**Is a round shape integrated with a /bouba/ sound? Enhanced neuronal signals at the intermodulation frequencies of congruent audio-visual stimuli**

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**METHOD**

Procedure and Stimuli

- One round and one spikey half-shape was presented in each hemifield, both contrast-modulated from 0 to 100% at either 5.45Hz (slower flickering) or 7.5Hz (faster flickering).
- Participants either heard no sound (baseline, for distinguishing good and poor activators), /ba/ or /ka/ sounds. The syllables were repeated at 3Hz.
- Participants monitored the color of the central fixation cross and made a key press as fast as possible when it turned red.

**EEG data pre-processing**

EEG recorded byBiosemi ActiveTwo (32±8 channels) and processed by Letswave 6.0

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**RESULTS (Intermodulation frequencies)**

**Hypothesis:** If corresponding crossmodal stimuli are integrated, then IM (Intermodulation, sum or differences of two frequencies) responses should be enhanced for congruent compared to incongruent pairings.

**Current study**

![Graph showing IM responses for round and spikey shapes and congruent and incongruent sounds.](image)

- **Previous study**
  - Barenseman, Nericia & Rossion (2017)
  - Good activators (round n=14, spikey n=8)
  - Poor activators (round n=6, spikey n=11)

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**RESULTS (Fundamental frequencies)**

**Hypothesis:** If sound-shape correspondence involuntarily directs attention, the SSEPs of a shape should be enhanced when presented with a congruent compared to incongruent sound.

![Graph showing SNR differences for congruent and incongruent sounds.](image)

**CONCLUSION:**

Yes sounds and shapes are integrated*

* Only when looking at IM sum of round shape and congruent sound

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Further research is needed to understand the following:
1. Why is IM congruency effect specific to shape type and IM type?
2. What explains the individual differences in entrainment?
3. What is the role of attention on the integration (IM) and orienting effect (fundamental frequency) of sound-shape correspondence?

References:
Others: Letswave 6.0 [www.nocions.org/letswave]

If you have questions, please email dorischm@gmail.com