Title: Neural Correlates of Visual Illusory Percepts after Temporal Event Integration.

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Abstract: 2.35

The lucidity with which we (sub)consciously experience the world is largely due to the cognitive system’s ability to filter and integrate the multitude of information it receives continuously into a coherent experience of the moment. One cognitive method by which the brain achieves this has recently enhanced our understanding of human attention and memory.

Temporal Event Integration (Akyürek et al., 2012) was shown in Rapid Serial Visual Presentation (RSVP) experiments with two target stimuli that were presented in succession and were combinable in a perceptually meaningful way. This led to subjects regularly reporting to have seen a single target stimulus, which was the combination of the two targets actually presented.

Unveiling the neural correlates of this cognitive process recently commenced with EEG data (Akyürek, Kappelmann, Volkert, & van Rijn, 2017) suggesting that after temporal integration the attentional system was modulated by the number of presented targets (two), but working-memory processes depended on the number of perceived targets (one).

This poster presents a temporal generalisation analysis of this dataset, which extends the original study by analysing all electrodes as opposed to the original three ERP components of interest. Our results show a sustained difference in whole-scalp activation patterns between conditions of no integration and integration. Interestingly, this pattern was not observed for the other two contrasts of interest: no integration and single-target as well as integration and single-target conditions. This hence suggests a qualitative difference in how a single target percept is being processed depending on whether it was the result of temporal integration or not.

We will further include unpublished work that explores how unexpected overfitting can occur after temporal generalisation, despite the use of cross-validation (Skokic, Collins, Callahan-Flintoft, Bowman and Wyble’s (2016) critique applied to temporal generalisation analyses).