

Effects of repeated mention and predictability on the production of prosodic prominence



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Abstract

This pair of experiments compared the effect of predictability against the effect of repeated mention on production of prosodic prominence. Experiment 1 suggests that repeated mention leads to differences in prosodic prominence on nouns. Experiment 2 suggests that predictability may also influence production of prosodic prominence. Less predictable events led to slightly longer durations and greater intensity on the production of verbs. Together, the results show that prominence can be affected by both repeated mention and predictability.

Previous Work

Words that are repeated will be produced with less prominence than first mentioned words (Fowler & Housum, 1987; Ērken & Hirshberg, 1994).

Words that are predictable from context are less intelligible (Bard & Aylett, 1999; Bard, Anderson, Sotillo, Aylett, Doherty-Sneddon, & Newlands, 2000).

Words that are predictable have shorter durations than less predictable words (Gregory, 2002).

In normal speech, words that are repeated are also the most predictable words (Arnold, 1998).

This Project

The goal of this study was to examine the effects of repeated mention and predictability on the production of prosodic prominence. In order to study these factors separately, this study used a task in which repeated words were less predictable and non-repeated words were more predictable.

Project Task

The paradigm was a referential communication task with a director describing actions to the matcher. The sequence of events were as follows:

- 1.) Two objects would appear on the both participants screens.
- 2.) One object on the director's screen would shrink.
- 3.) The director would say "the object is shrinking."
- 4.) The matcher would make the same object shrink on his/her own screen.
- 5.) One object on the director's screen would flash.
- 6.) The director would say "the object is flashing."
- 7.) The matcher would then make that object flash on his/her own screen.

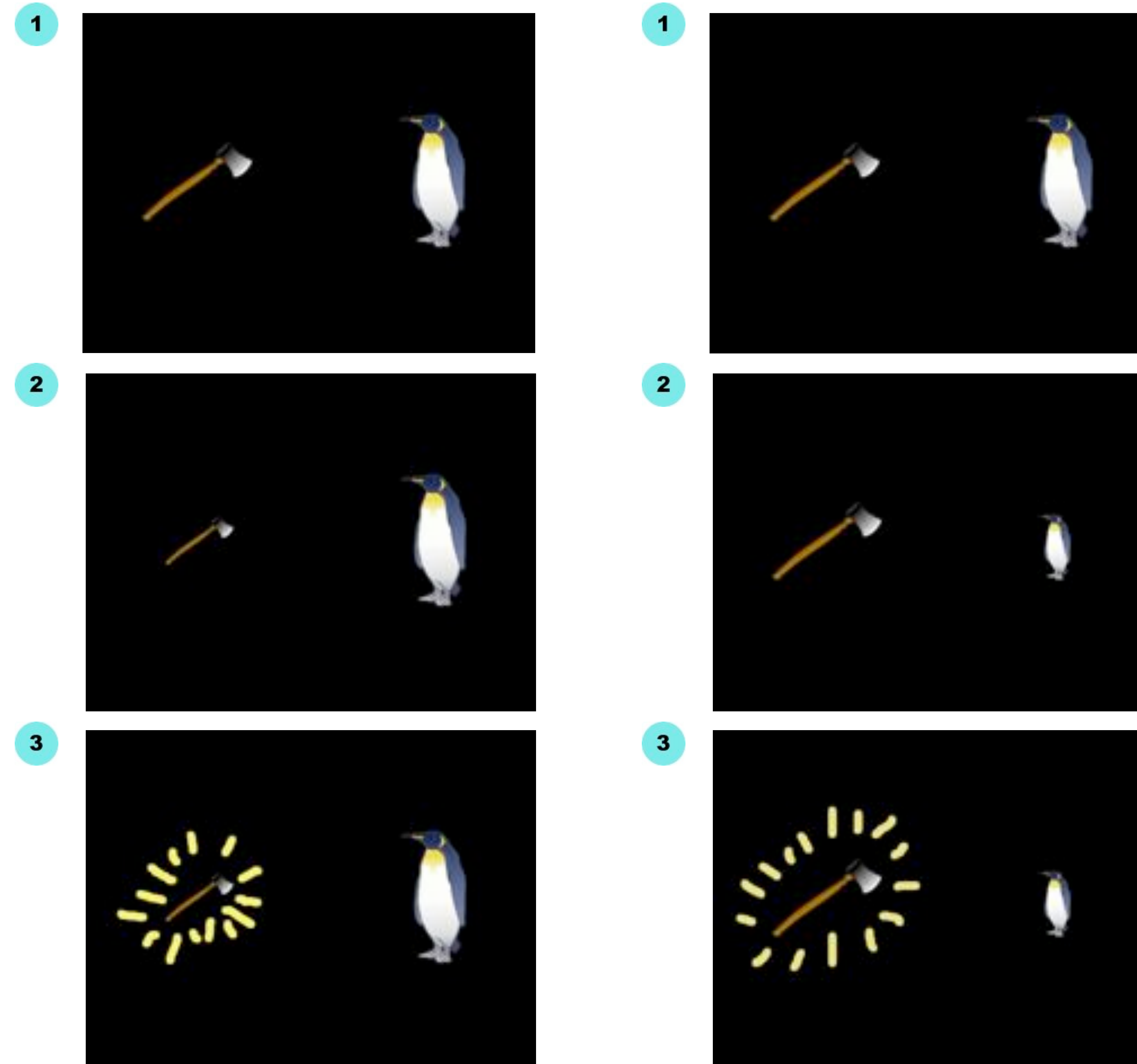
Example Sentences

Repeated mention

A.) The axe is shrinking...the axe is flashing.

Non-repeated mention

B.) The penguin is shrinking...the axe is flashing.



Experiment 1 & 2

There were 12 images grouped into six pairs of objects.

There were 96 training block trials followed by 12 test block trials.

There were two possible trials, one in which the same object both shrank and flashed (repeated mention) and one in which one object shrank, and then the other object flashed (non-repeated mention).

During Experiment 1, both trial types occurred an equal number of times during both the training block and the test block.

During Experiment 2, non-repeated trials occurred 90 times during the training block while repeated trials occurred only six times. Test trials for Experiment 2 were identical to Experiment 1.

Utterances were recorded during the test block trials and these were analyzed for prosodic information using Praat (Boersma & Weeknik, 2007).

Predictions

If repeated mention affects prominence, then repeated words should be produced with less prominence.

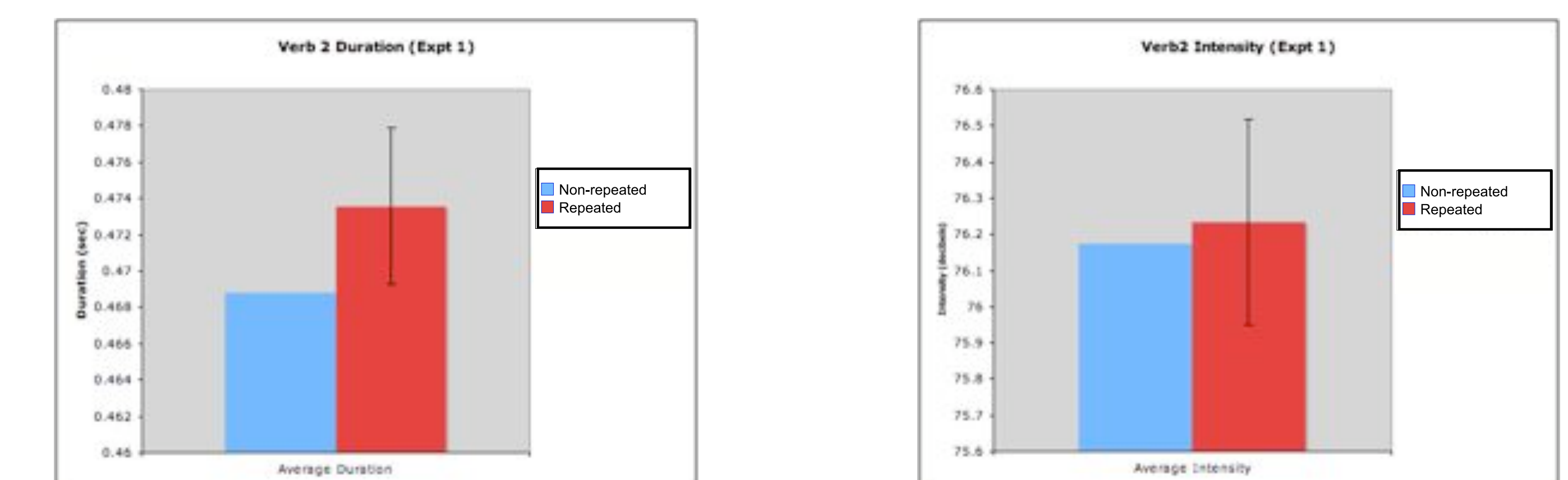
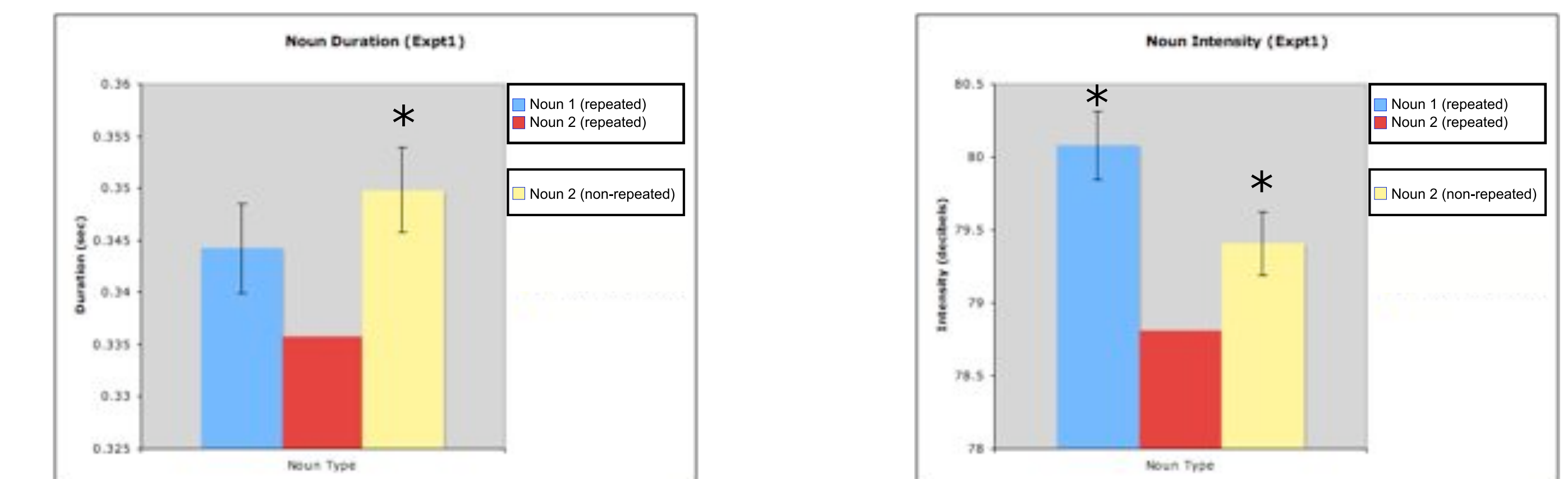
If predictability affects prominence, then words in the repeated (unexpected) condition should be produced with more prominence.

Results

There were no significant effects of repeated mention or predictability found on the F0 metric so only duration and intensity will be discussed.

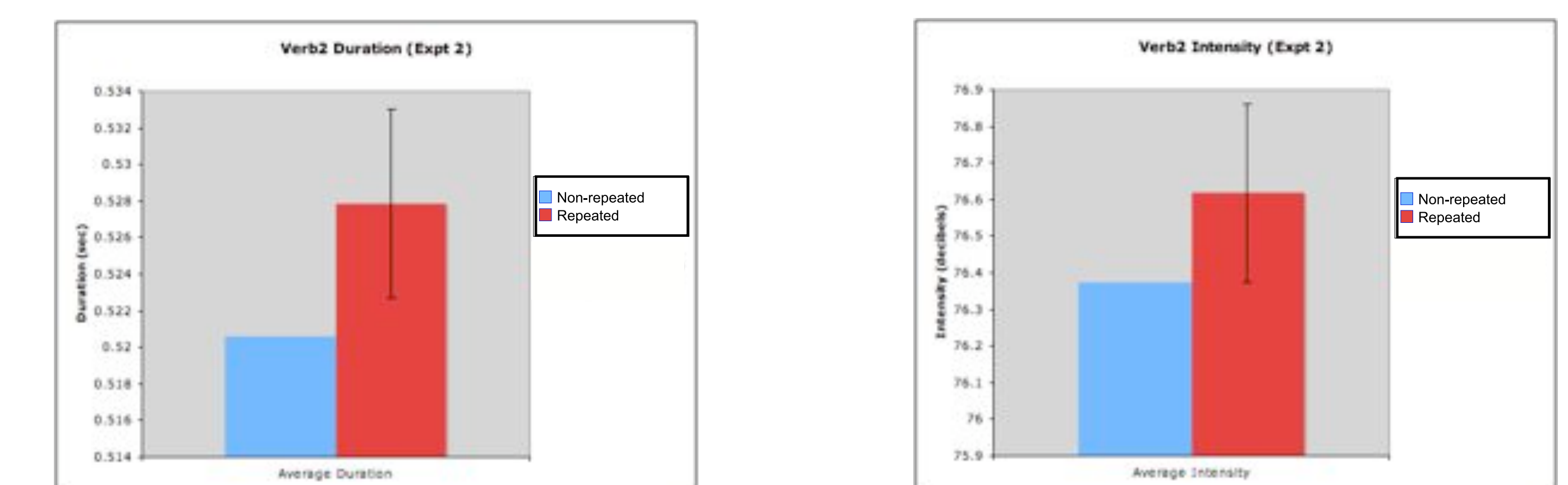
Experiment 1

Repeated mention affected noun duration and intensity. There was no effect on the verb.



Experiment 2

Results on the nouns replicated Experiment 1. However, in Experiment 2, verbs in the unexpected (repeated noun) condition were produced with numerically longer durations than verbs produced in the expected (non-repeated noun) condition and also produced with marginally more intensity.



Conclusion

These data suggest that repeated mention and predictability both influence the production of prosodic prominence at the sentence level. Repeated nouns are produced with shorter durations and less intensity than first mention nouns. Verbs may also be produced with longer duration and greater intensity when the utterance is less predictable.