Are listeners sensitive to articulation differences in over-described referring expressions: A test of the Audience Design Hypothesis?

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Introduction: Several studies have shown that speakers will often include unnecessary modifiers when producing referential expressions, contrary to the second part of the Maxim of Quantity [1,2]. Other studies have found that listeners are slower to process and execute descriptions that contain extra information [e.g. 3]. At first glance, the asymmetry between these findings suggests that speakers do not adhere to the Audience Design Hypothesis, which predicts that speakers should formulate utterances to be cooperative with their interlocutors [4]. We hypothesized that the phonetic properties of unnecessary modifiers might suggest that they are less prominent than modifiers required for referent identification.

To test this hypothesis, we conducted two experiments to investigate this potential dissociation between production and comprehension.

Experiment 1: The first experiment was a production study that required speakers to produce a referential expression (e.g. the large triangle) that identified an object from an array of distracters. We compared the acoustic properties (duration, pitch, and intensity) of modifiers that distinguished two contrasting objects (e.g. a small and a large triangle) with modifiers that were not used to distinguish contrasting objects. Participants were presented with four objects arranged in a 2 x 2 array. After 1500ms, a small arrow appeared in one of the four quadrants indicating which object participants had to describe. Instructions indicated that participants had to produce enough information for unique identification, but said nothing about including extra information.

Results showed that over-described modifiers were significantly shorter in duration \( t(13) = 3.58, p < .01 \) compared to those that were used to distinguish contrasting objects (282ms versus 355ms). There were no differences in pitch or intensity.

Experiment 2: The second experiment used the utterances produced in Experiment 1, and the goal was to determine whether comprehension performance was affected by modifier length. If speakers use length to signal (non)contrastiveness, then we expected comprehension of over-descriptions to be more efficient when a modifier was short compared to long. Participants heard utterances such as Click on the large triangle, and at utterance offset, a 2 x 2 array of objects appeared. For the critical trials, there was, for example, only one triangle in the array. Two other quadrants contained contrasting objects (e.g. a large square and a small square). Participants used the mouse to click on the indicated object. Results showed that reaction times from display onset were significantly shorter \( t(25) = 2.13, p < .05 \) with the modifiers that were short in duration compared to those that were long (953ms vs. 998ms).

Conclusions: On the production side, our findings suggest qualitative differences between over-described modifiers and modifiers that are uttered in contexts where they are needed. Thus, it appears that speakers' utterances reflect referential contrasts. Results from the comprehension experiment supported speakers' adherence to the Audience Design Hypothesis, as we were able to confirm that listeners are in fact sensitive to durational differences. These results may partly explain why speakers so often include unnecessary information in their utterances.
References


