## Anticipatory deaccenting in online language comprehension: A phonemic restoration study

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Most studies characterizing the contributions of prosodic and lexical cues to online language comprehension have found relatively weak effects of prosody [e.g. 1]. However, typical language processing studies may exaggerate the reliability of lexical information relative to prosodic information. In real life, speech errors, noise, and increased uncertainty about how a sentence will unfold reduce the reliability of lexical information. Preceding prosodic patterns may play a larger role in such cases, allowing listeners to "fill in" lexical information they have missed.

The present study investigates these questions within the domain of *anticipatory deaccenting* [2]. Although nouns are normally deaccented only when contextually given, context-new nouns can optionally be deaccented in anticipation of their repetition within a parallel construction, as in [i]. Because both [i] and [ii] are felicitous, however, anticipatory deaccenting is a *valid* but *unreliable* cue to upcoming parallel information structure. We therefore predict that partially masking the second occurrence of a repeated noun in a parallel construction should increase the contribution of anticipatory deaccenting to information-structural expectations.

To test this hypothesis, we adapted the phonemic restoration paradigm [3,4] in a visual world experiment ($n$=16). Participants followed spoken instructions to move a target object (e.g., a square with a mouse) to one of two destination objects that either had the same post-nominal attribute as the target object (e.g., a triangle with a mouse) or a different post-nominal attribute rhyming with the target attribute (e.g., a triangle with a house). Half of the instructions were produced with deaccented object attributes [iii] and half were produced with accented attributes [iv]. Crucially, lexical ambiguity in the destination attribute was introduced by replacing the initial consonant with a cough (e.g., *#ouse*). Any residual bias toward one lexical interpretation over the other in individual items was quantified in a norming study.

Reaction times, responses, and fixation patterns provided novel converging evidence that anticipatory deaccenting guided participants' interpretation of the ambiguous attribute. Each dependent measure (log reaction times measured from utterance offset, response choices, and the logit-transformed ratio of the proportion of fixations to the same-attribute destination over the proportion of fixations to both destinations) was analyzed with a multi-level regression model containing accent pattern, trial number, baseline item bias, response, and their interactions as fixed effects, and by-participants and by-items intercepts and slopes as random effects. Even after accounting for other contributions to the variance, deaccented items elicited faster response times ($p$<0.05), more selections of same-attribute destinations ($p$<0.05), and more fixations to same-attribute destinations shortly following the onset of the second attribute ($p$<0.005) than accented items. Further, effects of deaccenting were strongest early in the experiment, crucially demonstrating that the significant effect of prosodic condition was not based on contingencies within the experiment.

These results suggest that expectations from preceding prosody play a crucial role in word identification during online language processing when segmental information is degraded or ambiguous. Furthermore, this study establishes deaccenting as a rich domain for future quantitative investigations of cue-integration theories explicitly manipulating the relative reliability of different cues.

**Examples**

i. Move the SQUARE with a [mouse]$_d$ to the CIRCLE with a [mouse]$_d$.
ii. Move the SQUARE with a MOUSE to the CIRCLE with the [mouse]$_d$.
iii. Move the SQUARE with a [mouse]$_d$ to the CIRCLE with a [#ouse]$_d$.
iv. Move the SQUARE with a MOUSE to the CIRCLE with a #OUSE.

**References**

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