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Walking dynamics of intertemporal choice

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Abstract: The notion that cognitive processes "leak" into motor output of decisions inspired much recent process-tracing research. In mouse-tracking, an increasingly popular decision-making paradigm, difficult choices lead to increased curvature of the mouse trajectories towards the unchosen option. Here we explore whether traces of a decision process can be found in its motor output in a more naturalistic setting. Our subjects performed a series of choices between a smaller reward now and a larger reward at some delay. Using Kinect camera, we recorded subjects' walking trajectories when they moved towards their preferred option displayed in one of the corners across the room. We found that deviation of subjects' trajectories from the ideal trajectory increased with delay when they preferred the "later" option, and decreased with delay in trials where the "now" option was chosen. Our results suggest that walking trajectory of a person can provide information about their ongoing thought processes.