

Biological motion perception is cue-invariant

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Previous work investigating whether biological motion is supported by local second-order motion has been contradictory, with different groups finding either a difference or no difference in performance compared to that obtained with first-order stimuli. Here we show psychophysically, using randomized-polarity and contrast-modulated stimuli, that detection of second-order biological motion walkers is worse for stimuli defined by second-order cues, but this difference is explained by a difference in visibility of the local motion in the stimuli. By mixing first-order and second-order dots within the same stimulus, we show that, when the two types of dot are equally visible, first-order noise dots can mask a second-order walker, and vice-versa. We also show that direction-discrimination of normal, inverted and scrambled walkers follow the same pattern for second-order as that obtained with first-order stimuli. These results are consistent with biological motion being processed by a mechanism that is cue-invariant.