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Intention beyond Desire: Humans Spontaneously Commit to Future Actions

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Abstract

It is an ancient insight that human actions are driven by desires. Yet it misses one mental representation, intention, with which agents regulate conflicting desires by committing to an admissible plan. Here we demonstrate four behavioral signatures of intention only observed in humans: disruption resistance as sticking with a plan despite setbacks; exclusiveness as avoiding paths with temptations of re-planning; deliberation as the gradual emergence of a commitment plan; temporal leap as forming future plans before finishing the current one. Humans were compared against an optimal model formulated as Markov Decision Process (MDP), who acts only to maximize expected future rewards. Conflicting desires are defined as a reward function returning positive rewards for multiple states. It showed none of the behavioral signatures of intention. These results reveal that humans regulate conflicting desires with intentions, which directly drive actions.