

Deaccenting in Language Comprehension: a Phonemic Restoration Study

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In a discourse-new noun phrase, the head noun is generally accented; deaccenting is licensed only if the noun is given. Certain parallel constructions, like (1), allow anticipatory deaccenting – the noun of the first phrase can be deaccented, even if novel, just in case it is identical to the head noun of the second phrase (Van Deemter, 1999). Anticipatory deaccenting is never mandatory, so the patterns in (1) and (2) are both felicitous.

We used a version of the phonemic restoration paradigm (Warren, 1970; Stoyneshka, Fodor & Fernandez, 2010). Sixteen participants heard 16 deaccented sentences like (3), and 16 accented sentences like (4), in random order. They followed instructions to move the targets (e.g. “the square with a mouse”) to one of two destinations, where the destinations were pictures representing a minimal pair (“circle with a house” or “circle with a mouse”). The segment that would distinguish the second destination from the alternative (e.g. the “m” in mouse) was replaced with a cough, introducing ambiguity. Source recordings always contained the same minimal pair member in the first and second phrase (i.e. the recorded sentences were always of the form: “Move the square with the *mouse* to the triangle with the *mouse*”). This was done for both conditions to eliminate effects of coarticulatory cues. If listeners make use of the prosodic pattern, then anticipatory deaccenting, as in (3), should bias them toward interpreting the masked lexical item as identical to the deaccented noun of the first phrase. With the pattern in (4), no such preference is expected.

Destination choices indicated how participants resolved the ambiguity created by the cough in the final word. Reaction times indicated the degree to which each accent pattern facilitated the decision. Finally, eye-movements gave additional information about the how accent pattern contributed to online sentence comprehension in the absence of lexical disambiguation. Participants chose the destination with the same object 84% of the time in the deaccented condition, but only 64% of the time in the accented condition ($t=4.72$, $p<0.001$). Response times were faster following deaccented instructions than accented instructions ($t=3.62$, $p<0.01$). Eye-tracking data revealed that the preference for the same-object destination in the deaccented condition began during the cough, showing that deaccenting affects interpretation and facilitates processing of parallel constructions when lexically disambiguating information is unavailable.

The strong results reported by this study contrast with relatively weak (though consistent) findings in earlier studies of deaccenting in comprehension that did not employ lexical masking (Carbary, Gunlogson, and Tanenhaus, 2009). We propose that the strength of lexical cues masks the contribution of supra-segmental accent patterns to meaning when lexical content is highly reliable, as in experimental settings with clear and unambiguous speech. In real life language use, lexical information is less reliable: speech errors, ambient noise, between-speaker articulation differences, and increased uncertainty about how a speaker will continue a sentence all reduce the degree to which listeners can rely on lexical input alone, and hence increase the value of prosodic cues in lexical disambiguation.

Numbered Examples

- (1) Move the SQUARE with a [mouse]_d to the CIRCLE with a [mouse]_d.
- (2) Move the SQUARE with a MOUSE to the CIRCLE with the [mouse]_d.
- (3) Move the SQUARE with a [mouse]_d to the CIRCLE with a [#ouse]_d.
- (4) Move the SQUARE with a MOUSE to the CIRCLE with a #OUSE.

References

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