Confidence Ratings Improved Performance on the Tower of Hanoi Task

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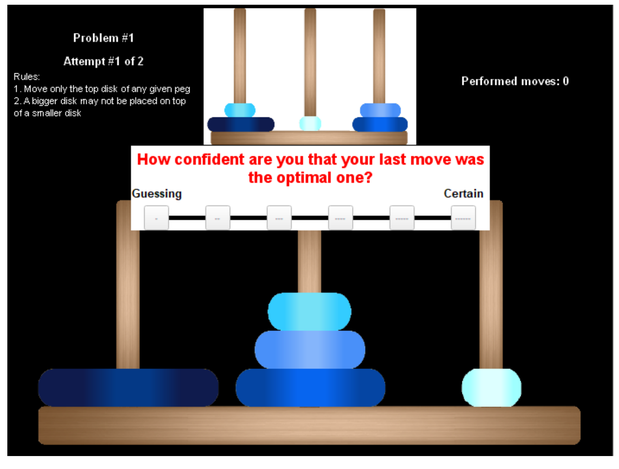
Background

- Metacognition plays a key role in how well we manage our learning.
- When people are asked to rate how confident they are in their answers during static cognitive tests (e.g., Raven's Progressive Matrices), their performance improves.
- We don't know if there is reactivity to confidence ratings in tasks that require ongoing learning.
- Before implementing confidence ratings in educational settings, we need to understand if they help students learn in more complex, dynamically evolving tasks.
- **Research Question**: Does asking people to rate their confidence affect their performance when they need to learn and adapt throughout a task?

Materials



Tower of Hanoi Task

Method

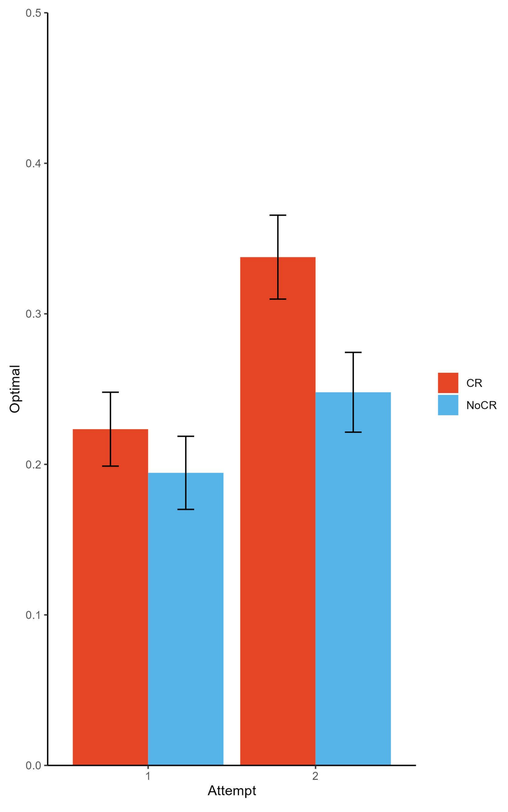
Experiment 1 (N = 112)

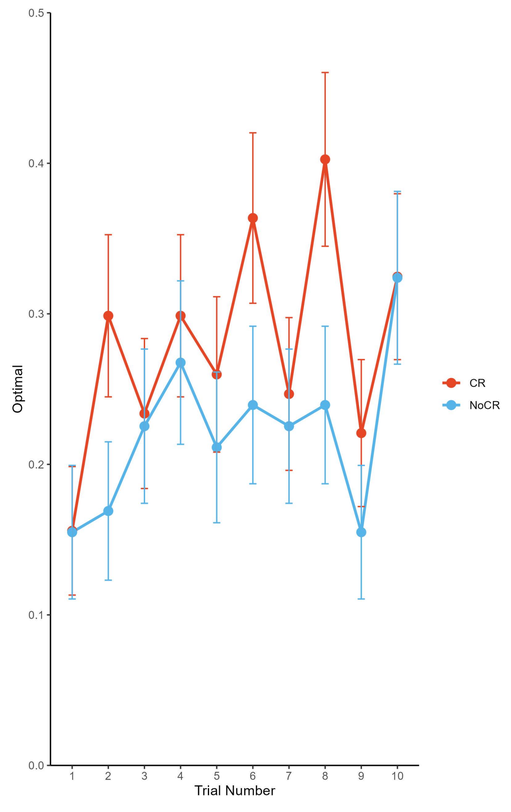
Participants completed the Tower of Hanoi (TOH) either with or without confidence ratings after each move. Each item was attempted twice.

Experiment 2 (N = 148)

Added an additional transfer item where participants qualitatively described their problem-solving procedure. Coded for number of steps (out of 4) in the optimal problem-solving procedure identified by each participant.

Results





Conclusion

- Making confidence ratings improved performance in the Tower of Hanoi Task in both experiments. Confidence ratings appeared to improve performance in dynamic evolving tasks.
- Reactivity did not interact with attempt or item number.
- The number of self-reported optimal problem-solving steps did not differ between the confidence rating and control group.
- Confidence ratings appear to be beneficial in tasks that require ongoing learning, suggesting they may be beneficial in learning environments.
- Positive reactivity may not develop linearly with experience, instead reactivity effects appear to follow a more complex development pattern.
- Future research should evaluate transfer using additional tasks and explore the generalisability of these findings in more realistic educational settings.

Further Information

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