Maladaptive Pavlovian bias over decision-making in human sign- and goal-trackers

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Résumé

Individuals can differ significantly in how they respond to environmental cues that predict rewards. Two distinct profiles have been identified in Pavlovian learning: sign-trackers, who are drawn to the conditioned stimulus (CS), and goal-trackers, who focus on the reward location. Sign-trackers attribute incentive value to the CS, which can bias their decision-making, potentially leading to maladaptive choices. This study investigates whether sign-trackers, as compared to goal-trackers, exhibit a greater Pavlovian bias in decision-making using a decision-making task with a learned optimal strategy. Results revealed that sign-trackers were susceptible to the Pavlovian bias even when this was altering their decisions in favor of the suboptimal choice. In contrast, goal-trackers maintained the optimal decision-making strategy. Computational modelling revealed that this bias in sign-trackers stems from slower updating of cue values rather than overvaluation of cues. These findings highlight how Pavlovian cues can lead to suboptimal decision-making in sign-trackers and may have implications for understanding vulnerability to disorders such as addiction.

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