

## FREQUENCY-TAGGING AS A MEASURE OF CONSCIOUS FACE PERCEPTION

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### Grant 50/22

**Background:** Steady-state visual evoked potentials (SSVEPs) from frequency-tagging (FT) paradigms are widely used to investigate visual processing. Yet their association with conscious perception remains unclear.

**Aims:** To test whether SSVEP occurs during conscious perception or without consciousness, 32 participants saw sequences of different images presented at 6 Hz (6 images per second) and containing faces every fifth image (1.2 Hz).

**Methods:** All images were presented at either a face-categorisation-threshold contrast (1%) or a supraliminal contrast (1.5%). After each sequence, participants had to categorise the face gender (objective perception) and rate their confidence in this categorisation and the visibility of the faces (subjective perception). During the sequence presentation, participants' attention was monitored via an orthogonal fixation-cross task.

**Results:** Results showed that, at 1.5% contrast, the face signal was higher during correct than during incorrect gender categorisation and increased linearly with both visibility and confidence ratings. In line with participants' performance on the fixation-cross task, the signal collected at 6 Hz also indicated that attention related more closely to confidence than to visibility. At 1% contrast however, no face perception occurred behaviourally, which was confirmed by an absence of brain signal recorded in response to face instances.

**Conclusions:** Overall, these findings show that SSVEPs can track both the objective and subjective perception of faces at a supraliminal, hence conscious, contrast (1.5%). These findings bring new evidence that SSVEPs can be used as a marker of conscious perception.

**Keywords:** Frequency-tagging consciousness, Faces, Metacognition, Visibility

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