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Video ratings correlate with video motion energy (ME)

- Videos with higher motion energy get higher ratings on average
  - Supports relatively direct pre-cognitive route from visual motion to audition

Surround suppression test

- Contrast matching of centre with Collinear vs Orthogonal surround 5; 14 randomised trials
- ME sensitivity predicts vEAR, auditory-evoked phosphenes, earworms and pattern glare
- These phenomena may be related to increased cortical excitability / disinhibition 7,8

Sensitivity to motion energy predicts specific traits

- ME sensitivity predicts vEAR, auditory-evoked phosphenes, earworms and pattern glare

Free-text descriptions of videos

- ME sensitivity predicts less surround suppression
- vEAR is evoked by abstract videos with high motion energy
- independent of prior audiovisual associations
- Bypasses semantics and controlled imagery
  - Direct cross-talk from vision to audition

Conclusions

- vEAR is evoked by abstract videos with high motion energy
- independent of prior audiovisual associations
- Bypasses semantics and controlled imagery
  - Direct cross-talk from vision to audition

- Visual-ear synaesthesia (vEAR) correlates with diverse sensory phenomena
- auditory-evoked phosphenes, earworms and pattern glare
- reduced surround suppression in vEAR points to sensory disinhibition
  - Supports disinhibition theory of synaesthesia and related phenomena 1

Video rating associated with all tested traits

- Stronger traits, higher video ratings

• Yea-saying’ bias? Unlikely given reverse-coding

Surround suppression

- Disinhibition may link these phenomena

Video ratings correlate with video motion energy (ME)

- ME sensitivity predicts specific traits

Abstract videos -> ME analysis

- Musicality, auditory-evoked phosphenes, self-assessed vEAR

On-line video rating survey

- >7000 worldwide participants followed link to our survey from popular press
- Video ratings correlate with video motion energy (ME) analysis

Background / Questions

- Some people ‘hear’ what they see: flashing displays, people walking, any movement
- We call this the visual-evoked auditory response or ‘visual ear synaesthesia’ (vEAR)1,2
- Can auditory sensation be evoked by raw motion energy (ME), rather than by learned expectations?
- What traits are associated with vEAR?
- Is cortical excitability/disinhibition a possible mechanism? 3

Stronger traits, higher video ratings or ‘displays, people walking, any movement

Some people ‘hear’ what they see: flashing

Video ratings correlate with video motion energy (ME)

- ME sensitivity predicts vEAR, auditory-evoked phosphenes, earworms and pattern glare
- These phenomena may be related to increased cortical excitability / disinhibition 7,8

Free-text descriptions of videos

- Supports reduced inhibition in vEAR