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Meaning can be Accessed for the Groundside of a Figure

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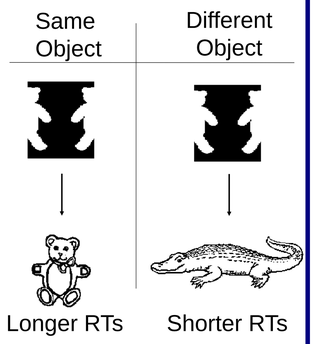
Introduction

- Figure-ground perception entails inhibitory competition between possible objects across a border
- Response to the shape of the loser is suppressed [1]
  - Evident at 83ms SOA, not ≥ 100ms

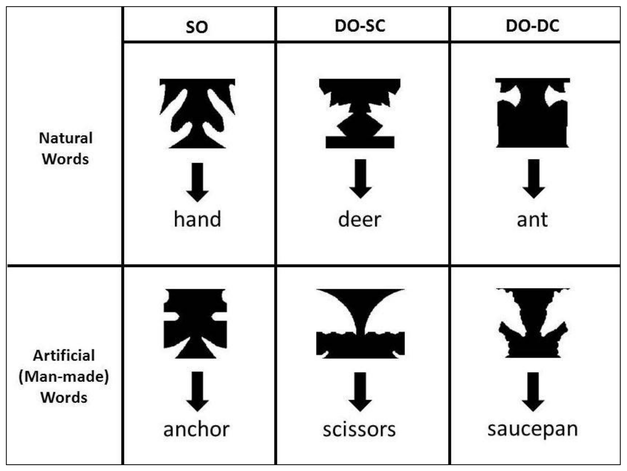


Are semantics of the losing competitor accessed as well?

Different predictions on feedforward vs. recurrent architectures

Methods

- Task: categorize words as naming natural/artificial objects
  - Words followed silhouettes with familiar shapes suggested but not perceived on the groundside
- Conditions: same object (SO), different object, same category (DO-SC), different object, different category (DO-DC)

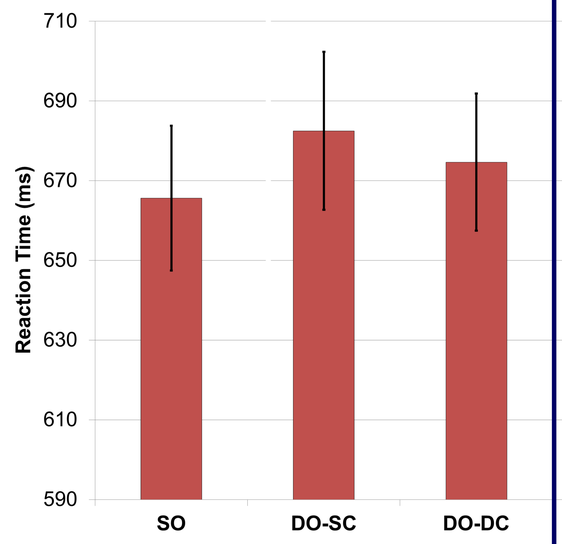


- Predictions: if meaning is accessed for groundside and:
  - suppressed: slower RTs for SO & DO-SC than DO-DC
  - not suppressed: faster RTs for SO & DO-SC than DO-DC

Results

Words Only

- Goal: equate RTs for words across conditions



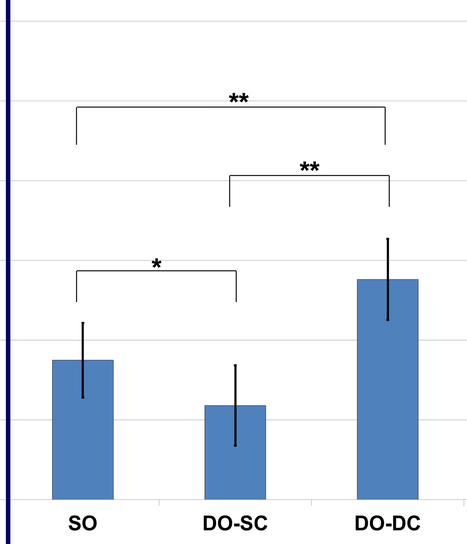
- No effect of condition

* $p < .05$

** $p < .01$

Words + silhouettes: 83ms SOA

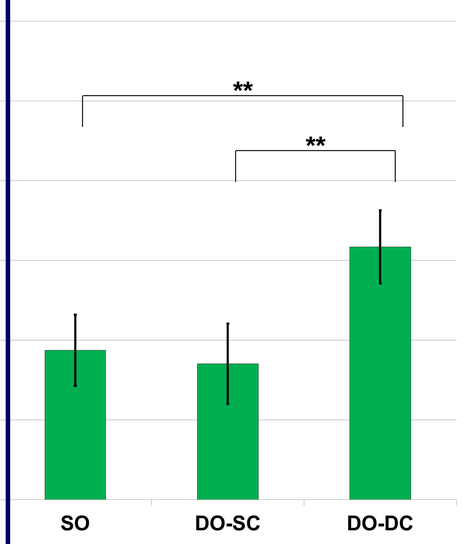
- At SOA when shape is suppressed, is meaning suppressed or facilitated for groundside?



- Meaning is accessed for groundside of silhouettes [2]
  - DO-SC & SO faster than DO-DC
  - SO longer RTs than DO-SC
    - Due to suppression of shape?

Words + silhouettes: 166ms SOA

- At longer SOA when shape is no longer suppressed, does difference between DO-SC and SO disappear?
- Is meaning still facilitated?



- Meaning is accessed at longer SOA
  - DO-SC & SO faster than DO-DC
  - Equal facilitation of SO & DO-SC
    - Shape no longer suppressed

References:

1. Peterson & Skow (2008). *JEP: HPP*, 34 (2), 251-267.
2. Sanguinetti & Peterson (2012). VSS Talk: Object recognition: categories. Tue 5/15 2:30-4:30pm.
3. Sanguinetti, Allen, & Peterson (2012). Unpublished manuscript.

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Conclusions

- The semantics of familiar objects that are suggested **but not perceived** in the ground are accessed
- Unlike shape, semantics facilitated, & effects are long-lasting (for consistent ERP evidence, see [3])
- Familiar object on groundside loses competition for shape perception, but results are not relayed to the semantic level
- Results support recurrent architecture
  - Meaning accessed prior to figure assignment