Intuitive Insight: Fast Associative Processes Drive Sound Creative Thinking

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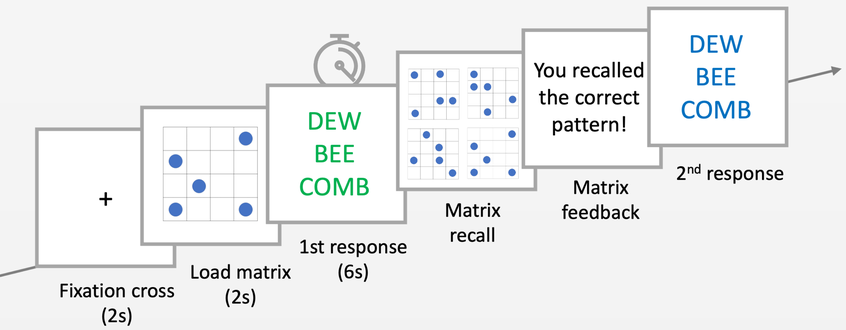
INTRODUCTION

- **Do we really need to deliberate to be creative?** Here we tested popular dual-process theories of creativity [1].
- We used the **Compound Remote Associates (CRA)** test, where participants have to find a word that connects three seemingly unrelated words (e.g., "DEW, BEE, COMB"; solution: "HONEY").
- We implemented a **two-response paradigm** [2] version of the CRA wherein participants provided an **initial, intuitive response** under cognitive load and time pressure**, followed by a final, deliberate response**.

METHODS

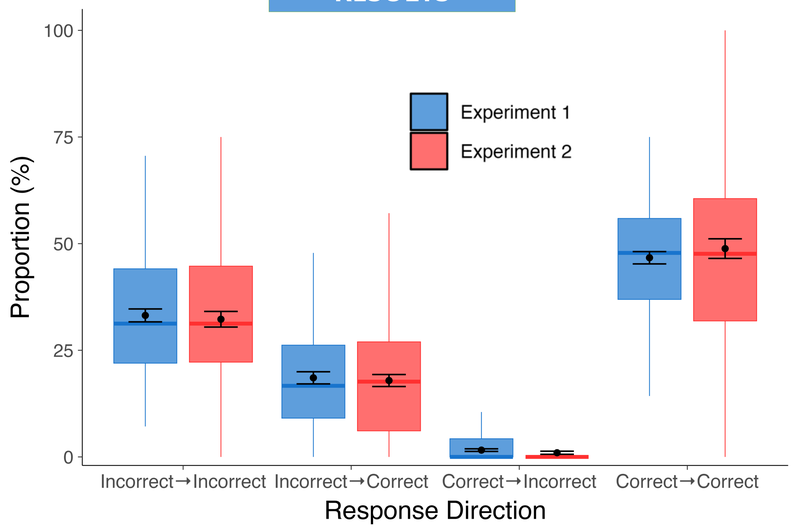


Time course of a two-response CRA trial (Exp. 2).

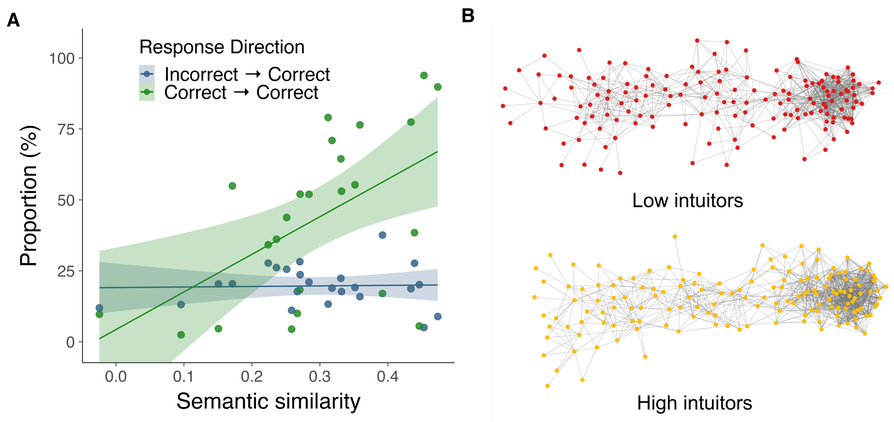
- **Two experiments**: N = 200 participants.

- Experiment 2: validation with harder deadline/load, with an **additional animal fluency task** to model differences in semantic memory structure.

RESULTS

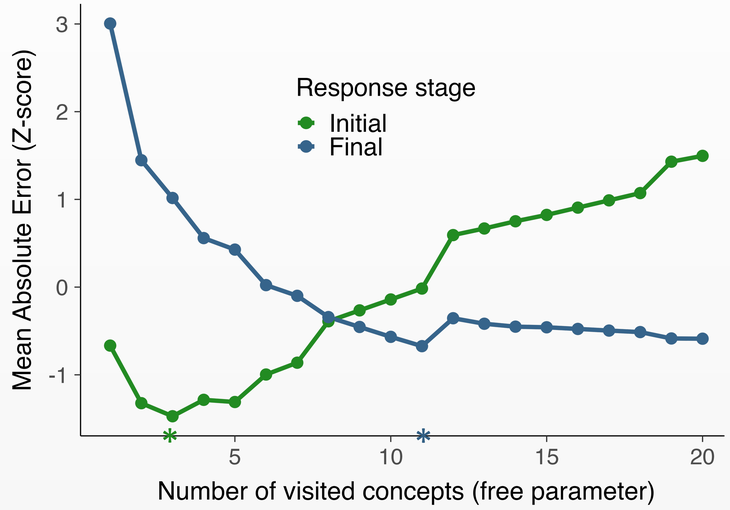


Proportion of each response direction (initial ➔ final). Middle lines show median, and error bars show SEM.



(A) **Semantic similarity** between cue words and solution word **correlates with correct intuitive responses** (p < .001)**,** but not with deliberation-only correct responses (p = .88). Error bands = 95% CI.

(B) Semantic network comparison of individuals with high vs. low intuition shows that **high intuitors'** networks are **more efficient and flexible** (Exp. 2).



Computational *spreading activation model* of CRA [3] performance by response stage (lower = better). Participants **primarily relied on concepts highly activated by cue words in the initial response stage.**

DISCUSSION

- **Correct responses** in a convergent-thinking task were **largely intuitive**, challenging dual-process theories of creativity.
- **Intuition** in CRA draws on **rapid, associative processes within semantic memory.**
- **Intuitive performance depends on** the participant's **semantic memory structure** and the **associative connections** required by each item.

References

[1] Allen, A. P., & Thomas, K. E. (2011). A dual process account of creative thinking. *Creativity Research Journal*, *23*(2), 109–118.

[2] Thompson, V. A., Prowse Turner, J. A., & Pennycook, G. (2011). Intuition, reason, and metacognition. *Cognitive Psychology*, *63*(3), 107–140.

[3] Schatz, J., Jones, S. J., & Laird, J. E. (2022). Modeling the remote associates test as retrievals from semantic memory. *Cognitive Science*, *46*(6), e13145.

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