Correlating beauty with three measures of pleasure

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Introduction & Methods

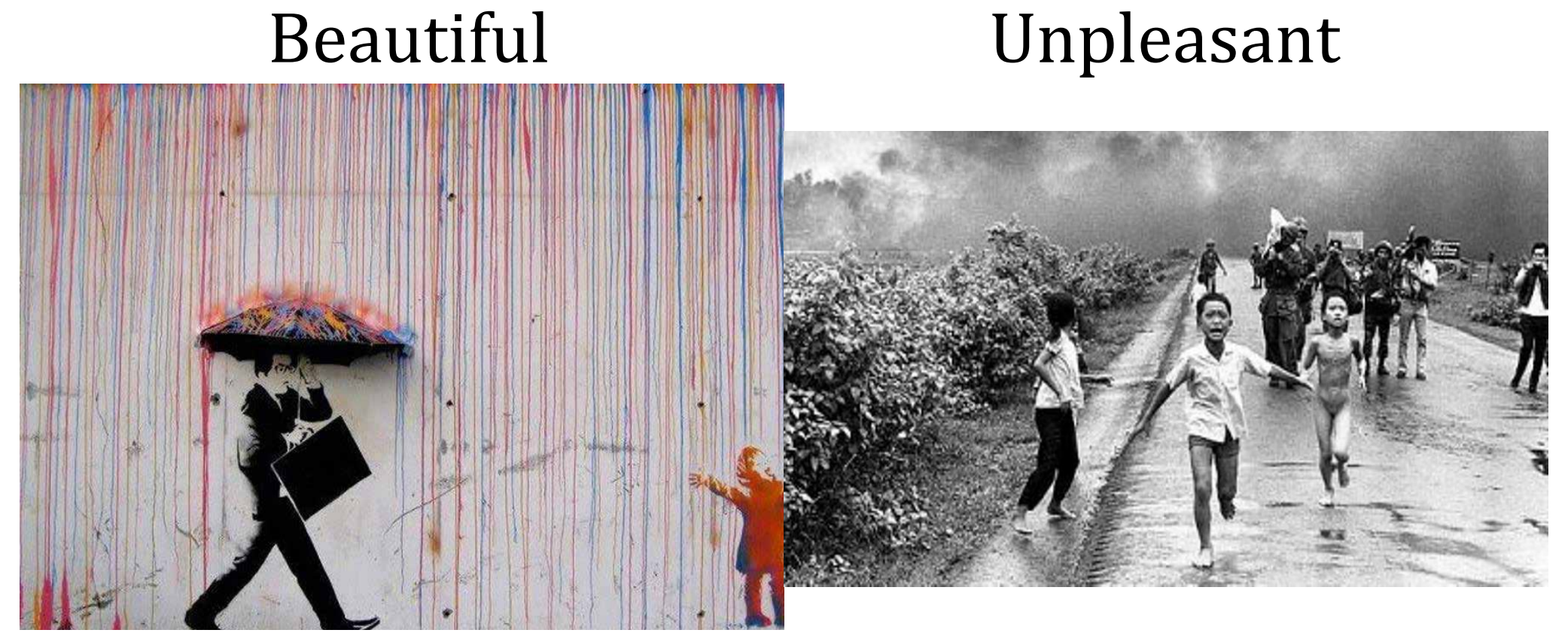
Question: When you look at your beauty and I look at mine, do we have the same feeling? Kant (1764) and Santayana (1896) say the experience of beauty is pleasure, with qualifications. So we measure the time course of pleasure psychophysically and physiologically during the experience of beauty.

Stimuli: Four types of images were selected as beautiful or unpleasant, “Popular” by a large group of students and “Personal” by the participant. “Popular” images were 10 “beautiful” and 10 “unpleasant” IAPS (International Affective Picture System) images. “Personal” images were 10 “beautiful” and 10 “unpleasant” images found with Google Images by the participant.

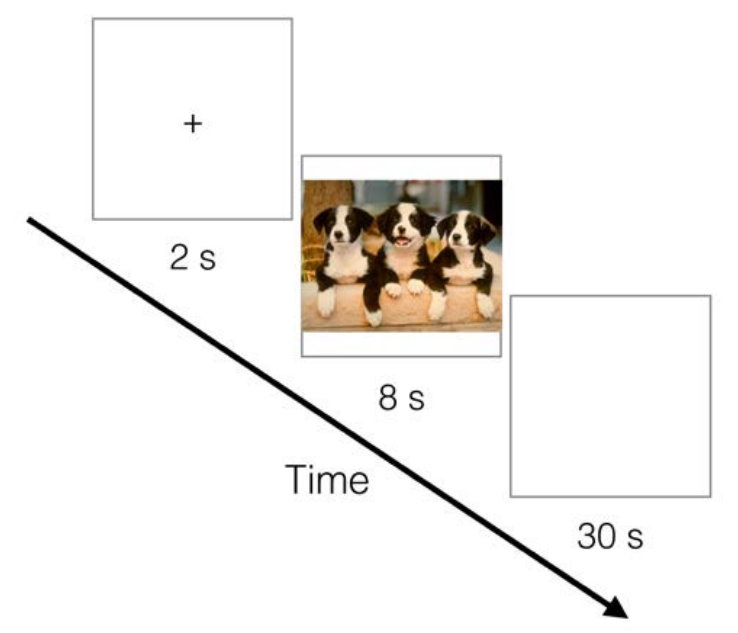
Popular

Beautiful
Unpleasant

Personal



Trial: Each trial consists of 2 s fixation, 8 s image presentation, and 30 s blank screen after stimulus offset. There are 40 trials per participant. Participants rate during the entire trial by continually adjusting the spread of two fingers to indicate pleasure at each moment (EmotionTracker.com). We simultaneously record facial muscle activity (fEMG, facial electromyography) of Corrugator Supercilii and M. Zygomaticus muscles.



Feeling of beauty: At the end of the trial we ask the participant, “During this trial, did you have the feeling of beauty?” They respond on a 4-pt. scale from **Definitely yes (4)**, **Perhaps yes (3)**, **Perhaps no (2)**, and **Definitely no (1)**. All data are color coded to indicate this distinction.

Pleasure Rating

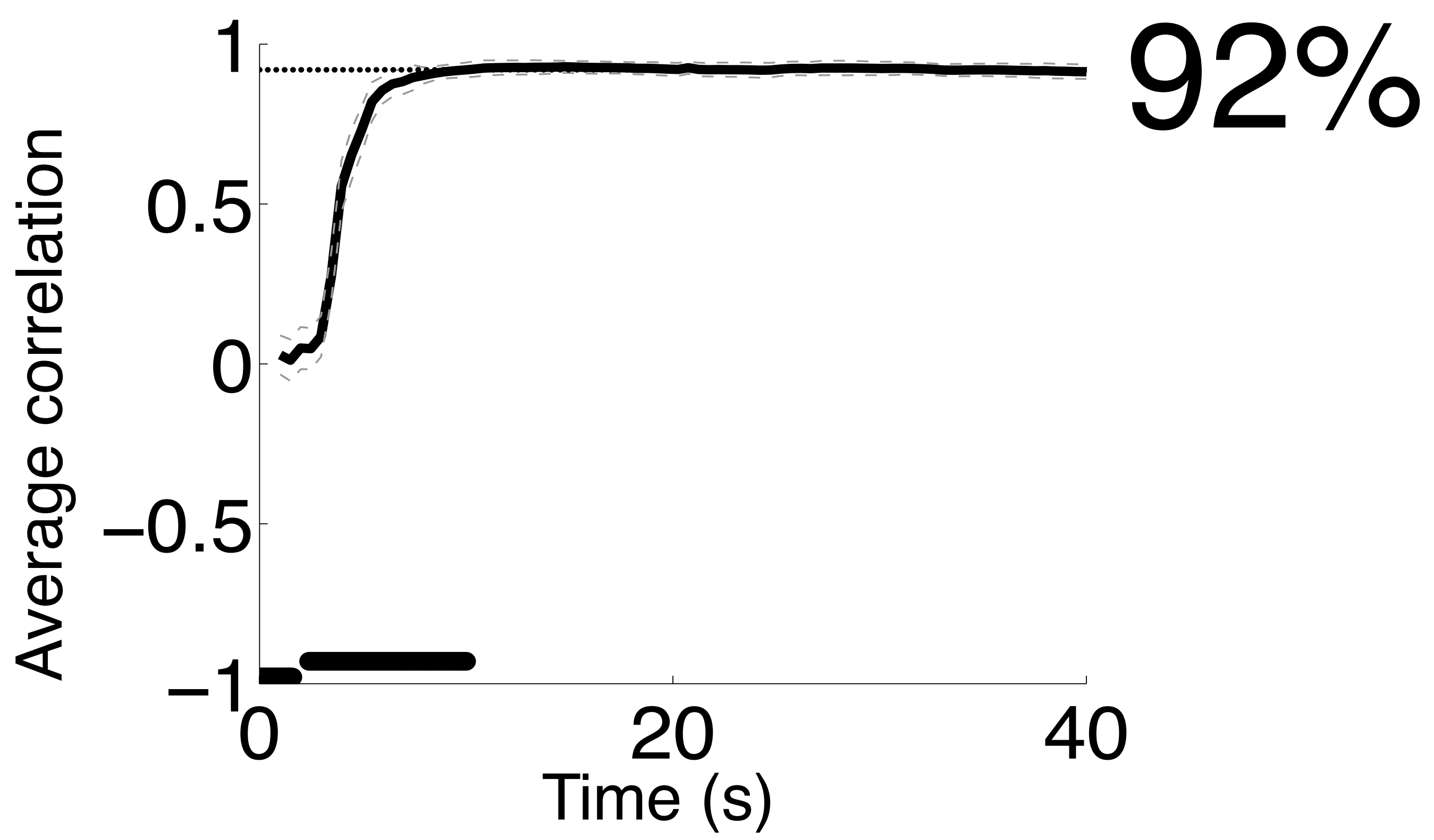


Fig. 1. Correlation of pleasure and felt beauty over time. Pleasure experienced during most of the trial is 92% correlated with the feeling of beauty reported after the trial. Black bars indicate fixation and stimulus exposure.

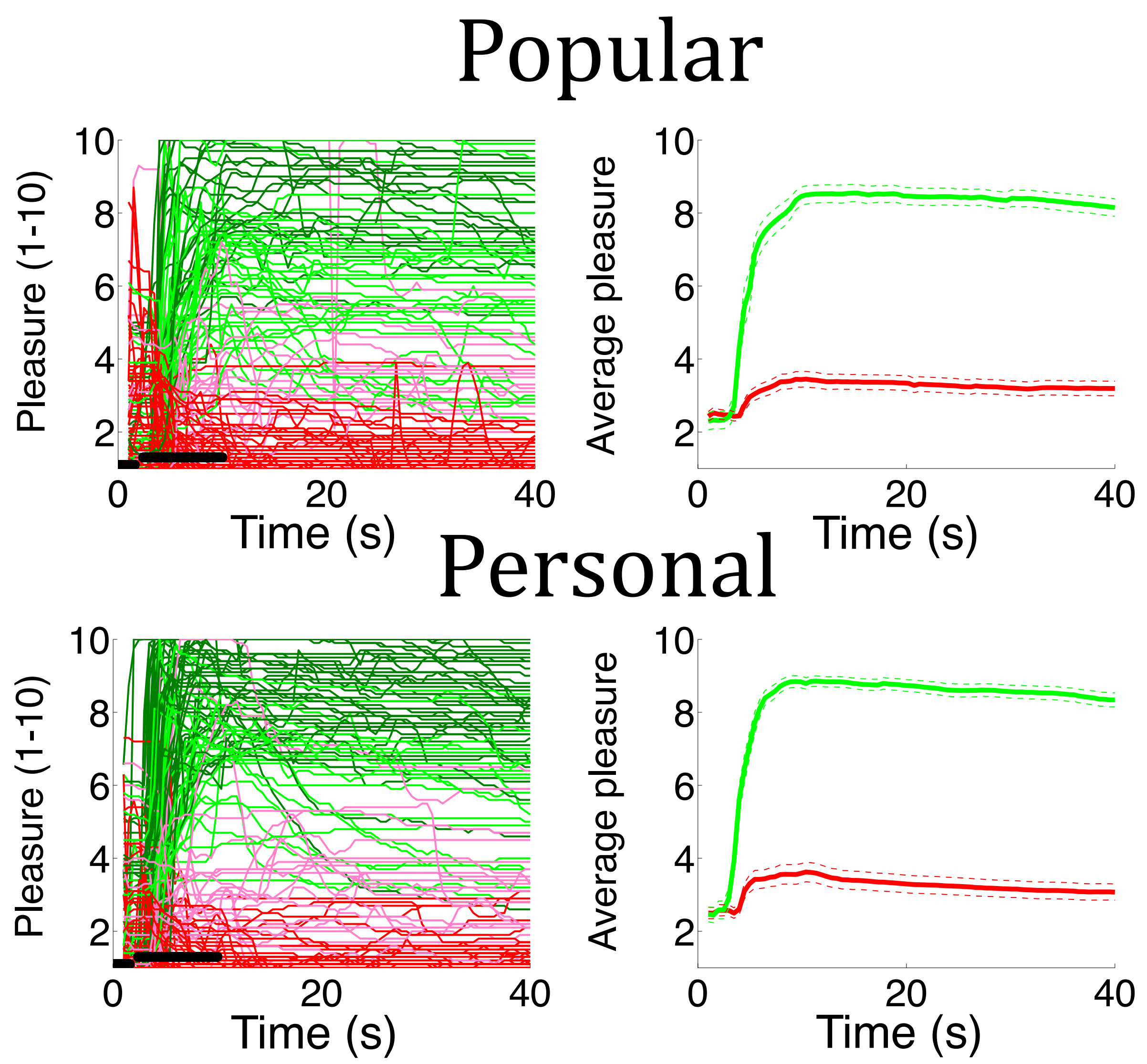


Fig. 2. Pleasure over time. Left: raw data color coded by the feeling of beauty (1-4). Right: average curves for **felt beauty(3,4)** and **did not feel beauty(1,2)**. Pleasure is much higher when participants felt beauty compared to when they did not feel beauty.

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Smile Muscle (M. Zygomaticus)

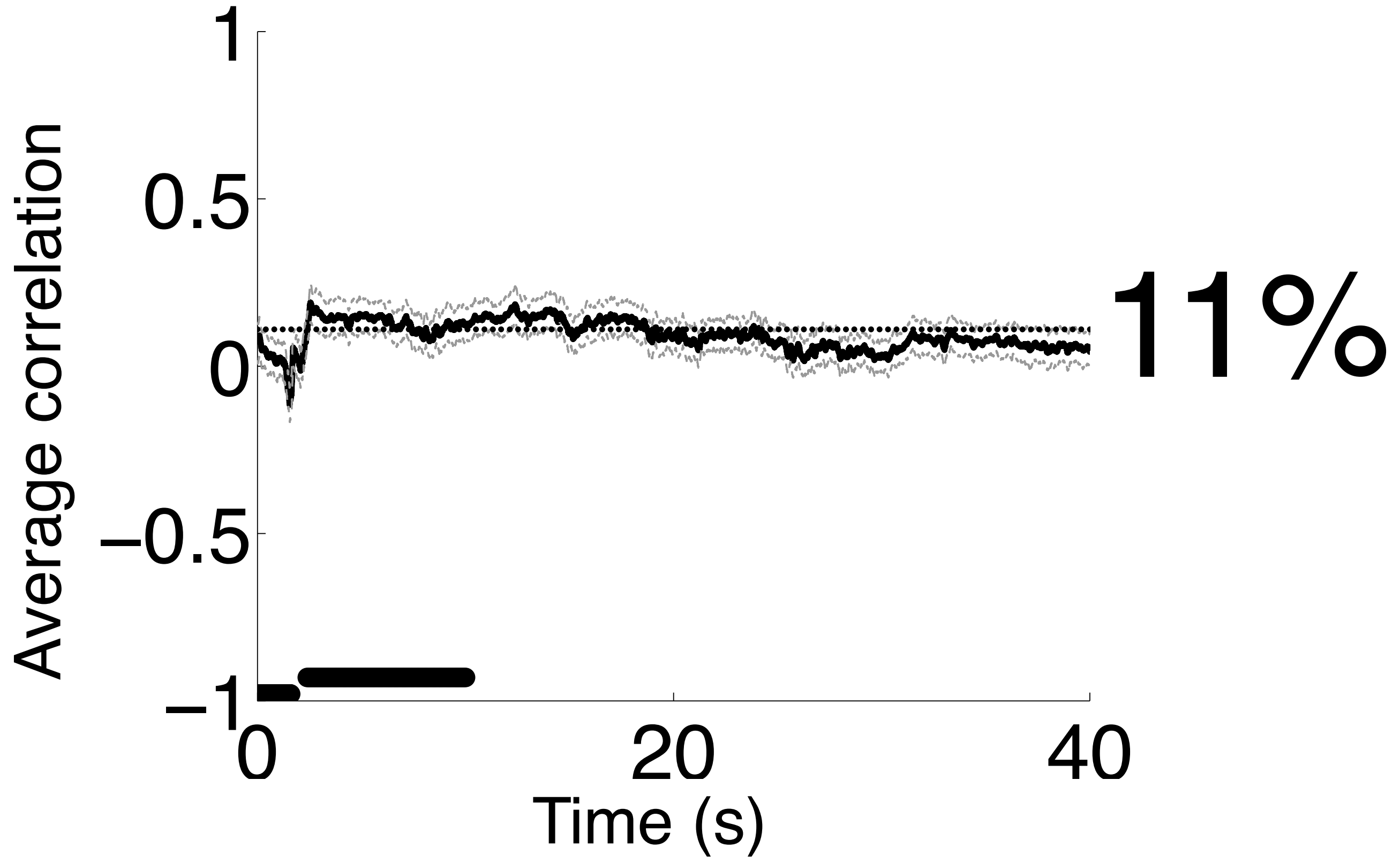

Fig. 3. Correlation of Zygomaticus activation and felt beauty over time. Zygomaticus activation during most of the trial is 11% correlated with felt beauty reported at the end of the trial.

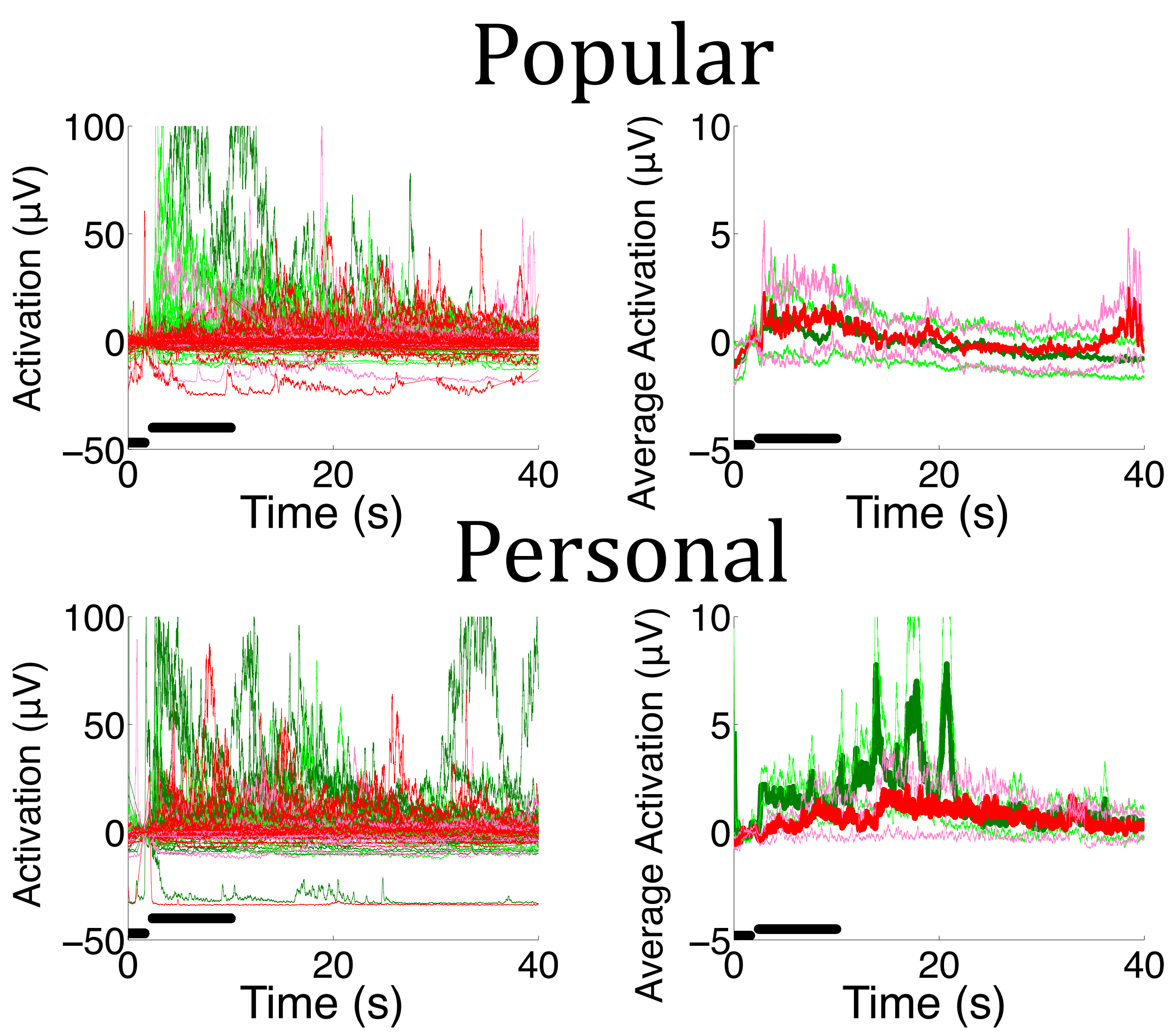

Fig. 4. Zygomaticus activation over time. Left: data color coded by feeling of beauty. Right: average curves for **felt beauty** and **did not feel beauty**. Zygomatocus activation is slightly stronger when participants felt beauty, as shown by Fig. 3.

Acknowledgments & Citation

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Frown Muscle (Corrugator Supercilii)

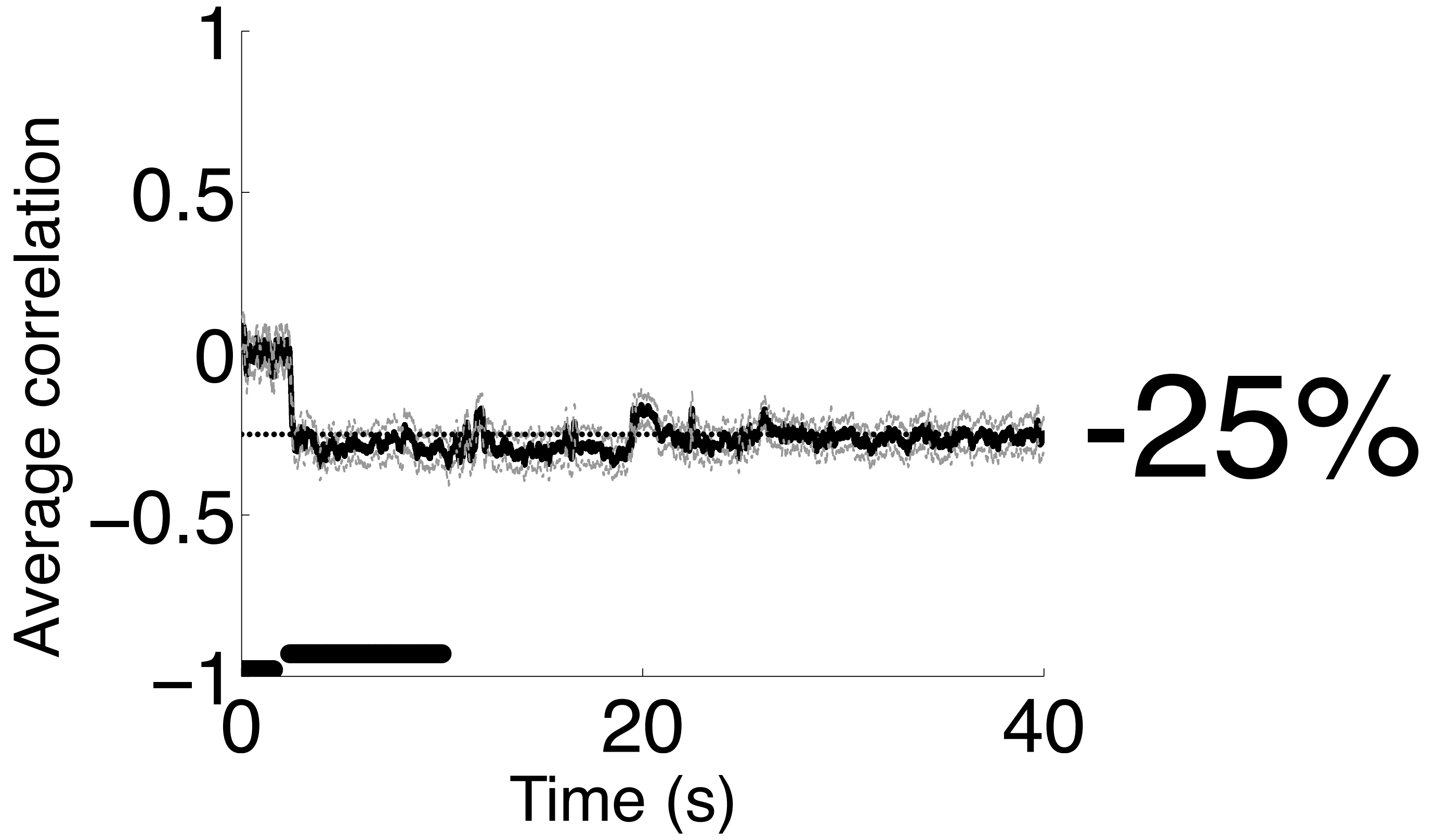

Fig. 5. Correlation of Corrugator activation and felt beauty over time. Corrugator activation during the whole trial is 25% negatively correlated with felt beauty reported at the end of the trial.

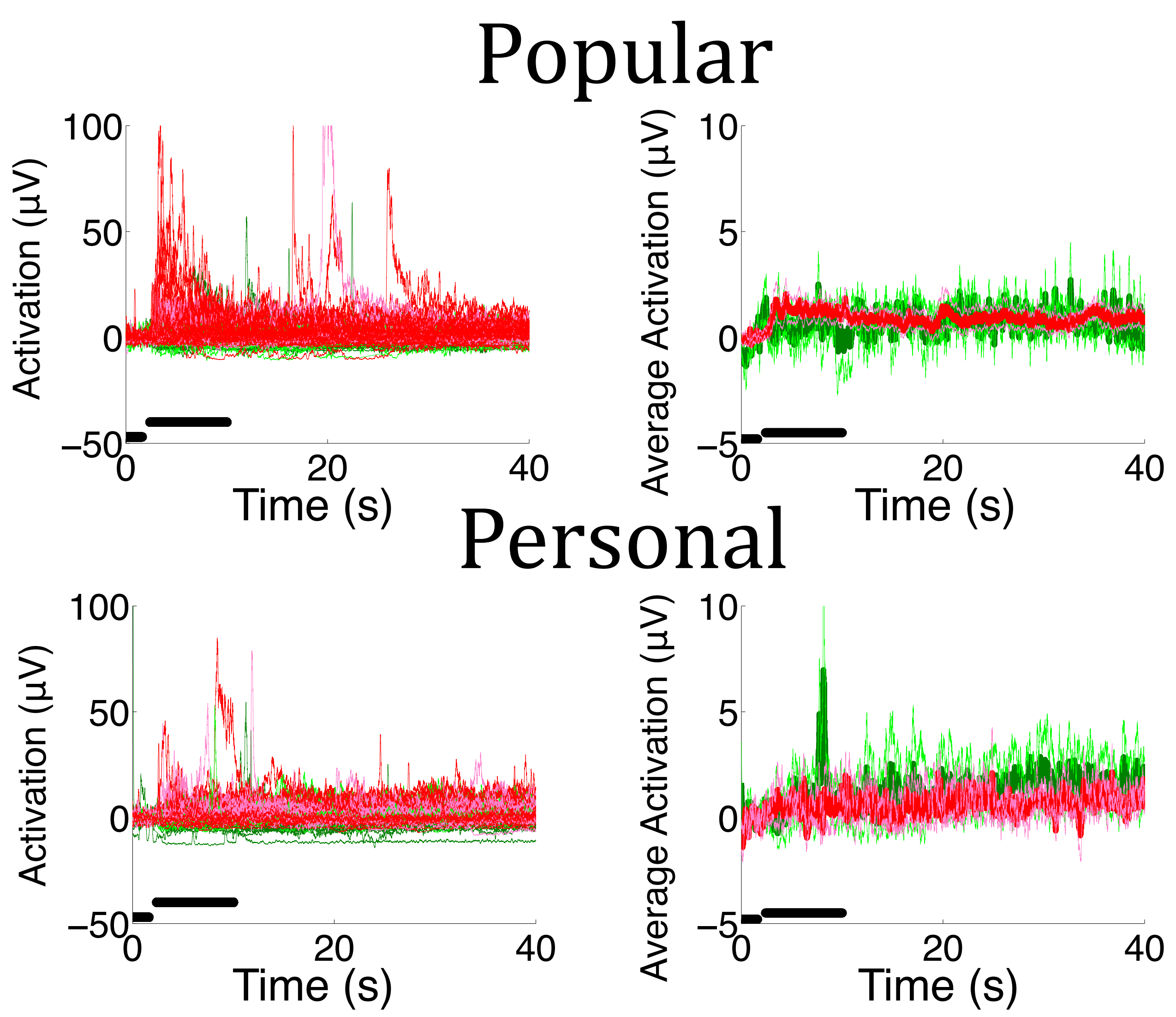

Fig. 6. Corrugator activation over time. Left: data color coded by feeling of beauty. Right: average curves for **felt beauty** and **did not feel beauty**. Corrugator activation is slightly stronger when participants did not feel beauty, as shown by Fig. 5.

Conclusion

The feeling of beauty is highly correlated (92%) with the moment by moment rating of pleasure and weakly correlated with activation of the smiling (11%) and frowning (-25%) muscles.