An Optimal Viewing Position for Object Processing

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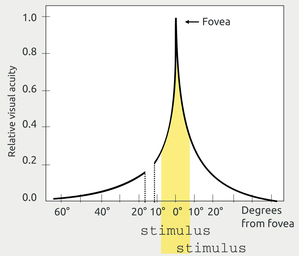
Introduction

Optimal viewing position (OVP)

Word processing is most efficient when initially fixating at the word's **center**, or **just to the left** of it [1]

Underlying mechanisms

- Visual-acuity drop-off with eccentricity [2]



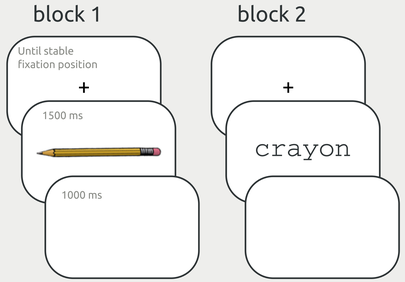
- Language-related constraints, such as the fact that ...
  - In Western languages, we read from left to right [3]
  - The left hemisphere is specialised in language [4]
  - Visual ambiguity + lateral masking = minimal ambiguity [5]

Research questions

- Is there also an OVP for object processing? [cf. 6,7,8]
- If so, do OVP effects differ between words and objects?

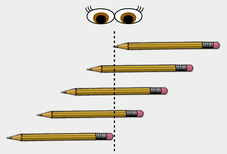
Methods

Object-/ word-naming task



Independent variables

- Stimulus type
- Initial-fixation position



Dependent variables

- Verbal responses
- Eye-movement behaviour

Furthermore

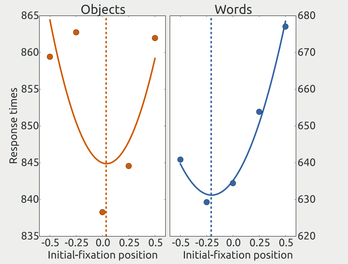
Participants: 30 naive, French-speaking, right-handed observers with normal or corrected-to-normal vision.

Stimuli: 105 picture-word pairs. Word length ranged between 4-8 letters (width 3.41-6.82°). Picture width was matched.

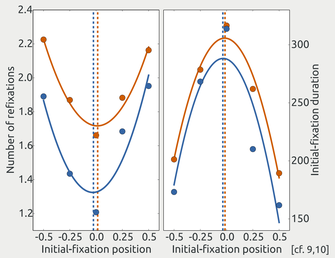
Design: Initial-fixation position was varied according to a Latin-square design. Stimulus type was blocked (counter balanced).

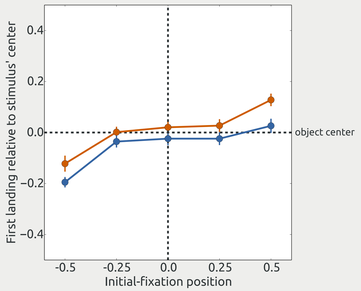
Results

Verbal responses



Eye-movement behaviour

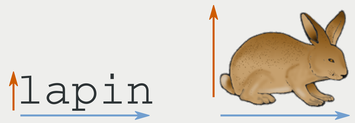




Discussion

We found

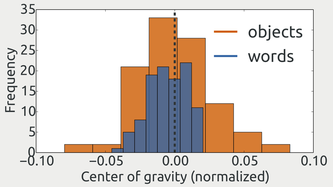
1. **An OVP effect for object processing** [cf. 6,7,8]
   - Visual-acuity drop-off with eccentricity influences OVP for both stimulus types
2. **But weaker for objects than for words**
   - X-coordinate of fixation position might be less crucial for objects than for words. Y-coordinate may compensate



3. **No leftwards bias for objects**
   - Language-related constraints do not play (a large) role in object processing

However

- We believe there might be an altenative, very **low-level** explanation
- Different distributions of **center of gravity** for objects and words
  - Distribution is wider spread for objects than for words
    - Stronger OVP effects for words than for objects
  - Distribution is biased to the left for words but not for objects
    - For words, OVP is just to the left of the word's center



Future research

To investigate whether a stimulus is actually most optimally processed when fixating its center of gravity, rather than its absolute center

Selected references

[1] O'Regan et al. (1984). *J Exp Psychol Hum Percept Perform, 10(2)*, 250-257.
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[4] Brysbaert (1994). *Behav Brain Res, 64(1)*, 151–161.
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[10] Vitu et al. (2001). *Vis Res, 41(25-26)*, 3513–3531.