

Suboptimality and Metacognition in Human Sequential Planning

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Presentation Abstract Summary People are naturally good, yet suboptimal, at various sequential planning tasks. While human planning is still not well understood, computational approaches for suboptimal planning, such as agent-centered search, are extensively studied. In agent-centered search the agent searches for an incomplete strategy and re-plans when necessary. Here we present data collected from 11 subjects who played a natural planning game. Our contribution is twofold. First, we provide initial evidence that subjects follow incomplete strategies, as in agent-centered search. Subjects tend to perform a slow move, followed by a series of rapid moves, which indicates that on some steps subjects devise a plan and execute it on consecutive steps.

Second, our results show evidence for a meta-cognitive process of error-monitoring. We show that subjects react slower when they are about to make mistakes and tend to forfeit a puzzle only when they drifted far away from the goal. In this work, we characterize human suboptimal behavior and also provide important evidence that people rely on partial strategies and error-monitoring in a sequential planning task, which is natural, a planning domain that is rarely studied.

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