

Previous studies suggest that both repeated mention and predictability can influence the prominence with which a word is produced. Repeated words are less intelligible than non-repeated words (Bard & Aylett, 1999), and words that are less expected are produced with longer durations than expected words (Gregory, 2002).

In English, these two factors are difficult to separate because predictable words are also the ones that are most repeated (Arnold, 1998). The experiments presented here will examine whether repeated mention and predictability are independent factors or two aspects of the same phenomena.

A scene description task was used to elicit responses containing a verb and a noun. On each trial there were two objects and two actions that the speaker described. There were two types of trials. In the repeated condition, the same object shrank and then flashed. In the non-repeated condition, one object shrank and then the other object flashed. To control for lexical differences, the same noun was used in the second event in both types of trials. There was a 96 trial training block followed by a 12 trial test block. In Experiment 1, the training block presented repeated and non-repeated trials equally, testing the effects of repeated mention in the absence of a predictability manipulation. In Experiment 2, the training block established very low predictability of the repeated condition (6.25% of trials). This tests the effects of repeated mention when it is not predictable (in contrast with its usual high predictability in natural speech). If repeated mention, and not predictability, affects acoustic prominence, there should be no effect of the predictability manipulation.

Experiment 1 revealed an effect of repeated mention when there was no predictability manipulation. In repeated-noun trials, speakers produced the first noun with marginally longer duration ( $p=.065$ ) and greater intensity ( $p<.01$ ). In a comparison of second nouns in the repeated versus non-repeated trials, repeated nouns were produced with shorter duration ( $p<.01$ ), and less intensity than non-repeated nouns ( $p<.05$ ). These results confirm that repeated mention affects acoustic prominence.

Experiment 2 also found that repeated nouns were produced with reliably shorter durations ( $p<.01$ ) and less intensity ( $p<.01$ ). However, verbs in the unexpected (repeated noun) condition were produced with numerically longer durations than verbs produced in the expected (non-repeated noun) condition, although this did not reach significance. Verbs in the unexpected condition were also produced with more intensity, and this approached significance ( $p=0.07$ ). The verb results suggest a weak effect of predictability. This contrasts with Experiment 1, which contained no verb differences. This finding is compatible with the linguistic literature, which has found that focus can project from a stressed head to the entire constituent (e.g. Selkirk, 1996). In this case, the verb is the head of the clause and may signal predictability information about the entire sentence.

These experiments provide confirmation that repeated words are attenuated, even when they are not more predictable within the current task. At the same time they suggest that predictability may independently result in acoustic attenuation, suggesting that repetition and predictability have independent influences on acoustic prominence.

Example:

Sentence Type 1: The axe is shrinking ... the axe is flashing.

Sentence Type 2: The penguin is shrinking ... the axe is flashing.

References:

- Arnold, J. E. (1998). Reference Form and Discourse Patterns. Dissertation, Stanford University.
- Bard, E.G. & Aylett, M.P. (1999) The dissociation of deaccenting, givenness and syntactic role in spontaneous speech. In PICS, San Francisco (pp. 1753-1756).
- Gregory, M.L. (2002) Linguistic Informativeness and Speech Production: An Investigation of Contextual and Discourse Pragmatic Effects on Phonological Variation. Unpublished doctoral dissertation. University of Colorado Boulder.
- Selkirk, E. (1996). The prosodic structure of function words. In Morgan, James L., & K. Demuth (Eds.), Signal to syntax: Bootstrapping from speech to grammar in early acquisition. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.