and low (blue line) face expectation conditions, as calculated from an RL model for a typical trial sequence (x-axis: simulated trials 1-200). **B**, Prediction error values from the RL model for each condition. **C**, Mean face expectation (over values from A) for face and house stimuli. Face expectation values (x-axis) refer to low (0.25), medium (0.5) and high (0.75) face expectation conditions. **D**, Mean face surprise (over values from B) for face stimuli (house stimuli elicit no face surprise in the FFA). **E**, Mean-corrected FFA responses and best-fitting predictive coding model variant, for faces (blue lines) and houses (red lines) under low, medium, and high face expectation. Underlying markers represent mean-corrected observed FFA data (\pm standard error).

Supplemental Figure 2



Supplemental Figure 2. PPA functional MRI data. **A**, PPA localizer group results in the parahippocampal gyrus are displayed on axial and coronal sections of a single-subject normalized brain. Data are shown at a false-discovery-rate (FDR) corrected threshold of $P < 0.05$ ($t = 2.30$) (left PPA peak, $x = -24$, $y = -48$, $z = -12$, cluster = 478 voxels; right PPA peak, $x = 28$, $y = -40$, $z = -14$, cluster = 615 voxels). **B**, Mean group activation estimates (beta parameters \pm standard error of the mean) for each condition of the main experimental protocol are shown for the group PPA peak ($x = -24$, $y = -48$, $z = -12$) defined in the localizer task.

Supplemental Figure 3



Supplemental Figure 3. A, Mean-corrected FFA responses and the best-fitting feature + surprise model variant, for faces (blue lines) and houses (red lines) under low, medium, and high face expectation. Underlying markers represent normalized observed FFA data (\pm standard error). **B**, Scatter plot showing FFA response to unexpected faces (x-axis) and unexpected houses (y-axis). The line shows the best linear fit. The significant negative correlation ($r = 0.72$, $p < 0.002$) supports the predictive coding model, which argues that FFA responses are driven by distinct face expectation (on unexpected house trials) and face surprise (on unexpected face trials) processing units.