Restricted Access to Working Memory Does Not Prevent Cumulative Improvement in a Cultural Evolution Task.

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Abstract

Some theories propose that human cumulative culture is dependent on System 2 cognitive processes. We aimed to restrict access to adults executive functions via a dual-task paradigm, to assess whether this reduced their ability to improve upon information provided by a computer model. 206 participants completed a grid-search task in conjunction with a working-memory task and a matched control, with the aim of outperforming an example attempt observed vicariously, presented on the computer. Participants behaviour was then used to simulate the outcome if the task was iterated over multiple generations. Simulations run using the data showed that, across all conditions, participant behaviour would lead to cumulatively increasing scores over successive generations. However, scores plateaued without reaching the maximum. Overall, the task did not provide clear evidence that working-memory directly facilitates cumulative cultural evolution. However, differences between conditions may have been masked by offloading task demands to the concurrent working-memory task.