Absolute pitch impacts visual awareness of musical scores accompanied by auditory melodies during binocular rivalry

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Individuals with absolute pitch (AP) are able to identify or reproduce a given musical note without the benefit of a reference tone (Deutsch, 2013). They tend to utilize AP when matching visually presented musical scores with auditorily presented melodies, showing poor performance in recognizing a shifted tone in a transposed melody (Miyazaki and Rakowski, 2002). A previous work in our group showed that congruency between visual musical scores and auditory melodies modulated visual awareness of the musical scores during binocular rivalry (Lee et al., VSS 2014). In the present study, we further investigated whether visual awareness of musical scores accompanied by auditory *transposed* melodies is distinguishable from that of *congruent* audiovisual information for individuals with AP. Participants with the ability of reading musical scores were divided into two groups depending on the possession of AP. A sinusoidal vertical grating and one of six musical scores moving in the opposite directions were presented dichoptically. Each musical score was accompanied by congruent, incongruent, or congruent-transposed melody. Transposed melodies were either a semitone lower or higher than the noted melody. Participants tracked their rivalry perception by depressing one of two keys. Results replicated our previous work in that a visually presented musical score predominated over a competing rival stimulus when the melody congruent to that score is accompanied. However, only the AP group showed the difference in predominance of scores between the congruent and the congruent-transposed conditions. Specifically, a visual score tended to predominate less when accompanied by transposed auditory melody than when accompanied by congruent melody. The degree of reduced score predominance in the transposed condition didn’t reach that in the incongruent condition. These results suggest that individuals with AP are sensitive to a slight offset of an auditory melody from visual musical scores, which impacts perceptual dynamics during binocular rivalry.

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