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Authors

Simpson, Nick

Mazor, Matan

Rittershofer, Kirsten

et al.

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Attraction and repulsion effects of expectation on the perception of acceleration.

Nick Simpson

UCL, London, United Kingdom

Matan Mazor

University of Oxford, Oxford, United Kingdom

Kirsten Rittershofer

Birkbeck, University College London, London, United Kingdom

Emma Ward

UCL, London, United Kingdom

Clare Press

UCL, London, United Kingdom

Abstract

According to Bayesian accounts, perception is the consequence of integrating sensory input with prior expectations, resulting in biased percepts attracted towards our expectations. Contrary to this logic, Phan et al. show that downward motion is perceived as less accelerating than upward motion: a repulsion from the expectation that downward-moving objects should accelerate. This is one of a small number of reported effects where perception is repulsed from expectation. The question then arises, what conditions result in repulsive effects, and why? Here we manipulated the expected acceleration profiles for context and object identity along the horizontal axis, asking whether we see repulsion effects similar to those observed by Phan et al. We find repulsion when expectations are related to the context in which a ball moves, but attraction when an association is made between the ball's colour and the acceleration profile. We discuss possible reasons and implications for the contradictory results.