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Capacity for movement is an organisational principle in object representations

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Abstract

The ability to perceive moving objects is crucial for threat identification and survival. Recent neuroimaging evidence has shown that goal-directed movement is important for neural object processing. However, prior work uses moving stimuli that are also animate, making it difficult to disentangle effects of movement from aliveness or animacy. In the current study, we investigated the relationship between how the brain processes movement and aliveness by including stimuli that are alive but still (e.g., plants), and stimuli that are not alive but move (e.g., waves). We examined electroencephalographic (EEG) data recorded while participants viewed static images of moving or non-moving objects that were either natural or artificial. Movement explained significant variance in neural data over and above aliveness and other variables like real world size. Movement also influenced behavioural similarity judgements, suggesting that capacity for movement is an important dimension in visual object representations in the human brain and behaviour.