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Accessing meaning for the groundside of a figure: How long does it last?

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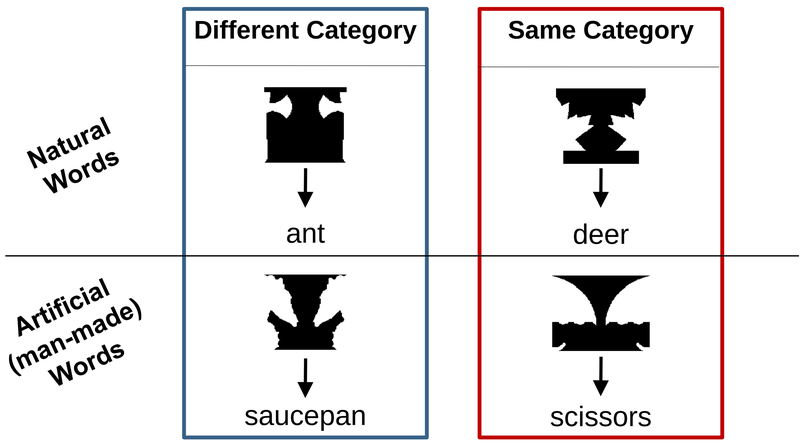
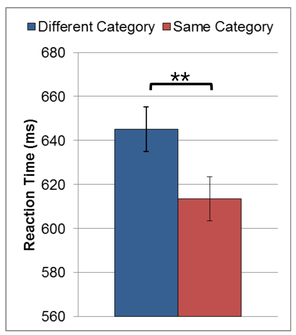
Background

- Figure-ground perception entails inhibitory competition between possible objects on opposite sides of a border
- Previous study[1]: Are the semantics of the competing objects accessed before figure assignment?
  - Strategy: Assess whether semantics of loser are accessed
  - Task: categorize words as naming natural/artificial objects
  - Words followed silhouettes with real-world, familiar shapes suggested but not perceived on the groundside
  - 83 ms silhouette-to-word SOA





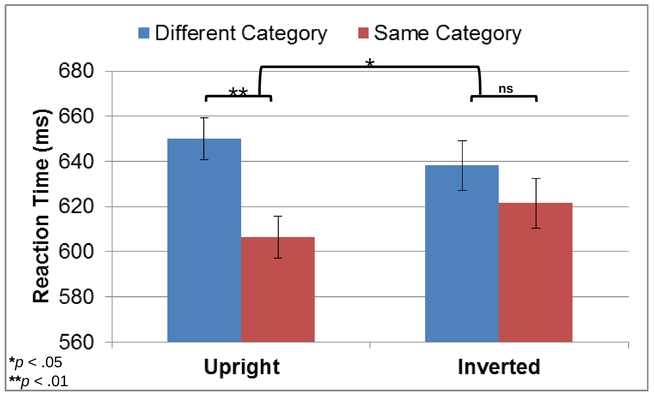
- Faster responses in same vs. different category condition
- **Explanation:** Semantic priming from shape suggested — but not perceived — on the groundside of the silhouette
- **Alternative explanation:** Same/different category difference due to differences in curvilinearity of the borders of the silhouettes
  - Curved borders suggest natural objects; straight borders suggest artificial objects

Current Experiment

- Control for curvilinearity by presenting silhouettes upright and inverted
  - If semantic access, should only see difference between conditions (same/different category) when silhouettes are upright
  - If silhouette borders, should see same/different category difference in both orientations
- Investigate longevity of semantic access
  - Effects previously found with a silhouette-to-word SOA of 83 ms; here, test longer SOAs

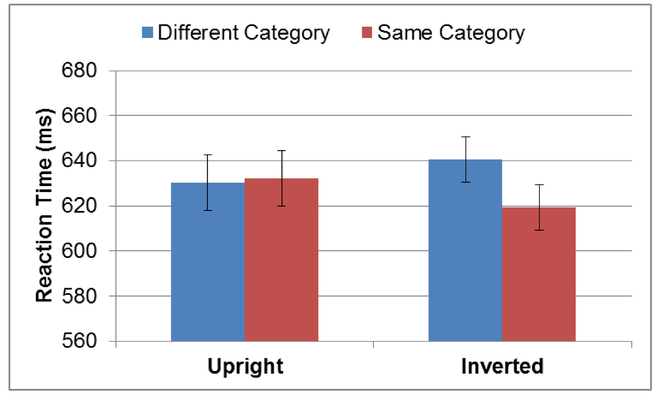
Results

133 ms SOA



- Faster same vs. different category responses for upright, not inverted silhouettes
- Semantics accessed for object suggested in ground
- Still measurable at silhouette-to-word SOA of 133 ms

166 ms SOA



- No difference between conditions for upright or inverted
- Evidence of semantic access for object suggested in ground is not observed with SOA of 166 ms

Conclusions

- Meaning for familiar objects that are suggested but not perceived on the groundside of figures is accessed before figure assignment!
- Evidence of semantic access persists at a133 ms silhouette-to-word SOA, but is not measurable at a 166 ms SOA
- Inverting silhouettes eliminated the effect. Facilitation observed is not due to shape/curvilinearity of the border.
- Contrary to traditional assumptions that semantics are accessed only after figure assignment and only by figures
- Consistent with view that potential objects on opposite sides of borders are processed to high levels in a first pass of processing

References

1. Peterson, Cacciamani, Mojica, & Sanguinetti (2012). Meaning can be accessed for the groundside of a figure. Journal of Gestalt Theory, 34(3), 297-314.

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