Taking the accent off accessories: De-accenting as a cue during reference resolution

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Background

Certain symmetric configurations routinely allow de-accenting of novel elements, e.g., *farmer*$_1$ in (1) from Rooth (1992).

(1) An AMERICAN farmer$_1$ met a CANADIAN farmer$_2$.

(1) can be uttered without preceding context (e.g., beginning a story or joke). We would expect *farmer*$_1$, as head of a new NP, to be accented. Instead, both instances of *farmer* are de-accented, highlighting the contrast between the accented adjectives.

Previous studies (e.g., DTC) have shown that listeners use de-accenting as a cue to givenness. But, how does de-accenting function in (1), where the de-accented noun is *not* given? Intuitively, it facilitates the contrastive reading, though it is not immediately clear why. A second question concerns accent type and contrast. Pierrehumbert and Hirschberg (1990) posit a contrastive interpretation for L+H* (see WTG and I&S for experimental support). In (1), however, shift of prominence to the adjective, with nominal de-accenting, seems to convey the contrast; the accent can be an ordinary H*.

We tested the effects of de-accenting in similar sentences by monitoring eye movements in a computerized visual world experiment. On each trial, two different scenes depicting pairs of animals wearing accessories appeared on the screen. Participants heard a recording of a speaker describing the target scene (e.g., *There's a cow with shoes and a pig with glasses*). The task was to click on the correct picture.

Design & Predictions

Three experimental conditions: early vs. late lexical disambiguation, plus disambiguation via de-accenting

• **De-accented**:
"There's a COW with shoes, and a PIG with shoes."
Display: Cow/shoes and pig/shoes; cow/shoes and pig/glasses
→ **both accessories are de-accented**
→ **POD where first accessory is recognized as de-accented**

• **Accented Late Lexical**:
"There's a COW with SHOES, and a PIG with SHOES."
Display: Cow/shoes and pig/shoes; cow/shoes and pig/glasses
→ **both accessories are accented**
→ **POD at second accessory**

• **Accented Early Lexical**:
"There's a COW with SHOES, and a PIG with GLASSES."
Display: Cow/shoes and pig/glasses; cow/shoes and horse/hat
→ **both accessories are accented**
→ **POD at second animal**

Predictions:

If de-accenting is a useful cue, reference resolution in the de-accenting condition should be faster than in the late lexical condition.

De-accenting vs. early lexical: no clear prediction
Early lexical, De-accented < Late lexical

Methods

20 participants from the University of Rochester were paid to participate.

Each participant completed 24 experimental trials (8 per condition) and 24 filler trials.

Response choices and reaction times were recorded.

Participants were eye-tracked throughout the experiment using a head-mounted Eyelink II eye-tracker. Fixations to each pair of animals were automatically coded by ExBuilder software.

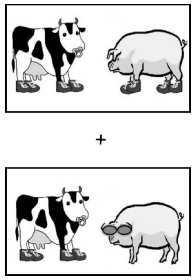


Figure 1. An example of the experimental displays.

The pairs of animals were presented inside boxes, at the top and bottom of the screen.

Results

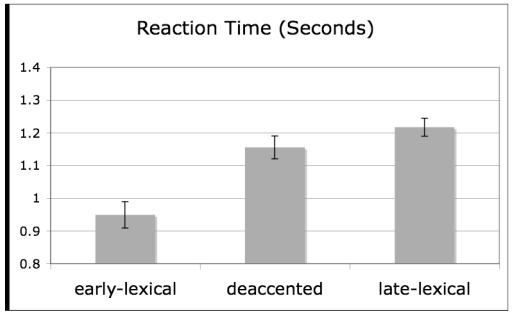


Figure 2. Average reaction time to select correct picture, as measured from the onset of the second accessory in the sentence (e.g. shoes).

A single factor ANOVA showed a significant effect of accent pattern type on reaction time ($p < 0.0001$). As predicted, participants took the longest to respond in the late lexical disambiguation condition. They were faster to respond in the de-accented condition, and even faster in the early lexical disambiguation condition.

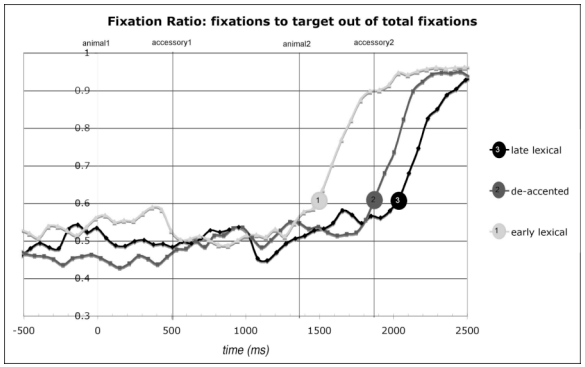
A planned t-test confirmed that the difference between the de-accented condition and late lexical condition was significant ($p < 0.05$).

Results

Figure 3. Proportion of fixations to the target picture, by condition. Vertical lines represent the onsets of the nouns.

The eye-tracking data show the same pattern as the reaction times.

Crucially, in the de-accenting condition, looks to the target begin to increase **before** information about the final accessory is available. This indicates that the accent pattern on the first three nouns provided disambiguating information, and that listeners were able to use that information to identify the referent.



Conclusions

• De-accenting made a difference to listeners; they were able to disambiguate before the final noun in the de-accented condition.

• The effect of de-accenting shows up relatively late, well after the de-accented word itself. We suspect this is due in part to the fact that prominence, and lack of it, are inherently relational notions (unlike segments, which can be recognized sequentially).

• It may be more accurate to think of the prominence pattern as a whole shaping interpretation, rather than de-accenting of an individual element.

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This research was funded by NIH grant HD 27206.