Late occipito-temporal processing reflects perception in the flash-lag illusion

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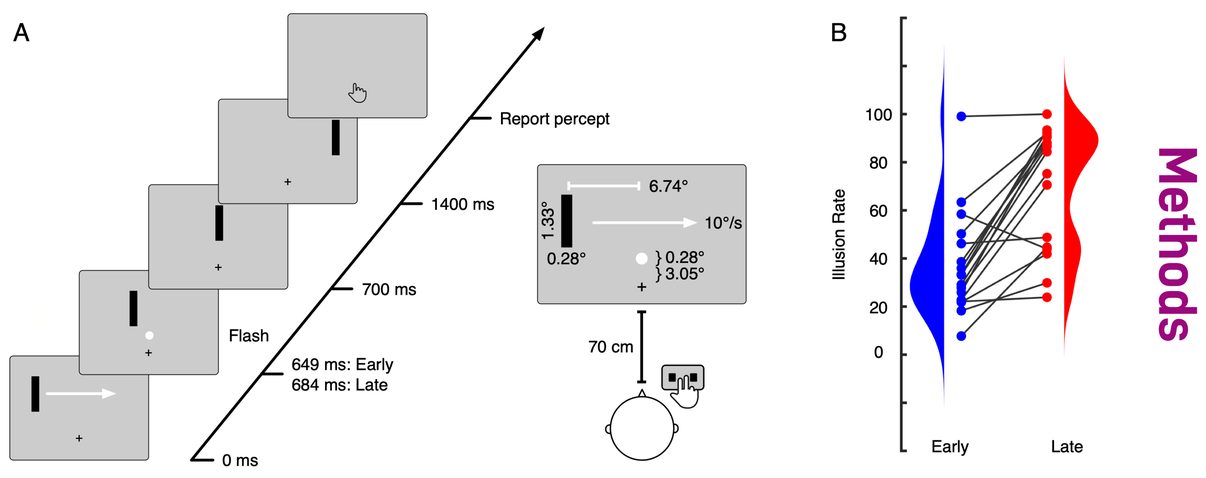
Introduction

Information following a stimulus within a temporal integration window (TIW) can influence perception. In the flash-lag illusion (FLI), the position of a flash presented ahead of a moving bar is mislocalized, so the flash appears to lag the bar. It appears perceptually linked to the moving bar's position only after the flash onset. Currently, it isn't clear whether this postdiction effect involves early and/or late processing stages.

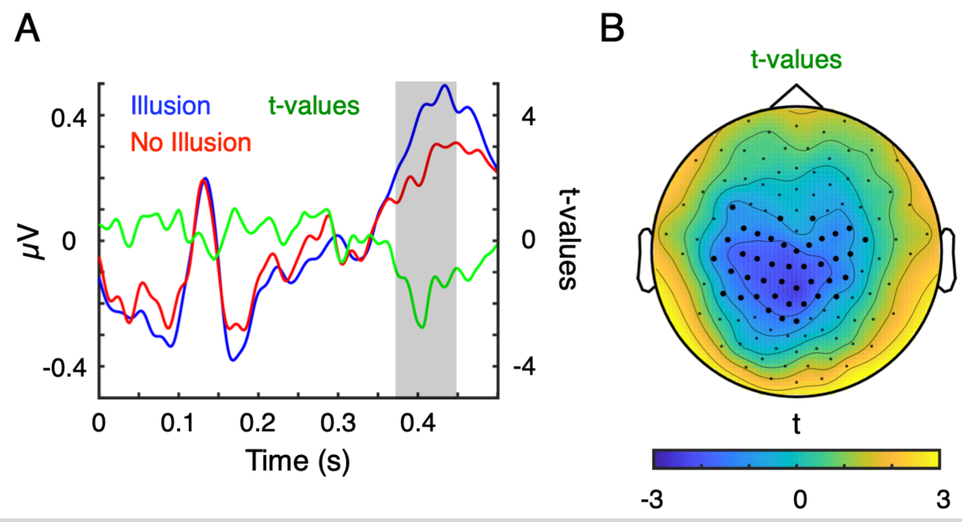
Methods

- N = 17 (8f, 24-52 yrs)
- Bar moving left to right
- 200 early trials: Flash 51 ms before bar at center
- 200 late trials: Flash 16 ms before bar at center
- Response: Bar left (no FLI) or right (FLI) of flash?
- 126-channel EEG
- Single-trial linear model µV = Time * Response
- Permutation test betas ~ 0
- LCMV beamformer source analysis



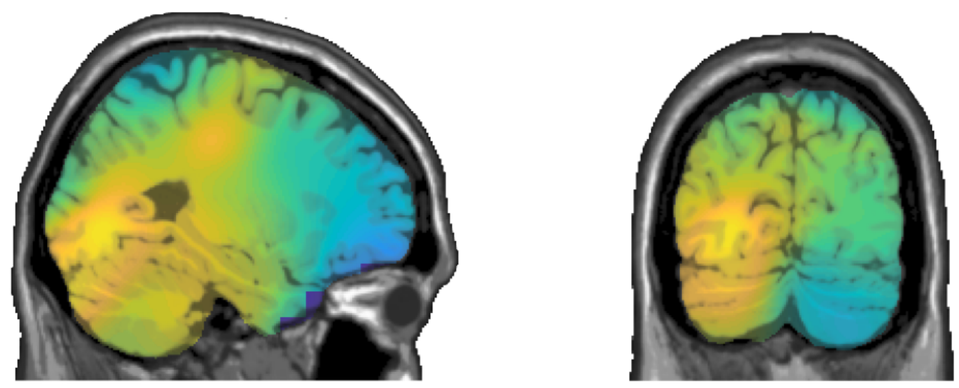
Results

- FLI more likely with bar close to central flash t(16) = -5.5091, p < 0.001, BF10 = 548.0798
- Late central negative cluster of betas reflects FLI perception 368 - 452 ms, cluster-p = 0.02 ± 0.0087
- FLI results in more positive ERP amplitude t(16) = 4.8825, p < 0.001, BF10 = 181.3138



Discussion

Late positive ERP, localized to the left inferior occipito-temporal cortex, differentiates between illusion and no illusion perception. Illusion trials evoked larger ERPs than no-illusion trials. We replicate previous findings on the TIW: FLI perception was higher in late vs. early trials. Post-perceptual late ERPs support the postdiction account of the FLI.



References

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