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Distinguishing response strategies in continuous response tasks: A geometric LBA approach

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Background

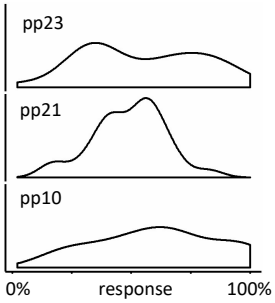
How do people categorize a continuous response interval?

Participants indicated that they did not distinguish among all possible response options, but rather **categorized possible responses** and chose among them.

Aim

To elucidate such categorization and to see whether we can **distinguish these different response strategies** using an LBA model combined with the geometric framework developed by Kvam (2019).

Overall response distributions

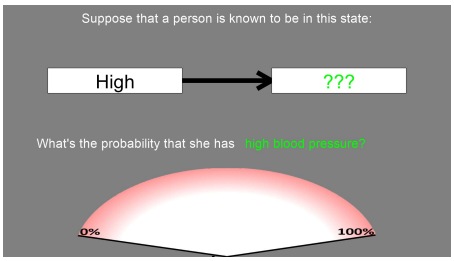


Task

- Causal reasoning task
- 9s response interval
- 3-variable causal structures
- Response by joystick movement

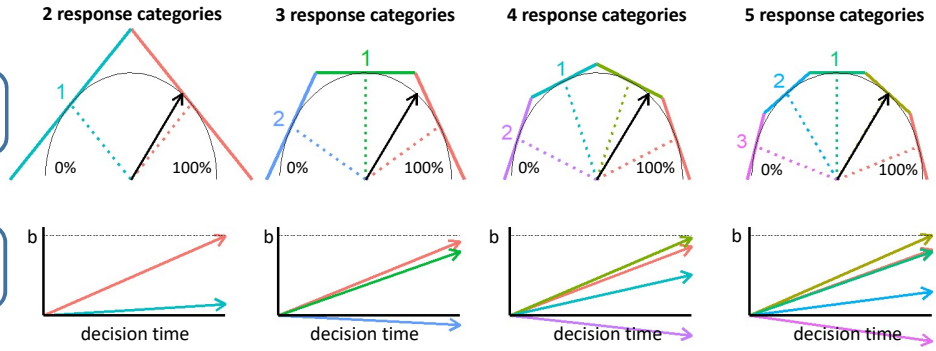
1. learn relationships

2. judge probabilities of events



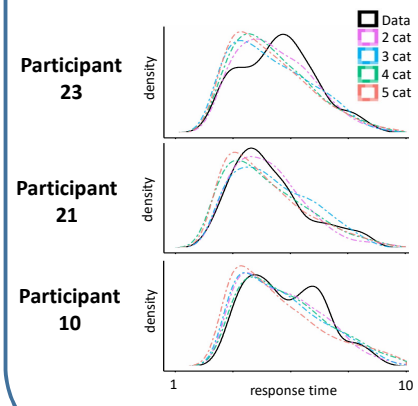
Model

- **2 evidence dimensions** evidence for high response is evidence against low response
- **Project geometric drift rates on response axes** (dashed lines)
- Separate accumulator for each response category
- **Symmetric constraints** on LBA parameters
- **Fitted per correct target category**

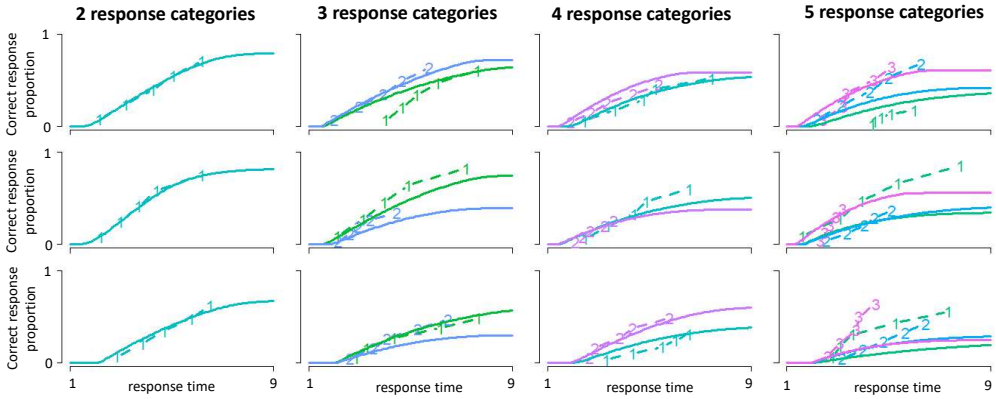


Preliminary results

Overall RT distributions



defective cumulative distributions



Conclusions

- The model with 2 response categories has best fit for 38 out of 41 participants. It is unlikely however that all of these participants categorize the response interval into only 2 categories
- Accumulator models may not be able to account for the observed RT distributions

Future work

- Remove symmetry constraints
- Estimate variance in driftrates
- Estimate starting point distributions
- Estimate location of thresholds
- Apply model to perceptual decision-making task

Reference: Kvam, P. D. (2019). A geometric framework for modeling decisions among arbitrarily many alternatives. *Journal of Mathematical Psychology* 91, 14-37