HEARING MELODY MODULATES PERCEPTUAL DOMINANCE OF MUSICAL SCORES DURING BINOCULAR RIVALRY

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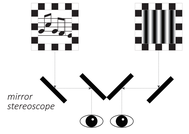
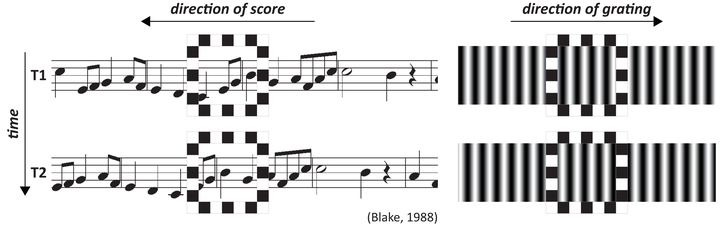
INTRODUCTION

Two dissimilar images viewed dichoptically compete for perceptual awareness, with perception alternating spontaneously over time. Dubbed binocular rivalry, this phenomenon is a useful means for manipulating and thereby studying conscious visual awareness (Blake & Logothetis, 2002). Previous studies showed that information within other sensory modalities can influence perceptual dominance of related visual stimuli during binocular rivalry (Lunghi et al., 2010; van Ee et al., 2009; Zhou et al., 2010). **The current study investigated the influence of audiovisual integration on binocular rivalry dynamics by exploiting auditory musical melodies and visual musical scores.**

METHODS

STIMULI	7 musical scores & vertical grating
TASK	Tracking rivalry
TRIAL DURATION	30 - 40 seconds (depending on the music)
WINDOW SIZE	1.9˚ × 1.9˚ deg visual angle





(Blake, 1988)

SOUND CONDITIONS

- ***"Congruent"*** auditory melody corresponds to visual score
- ***"Incongruent"*** auditory melody different from visual score
- ***"No sound"*** visual score only presented

NUMBER OF TRIALS 7 scores × 3 sound conditions × 2 eyes = 42 trials

OBSERVERS

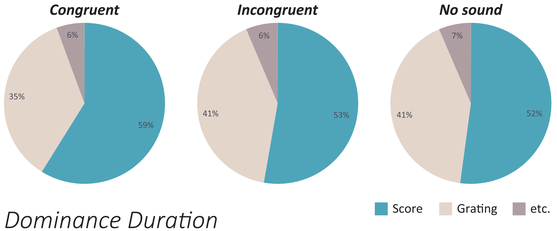
Readers People who can read music (N = 23)

Non-readers People who can't read music (N = 11)

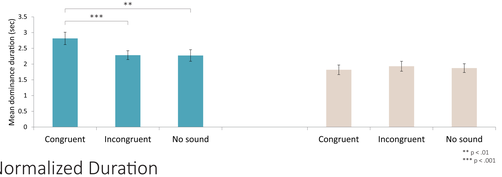
RESULTS

Readers

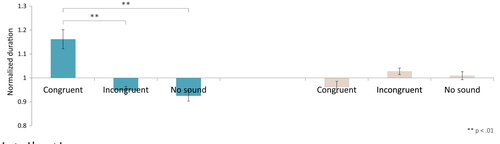
Predominance



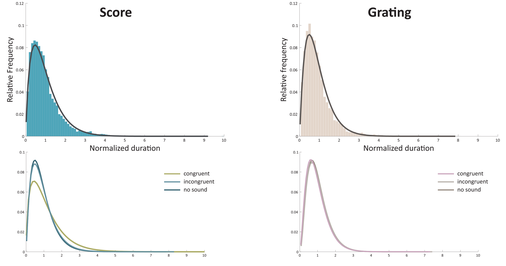
Dominance Duration



Normalized Duration

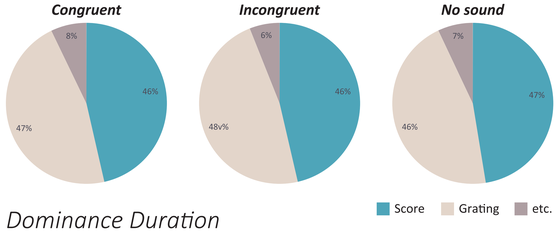


Distribution

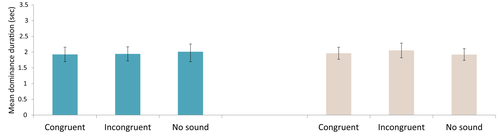


Non-readers

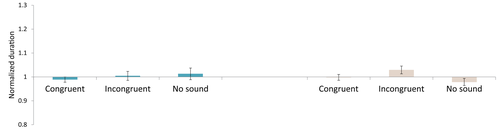
Predominance



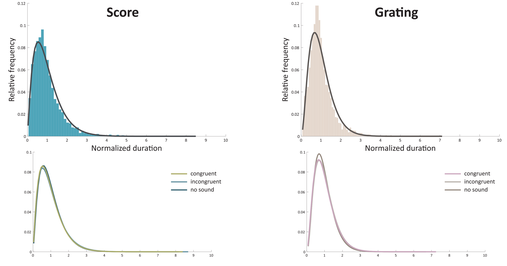
Dominance Duration



Normalized Duration

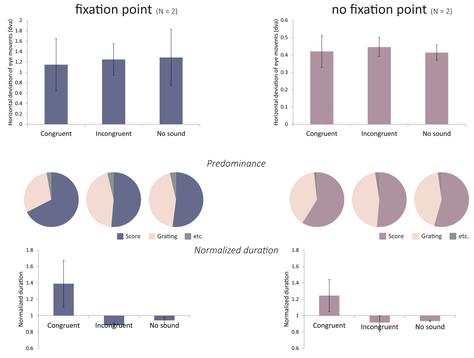


Distribution



No difference in eye movements across conditions

Eye viewing score (Readers)



CONCLUSION

These results imply that learned associations between structured auditory information and abstract visual representations of that information can impact binocular rivalry dynamics. These results comport nicely with models of rivalry based on Bayesian inference (Hohwy et al., 2008).

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