

Pattern Classification of Emotion-Induced Physiological Changes

Abstract:

Background

Distinct physiological changes preceding upcoming randomly selected arousing (vs. calm) stimuli have been analysed statistically, and it appears these effects are replicable (Mossbridge et al. 2012). Here we call these changes “presentiment” or predictive anticipatory activity or “PAA.”

Aims

1) Investigate how critical factors influence PAA, and 2) Create pattern-classification software that an individual can use to predict a future emotional event.

Methods & Results:

We completed three sets of experiments addressing these aims. Results from two EEG studies (experiment set 1) indicated that the alpha phase preceding upcoming stimuli predicts the motor response to those stimuli, an effect that seems to be difficult to isolate topographically using scalp electrodes. Results from two single-trial paradigms performed in the laboratory (experiment set 2) indicated that paradigms in which the delay between the onset of the trial and the stimulus is the same across all participants are most likely to show strong presentiment effects and that heart rate may be a better predictor of upcoming events than skin conductance. Finally, using smartphones to record heart activity in 300 people before either winning or losing \$2 (experiment set 3) resulted in a replication of a significant gender difference in presentiment responses, similar to that described in Mossbridge et al. (2012).

Conclusions

Single-trial presentiment experiments facilitated by smartphone apps should help reduce noise sources in presentiment experiments. Gender, age, and arousal level of the reward are factors that we plan to vary to determine how they influence presentiment.

Keywords

Presentiment, Predictive anticipatory activity, Precognition, Time perception, Anticipation

Published Work:

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