SUPPLEMENTAL DATA

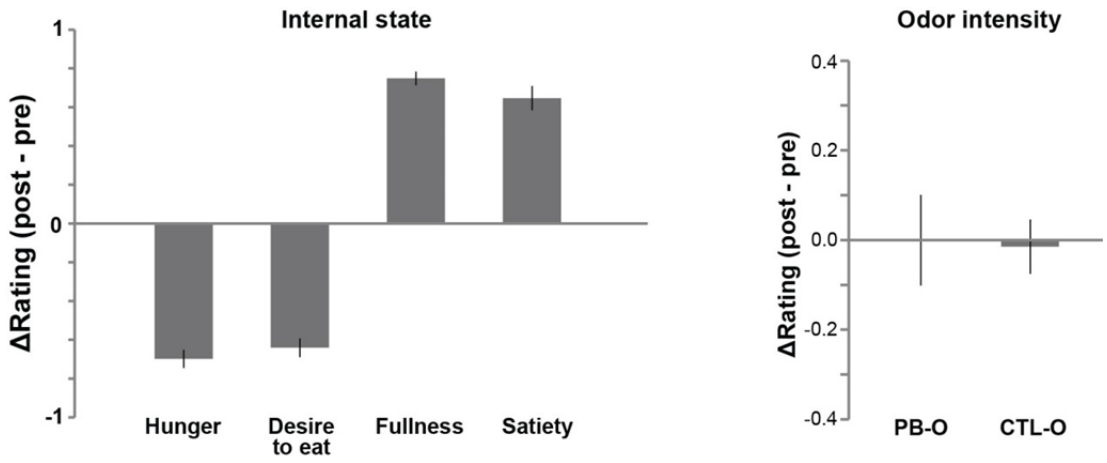

Figure S1, related to behavioral data in Figure 2A. (**A**) Ratings of hunger, desire to eat, fullness, and satiety were provided immediately before and after the feeding session. The subject-averaged (± s.e.m.) difference between post-satiety and pre-satiety ratings is plotted. Each effect changed significantly (p's < 0.0001, paired t-tests, pre vs. post feeding). (**B**) There was no satiety-related difference between PB-O and CTL-O in rated stimulus intensity ($p > 0.5$).

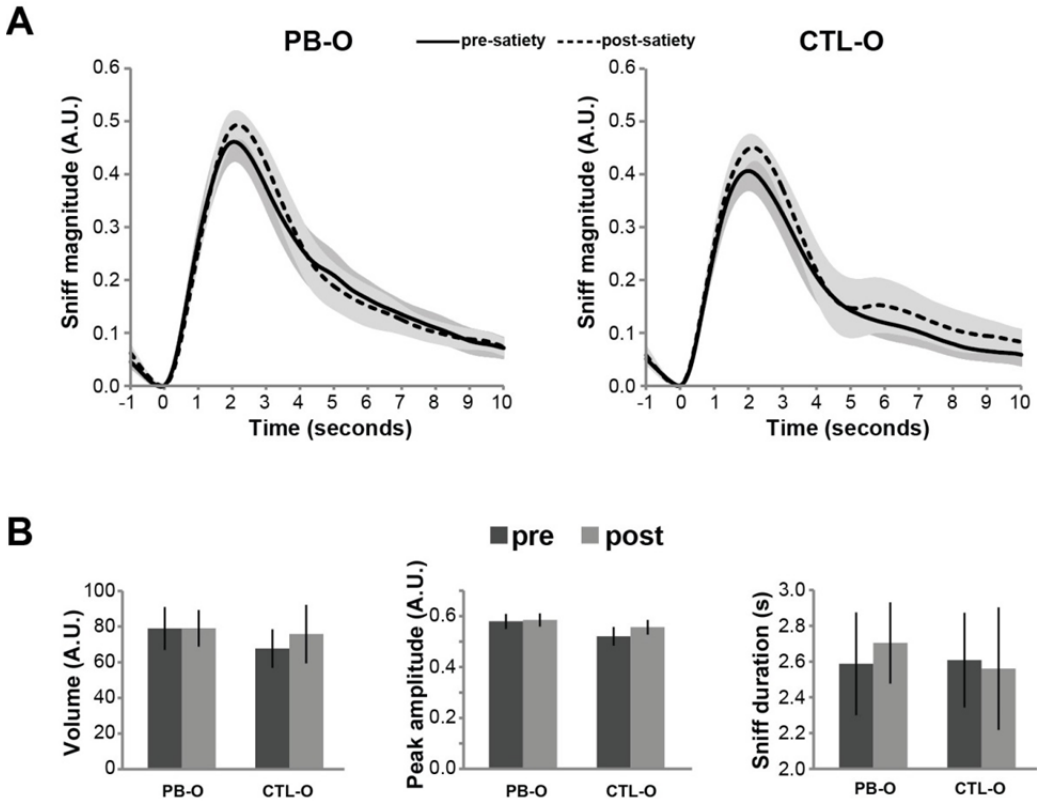

Figure S2, related to Figure 2. (**A**) Sniff traces averaged across trials within each scanning session for PB-O and CTL-O. Dark and light gray shading is the across-subject s.e.m. for pre- and post-satiety sessions, respectively. Sniff traces were normalized by subtracting the mean signal value and dividing by the standard deviation within each run, and then aligned to the zero point according to the minimum signal amplitude in the 2s window surrounding stimulus onset. (**B**) Subject-averaged condition and session-specific values for sniff volume, peak amplitude, and sniff duration are plotted with across-subject s.e.m. We found no main effects of session or condition, nor any satiety-related interaction between session and condition for any of these measures as tested by repeated-measures ANOVAs (p's > 0.11).

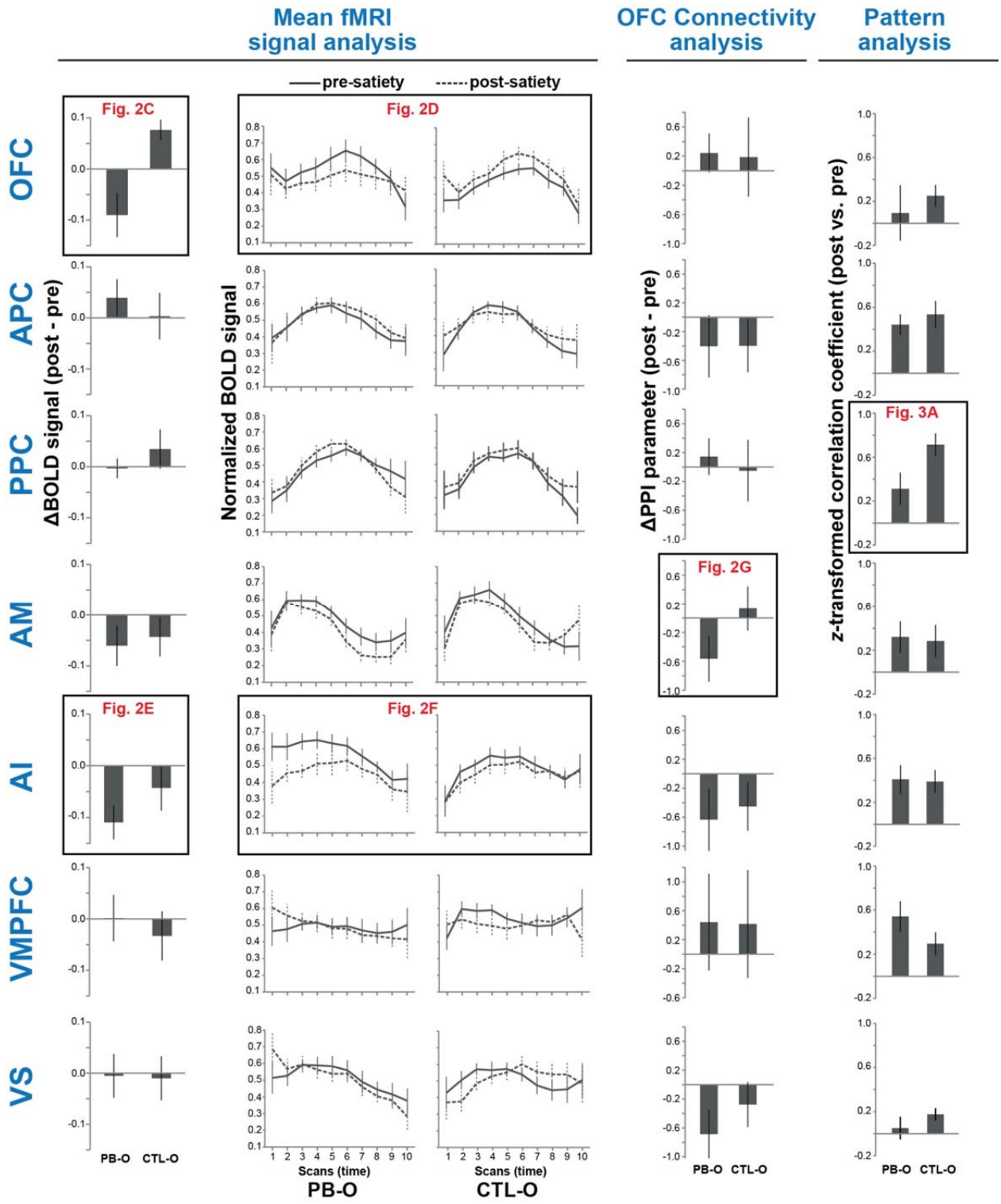

Figure S3, related to Figures 2 and 3. Summary of univariate, multivariate, and connectivity analyses for each of the seven tested ROIs . Significant effects are outlined in boxes and are notated according to the corresponding figures in which they were presented in the main text.

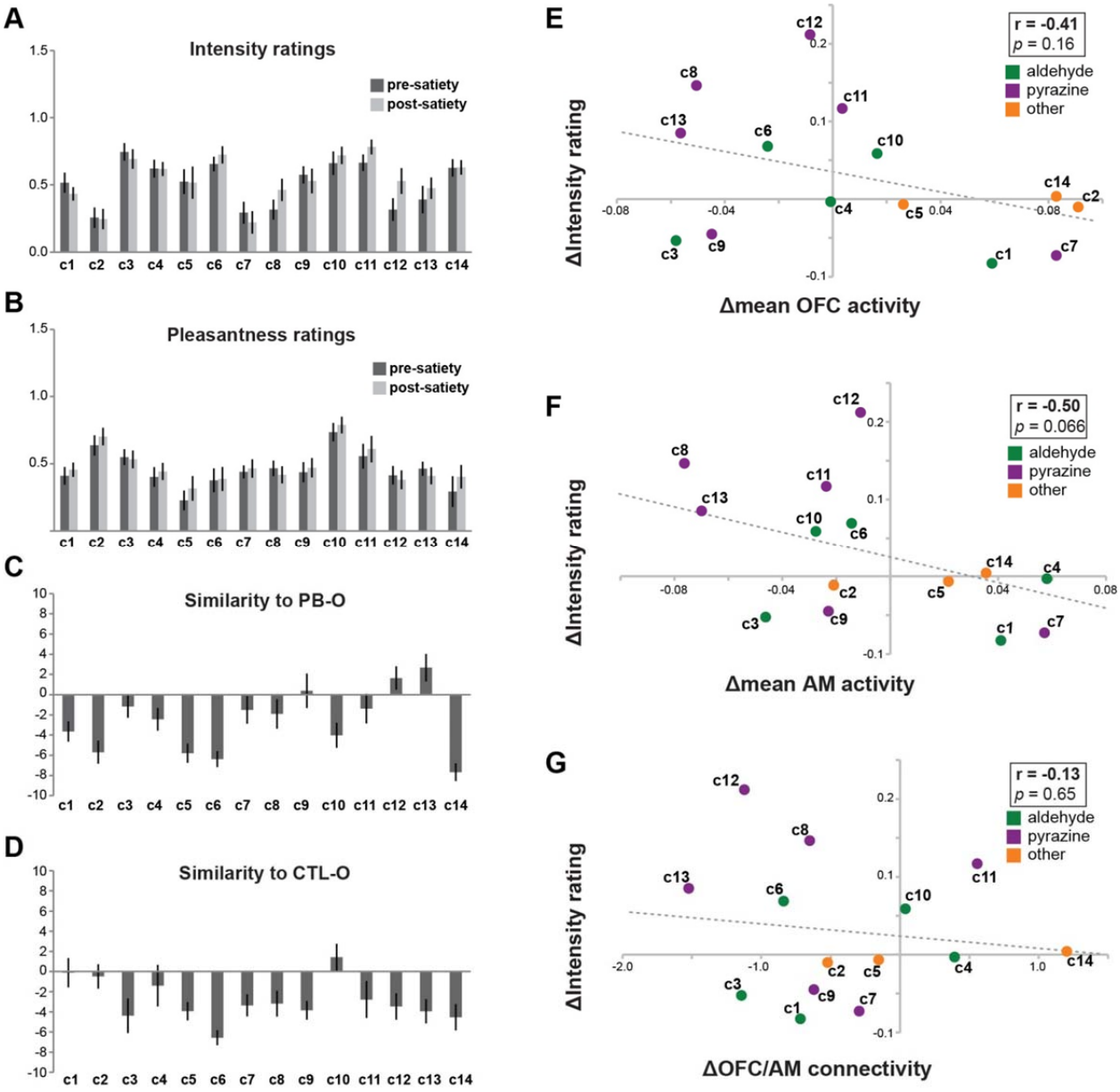

Figure S4, related to Figure 5. Pre-satiety and post-satiety intensity ratings (**A**) and pleasantness ratings (**B**) for each PB-O component. Perceptual similarity ratings of PB-O components to PB-O (**C**) and CTL-O (**D**). Correlations between satiety-related change (post – pre) in ratings of perceived intensity and mean OFC activity (**E**), mean AM activity (**F**), and functional connectivity strength between OFC and AM (**G**). In each case there was no significant relationship between neural and behavioral effects, contrary to what was found for pleasantness ratings.

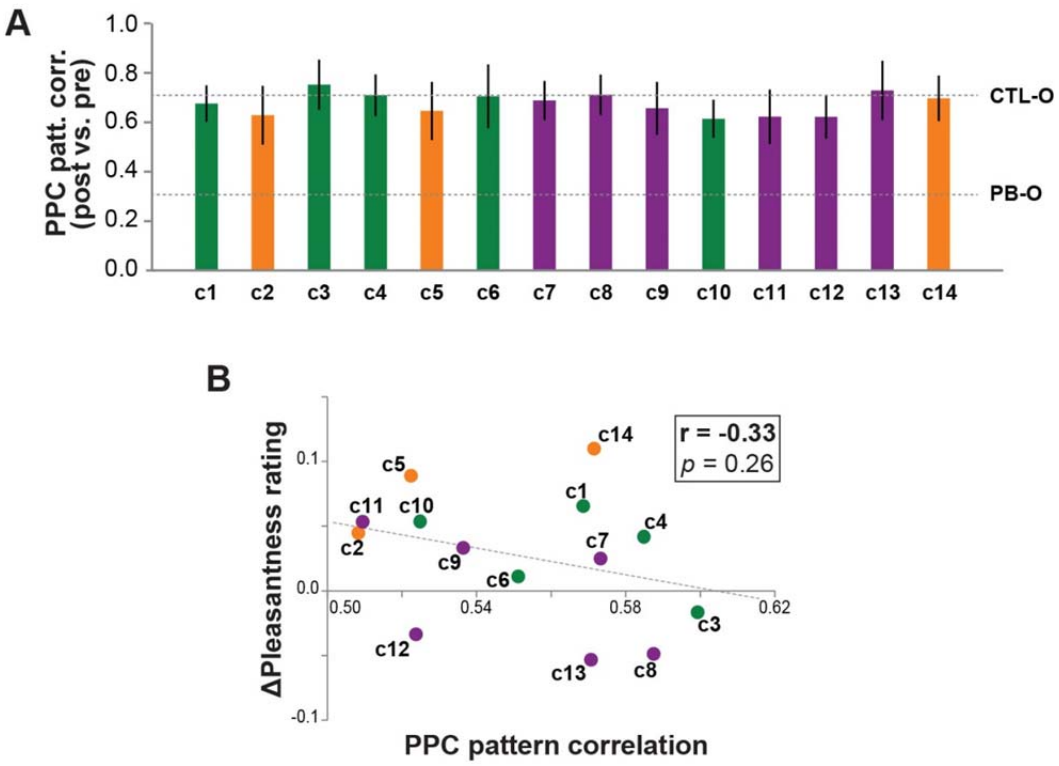

Figure S5, related to Figure 4. (**A**) Bar plots depict the subject-averaged multi-voxel correlations between pre- and post-satiety patterns of fMRI ensemble activity in posterior piriform cortex (PPC) for each of the 14 PB-O components (± s.e.m.), where greater pattern divergence, or decorrelation, from pre- to post-satiety, is reflected in a lower R value. Mean satiety-induced pattern shifts (correlation values) for PB-O and CTL-O are indicated by the dotted lines. Relative to CTL-O, none of the components evoked a significant decrease in pattern correlation. (**B**) A scatterplot of the pattern correlation in PPC vs. satiety-related change in pleasantness rating for each component did not reveal a significant relationship between these two measures.

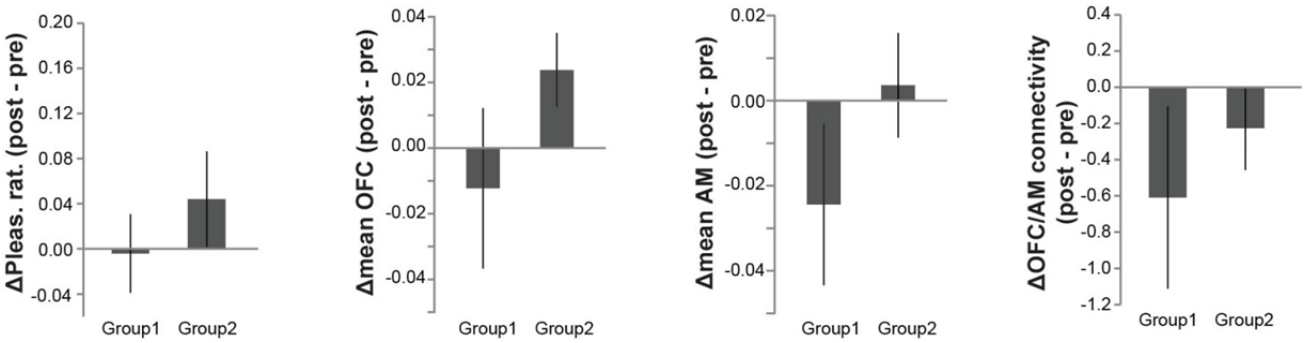

Figure S6, related to Figure 6. Panels depict the behavioral and neural effects averaged across the two main PB-O component groups based on molecular feature similarity (see main text and methods). There were no significant differences between group 1 (the 6 pyrazines), and group 2 (the 5 aldehydes plus c2 and c14) in satiety-related changes in pleasantness rating ($t_{10} = 1.31$, $p = 0.22$, paired *t*-test), mean OFC signal ($t_{10} = 1.20$, $p = 0.26$), mean AM signal ($t_{10} = 1.17$, $p = 0.27$), or OFC/AM connectivity ($t_{10} = 0.98$, $p = 0.35$). These null findings suggest that the molecular, or physical, identity of PB-O component was not a major factor in determining its satiety-related behavioral or neural response profile.