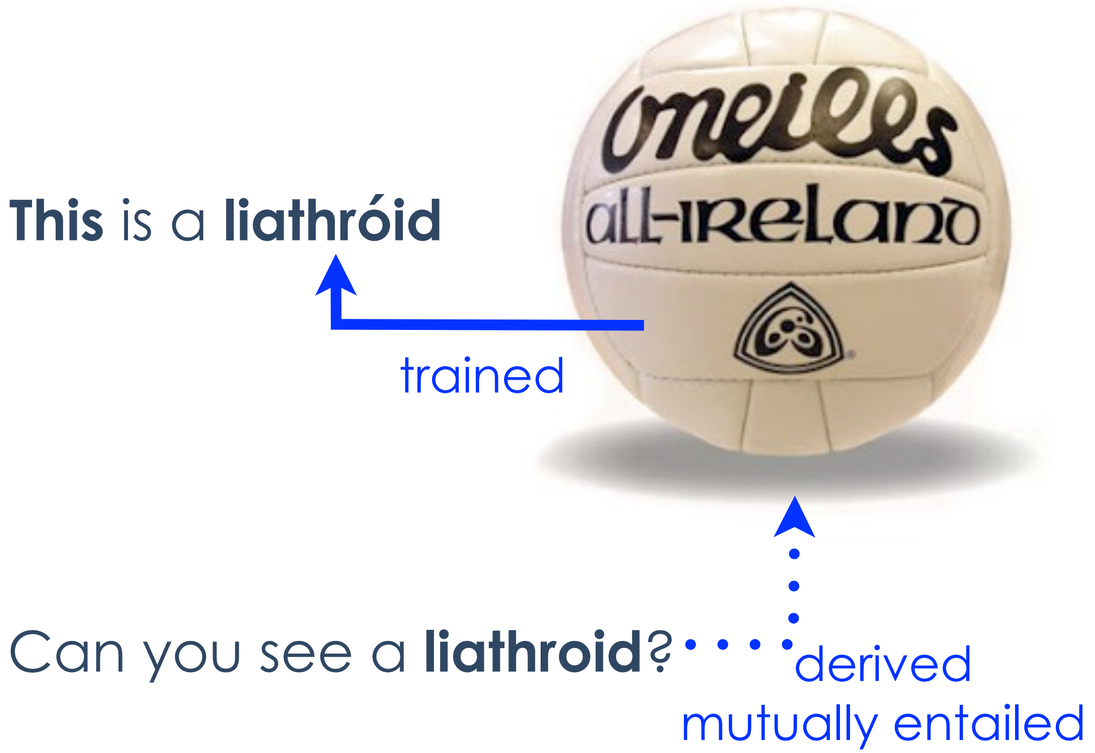
Reversing order and size judgements Mutual entailment of non-arbitrary stimulus relations

Nicola Brassil, Denis O'Hora, Ian Stewart

National University of Ireland Galway

Mutual Entailment

- Mutual entailment is a feature of relational framing
- Important for relational flexibility, executive function

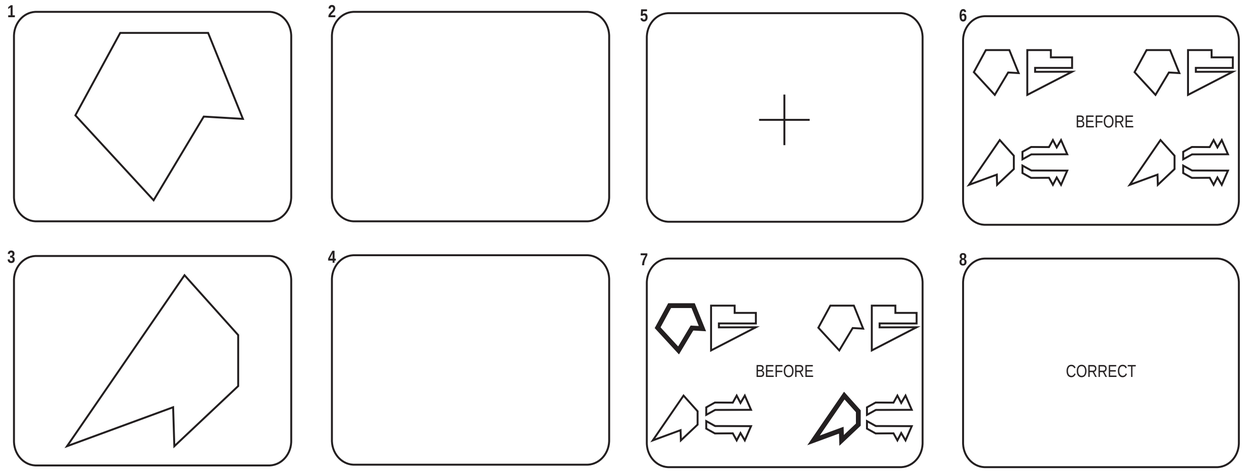


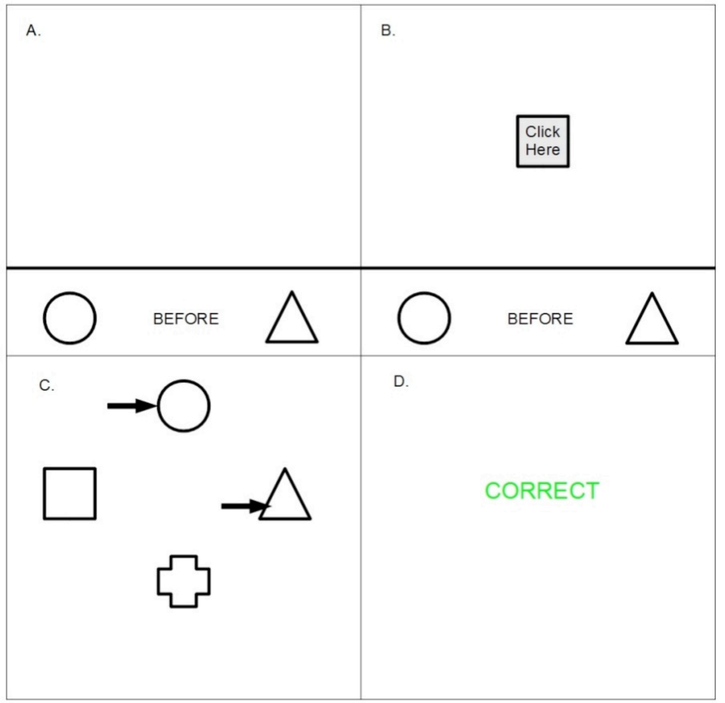
Temporal Relations

- Mutual entailment of temporal relations
  - always experienced in before direction
  - A after B is always mutually entailed

Temporal Relations

- Reversing temporal relations take time (Hyland *et al,* 12, Hyland *et al*, 13)





Nonarbitrary Relations

- Event encoding
  - event A is encoded with a timepoint x that is less than y, the time point associated with event B
  - querying time may require re-writing timepoints
- If general relational ability, then possible with other relations?

"A *bigger than* B"
"B *smaller than* A"

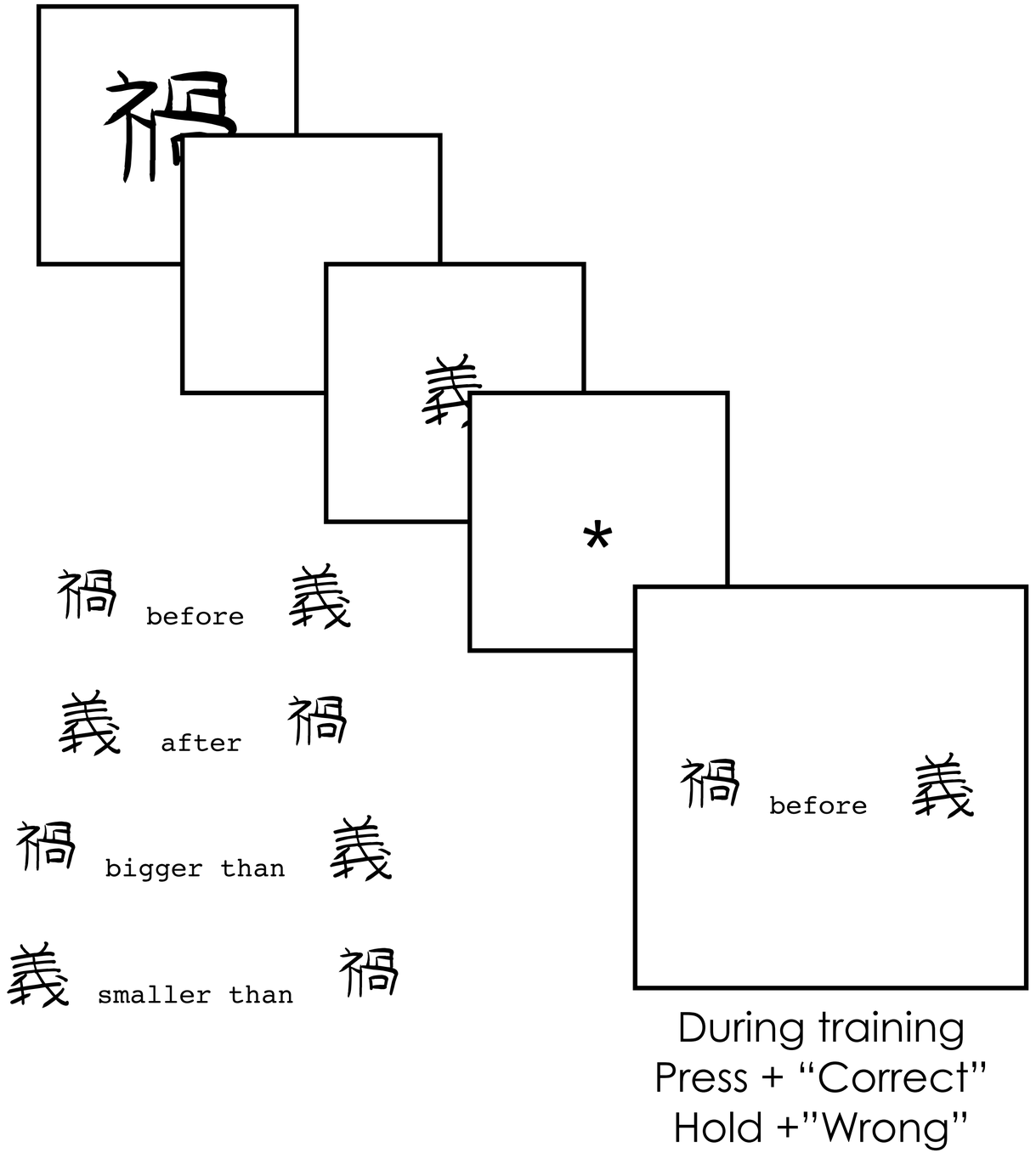
Comparison Relations

- Deriving arbitrary relations different than trained takes time
  - Steele & Hayes, 1991 (opposite, same)
  - O'Hora et al, 2002 (more, less)

"A *bigger than* B"
"B *smaller than* A"

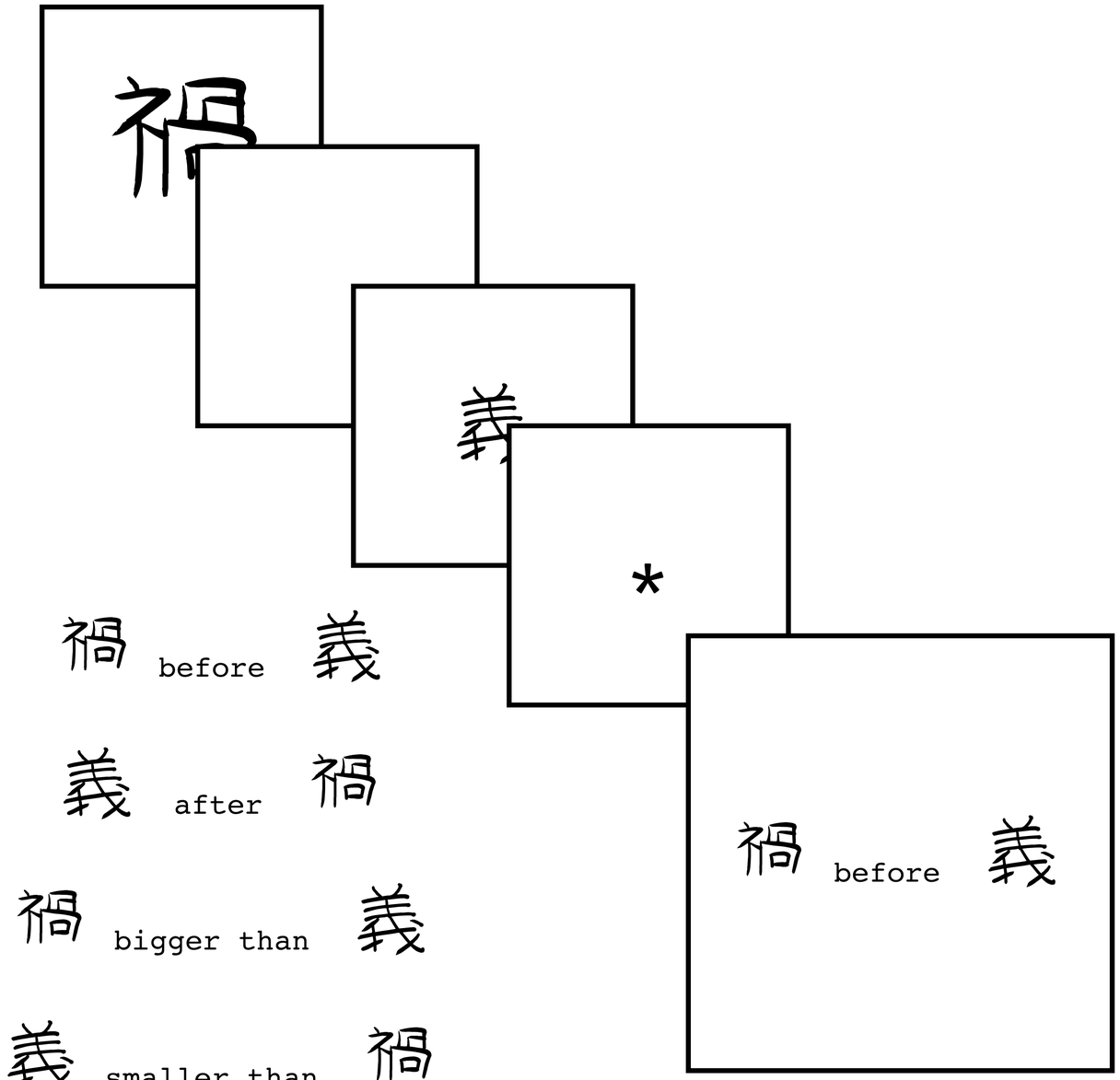
Method

- Participants
  - University Students
  - 20 *before/after* then *bigger/smaller (BABS)*
  - 20 *bigger/smaller* then *before/after (BSBA)*
- Go- No Go task
- Stimuli: GoJuOn font
  - 禍世威鬼苦



Method

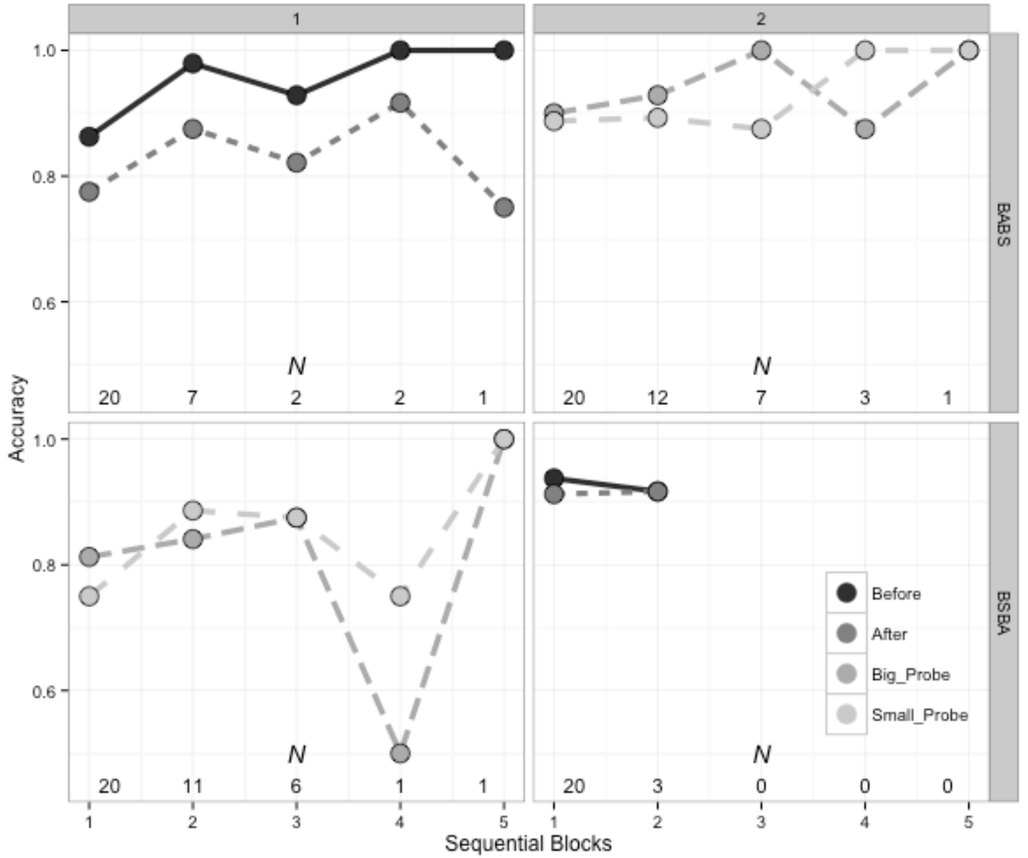
- Procedure
  - Training: Blocks of 16 trials (mastery: 15/16)
  - Test: 128 trials

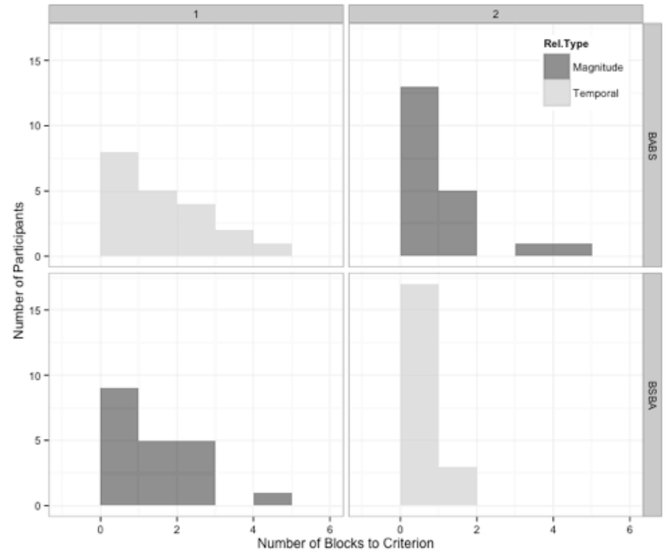


During training
Press + "Correct"
Hold +"Wrong"

Results

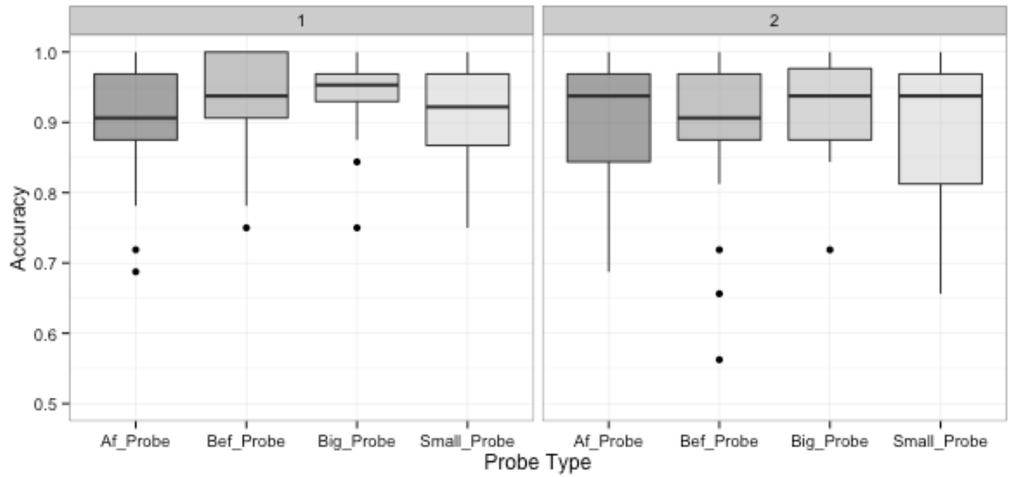
- Acquisition (training)
  - *before* easier to acquire than *after*
  - *before/after* easier to acquire than *bigger/smaller*

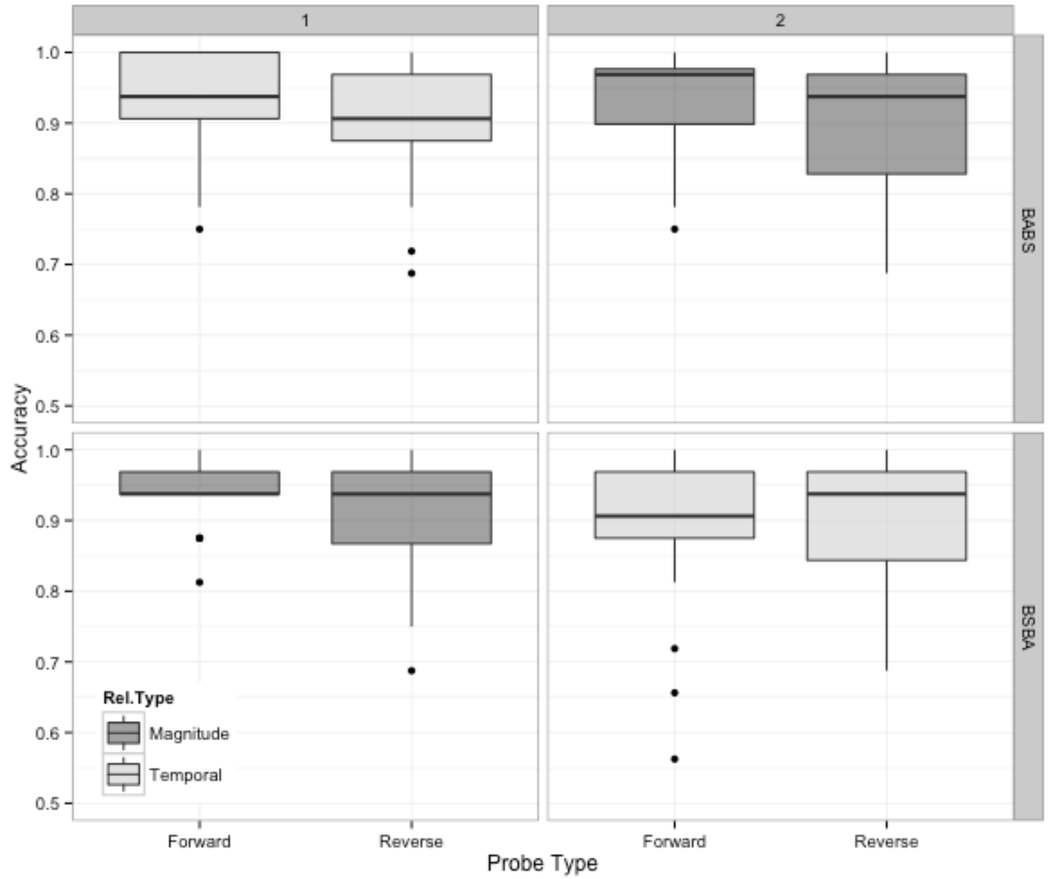




Results

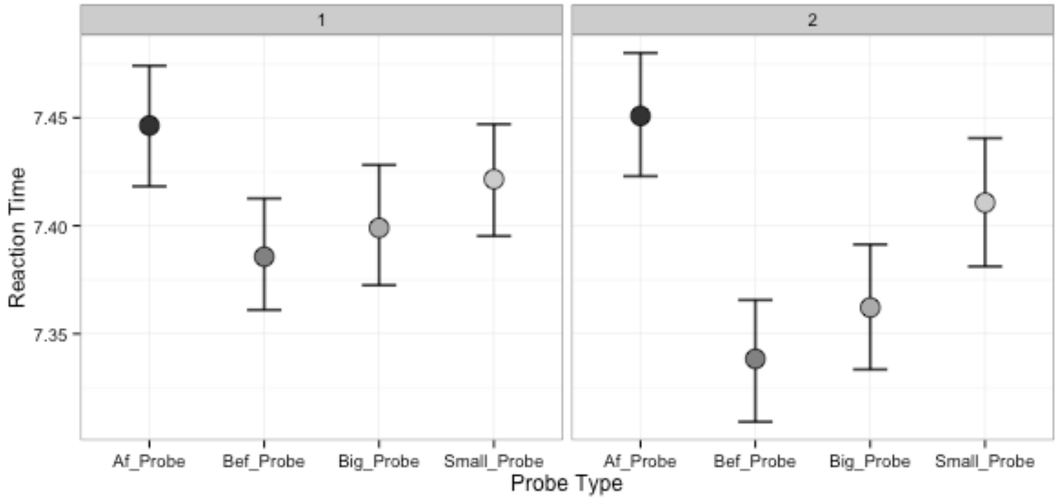
- Accuracy (testing)
  - *decrease in accuracy* across exposures
  - reversed relations *less accurate* than forward relations
  - no difference across relational frame types (i.e., magnitude vs temporal)

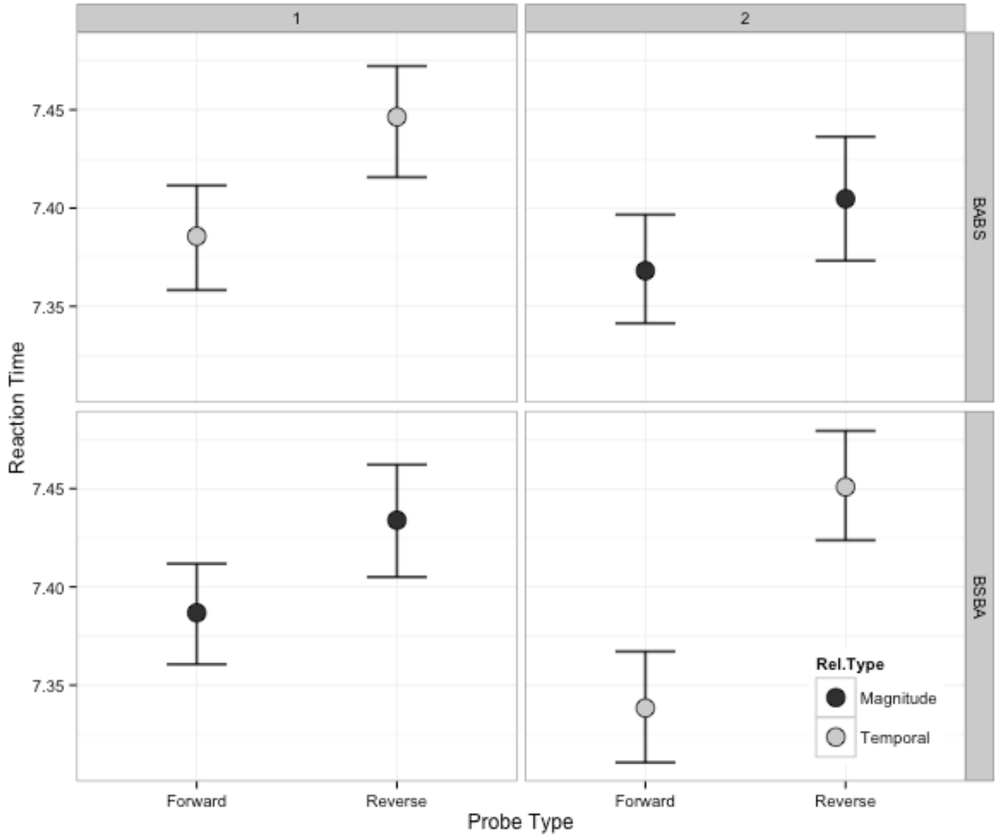




Reaction Times

- Data restrictions:
  - log(RT)
  - Participants over 80%
  - Accurate probe responses only
- *after* slower than *before*
- *bigger* faster than *smaller* at order 2
- Reversal effect for both relational frames, stronger for temporal relations at second test





Discussion

- Reversal effects observed for *bigger/smaller* and *before/after*
- Reversing observed relations an example of *very basic pragmatic verbal analysis*
  - *verbally identify physical relation*
  - *reverse order of events in report*

Discussion

- Interesting order effects
  - temporal order effect stronger when tested second
  - bigger/smaller exposure desensitise temporal characteristics?
  - bigger/smaller difference greater when tested second too
  - relational “stroop” effect?