Strategies and Subgoals: Planning and Execution in The Tower of Hanoi

In the experiment presented here, isomorphs of the Tower of Hanoi are used as the vehicle for examining issues relating to strategy development and execution as a function of subgoal depth. The results indicate that the structure of the Tower of Hanoi (across isomorphs) seems to give rise to a hierarchical representation of the problem elements (disks), thereby leading the problem solver to a solution strategy that places the focus on the most extreme element. As a result of this bias, otherwise identical problems show differences in difficulty based upon the depth of subgoaling required to correctly place the most extreme element (largest disk). A closer examination of the data suggests that maintaining an extra level of subgoaling in memory makes it more difficult to successfully execute the first move correctly. This results in longer solution times and a tendency for decreased accuracy (number of moves to solve).