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Perceived display speed helps account for the 'jitter advantage' in vection

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Abstract

Illusions of self-motion in depth ('vection') are strongly enhanced when coherent viewpoint oscillation or jitter is added to the inducing optic flow displays (Palmisano et al, 2010 *Perception* 29:57-67). The underlying cause of this "jitter advantage" is still unknown. Here we investigate the possibility that perceived speed plays a role, since other manipulations that increase perceived speed (adding stereo, using contracting rather than expanding flow) also increase vection in depth, and reducing perceived speed reduces vection. First, in a 2AFC procedure, we measured PSEs for smooth and vertically oscillating motion-in-depth displays; oscillating displays were uniformly perceived as faster. Then we used throttle and verbal measures to measure strength, duration and onset latency of vection in oscillating and smooth linear vection displays matched for real and perceived speed. The oscillation advantage was eliminated when displays were matched for perceived speed. Adding motion blur increased vection while leaving retinal speed constant. We tested whether observers were misattributing vertical motion to MID in a further 2AFC estimation of oscillation magnitude, but this was not the case. Testing with random viewpoint jitter, we found that jittering displays produced greater vection than speed-matched displays, suggesting there may be separate mechanisms driving jitter and oscillation effects.

Keywords

perceived, vection, account, advantage, jitter, display, speed, helps

Disciplines

Arts and Humanities | Life Sciences | Medicine and Health Sciences | Social and Behavioral Sciences

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