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Undoing in human planning

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Abstract

From writing to hiking, people’s real-world sequential decision-making often benefits from “undoing” (e.g. deleting sentences or backtracking). Surprisingly, undoing has not been studied in experiments on human planning. To investigate how much, when, and why people undo, we introduce a task that is a cross between the “Traveling Salesperson” and the “Knapsack” problems with an undo option. Within a length budget, subjects sequentially connect as many dots as possible on a map. On “undo” trials, they are allowed to take back actions without constraints. We find that undoing is beneficial, that subjects exhibit great individual variability in the number of undos, that undos are more frequent after errors than after correct actions, and that long response times tend to precede sequences of undos. Together, these results suggest that undo actions serve a dual role of correcting errors and of exploring alternative paths, where path evaluation benefits from full play-outs.