

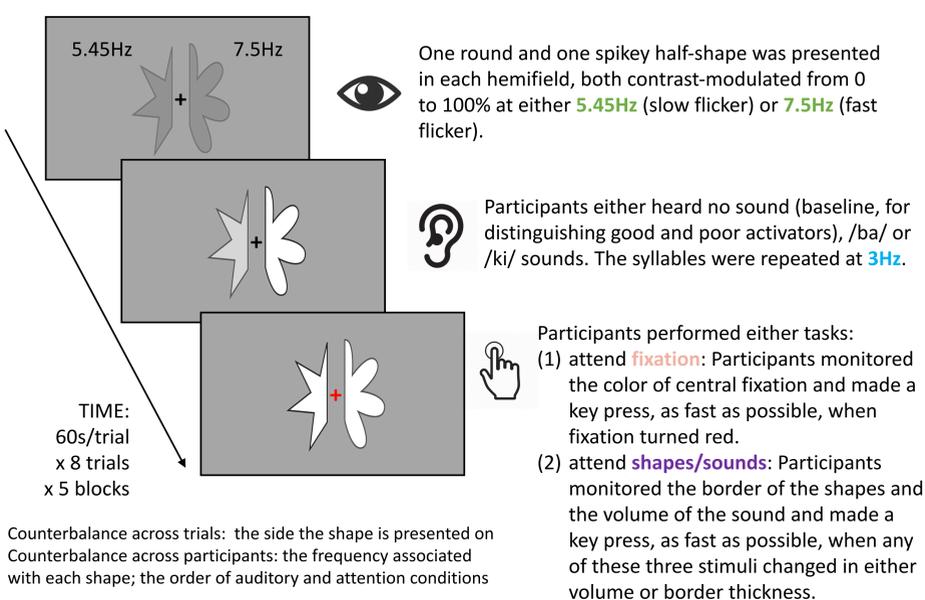
## QUESTION: Do nonsense words orient attention to abstract visual shapes?

Associations between abstract shapes and non-sense words, e.g., round shapes and /bouba/ sounds, have been observed across cultures and early in development. Yet, how automatic is this association and does attention influence such crossmodal correspondence? More specifically, does attending a sound enhance representation of the corresponding (congruent) shape feature naturally associated with this sound? We investigated the role of attention in sound-shape correspondence using steady state visual evoked potentials (SSVEPs) recorded by electroencephalography.

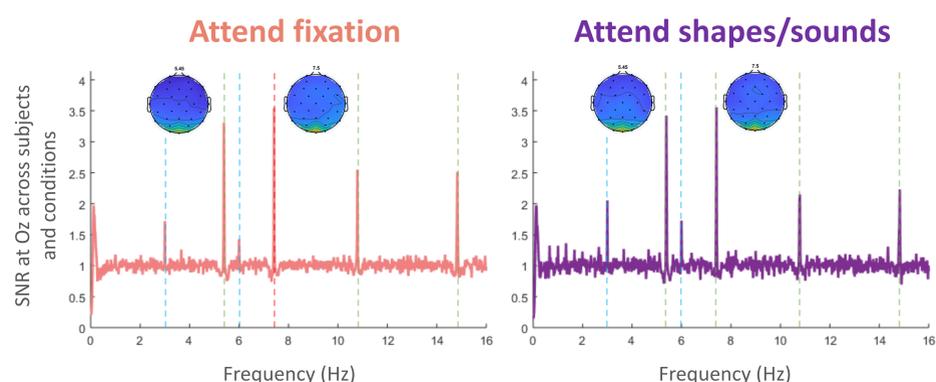
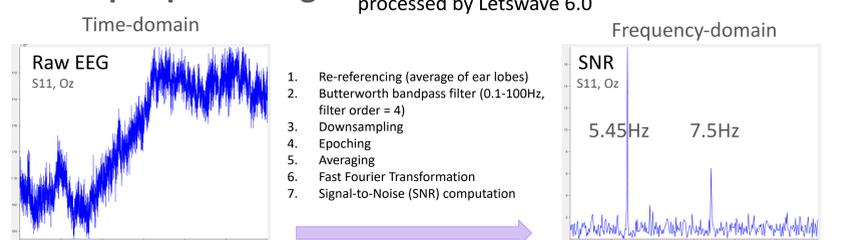


## METHOD

### Procedure and Stimuli

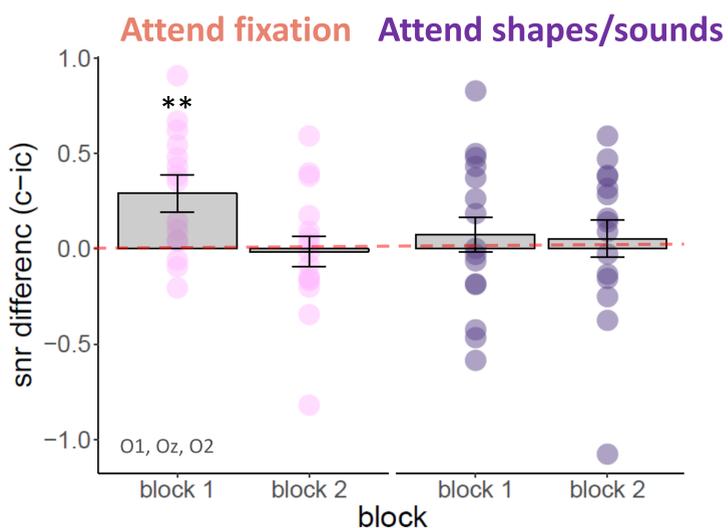


### EEG data pre-processing

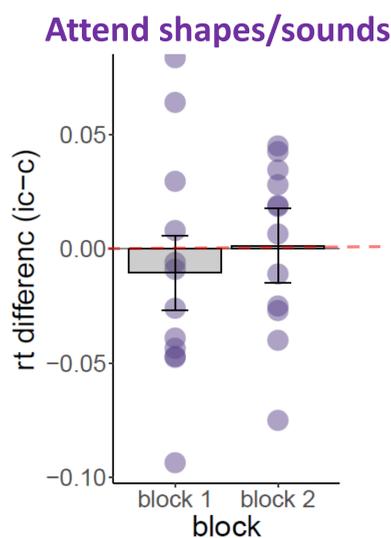


## RESULTS (Fundamental frequencies)

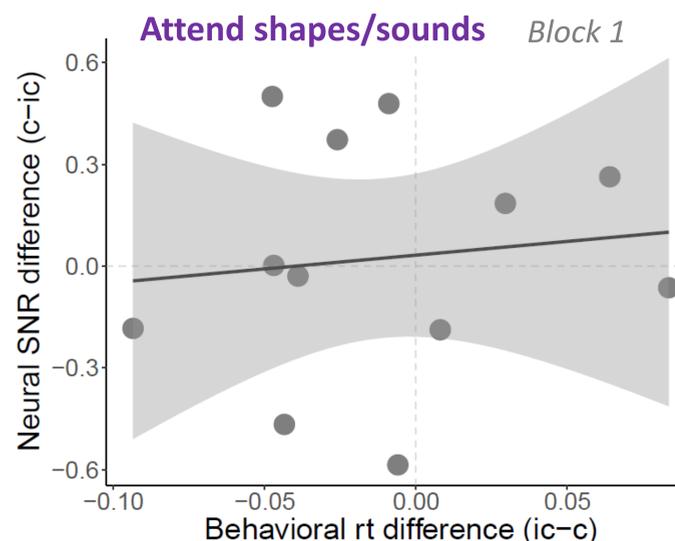
Inclusion criteria: (1) baseline SNR > 2.5 for at least one visual frequency, and (2) hit rate >= 0.8 when attending fixation and hit rate >= 0.5 for shape border changes and sound volume changes respectively (n=15)



Neural processing of visual shapes was enhanced when a congruent sound was presented, relative to when an incongruent sound was presented. This effect was transient (occurred in the first four trials only) and diminished when participants were asked to attend across sounds and shapes.



Participants did not respond faster to changes on the visual shape congruent to the concurrent sound.



There was no systematic relationship between behavioral (reaction time difference) and neural (SNR difference) effects when participants were asked to attend across sounds and shapes.

## CONCLUSION: Nonsense words can orient attention to congruent abstract visual shapes but not when endogenous attention is employed.

Further research is needed to understand the following:

- 1) Why do neural orienting effects dissipate (quickly)?
- 2) Why does endogenous attention impair the orienting effect of sound-shape correspondence?
- 3) What explains individual differences in the entrainment, direction and magnitude of neural/behavioral orienting effects?

References:  
 Boremanse, A., Norcia, A.M., & Rossion, B. (2013). An objective signature for visual binding of face parts in human brain. *Journal of Vision*, 13(11), 1-18.  
 Spence, C. (2011). Crossmodal correspondences: A tutorial review. *Attention, Perception and Psychophysics*, 73, 971-995.  
 Others: Letswave 6.0 ([www.nociions.org/letswave](http://www.nociions.org/letswave))

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