Learning from Mistakes (and Repeating Them)

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Abstract

Learning to navigate in an unfamiliar environment was investigated using a way-finding task in which subjects had to keep track of previous actions (and their outcomes) in order to optimise performance. It was evaluated whether people learned from their mistakes (i.e., whether erroneous consequences of actions were remembered, leading to avoidance of these actions on subsequent trials) or tended to repeat them. Also tested was whether learning would be better when subjects could backtrack to earlier points (through the use of a "back" button) than when trials were started anew (by clicking a "home" button) after mistakes were made. Subjects did tend to repeat their mistakes. However, the number of repeated mistakes did not depend on whether a back or home button was used in learning the task.

Introduction

It has happened to all of us. Driving along a seldom-travelled route you can't remember which exit to take. You see an exit with a familiar name, but you're not sure whether it's the exit you want or the one you took the last time when you wound up in the wrong neighbourhood. Much of our lives are spent navigating unfamiliar terrain. Even in simple tasks such as trying to find a short cut or searching for information on the internet, options must be weighed, choices must be taken, and, inevitably, mistakes are made. It might be that the familiarity of the decision point, whether an intersection or a computer menu, leads us to take a remembered action while ignoring the consequences of the action. In this study we sought to document the extent to which we learn from our mistakes, or just repeat them.

One account of how we learn from errors is that of Ohlsson (1996). In his model, learning is based on identifying that something has gone wrong, the point where things went wrong, and some feature which modifies the description of the situation in which the mistake was made so that the incorrect action will not be taken again. Task descriptions that led to the mistake remain in memory, supplemented by the more complete task descriptions that are created in response to an error. Thus, errors can still occur when an incomplete situation description is used.