Second Mention Reduction in Indian English and Korean

Rachel E. Baker and Ann R. Bradlow
Department of Linguistics, Northwestern University

Introduction

Phonetic reduction of the second mention of a word relative to its first mention in a discourse (Second Mention Reduction) is a well-documented feature of spoken American English (AE) (Fowler & Houssam, 1987). One possibility is that the phenomenon is mediated by discourse-level prosodic structure. If this is the case, second mentions are reduced because they are less likely than first mentions to be accented in AE, and unaccented words tend to be reduced. The other possibility is that the phenomenon occurs independently of prosodic structure. If this is the case, second mentions are reduced relative to first mentions because they are more predictable, even if they share the same accent status.

Impressionistic studies indicate that Indian English (IE) speakers do not deaccent second mentions like AE speakers (Gumperz, 1982). Korean marks information structure through phrasing rather than pitch accents (Jun, 1993). Therefore, Second Mention Reduction in these languages would support a direct link between lexical probability and duration.

In this study we address the following questions:
• Do Indian English speakers deaccent second mentions less than American English speakers?
• If so, does Second Mention Reduction appear in Indian English?
• Does Second Mention Reduction appear in Korean, a language in which words cannot be accented?

Methods and Materials

Participants:
7 Indian English speakers (5 male, 2 female)
6 American English speakers (3 male, 3 female)
5 Korean speakers (4 males, 1 female)

Materials:
• Indian and American English speakers read 5 paragraphs containing a total of 59 repeated words, designed to appear in similar phonetic and prosodic contexts. American speakers read the paragraph in both clear and plain speech styles.

Example English Paragraph:

If you want to go to Gina’s Pizza Shop, I can tell you the best way to get there. Go straight down this street and follow the signs for the Johnson Expressway. However, don’t actually go onto the Johnson Expressway. When you get to the on-ramp, take a left onto Cleveland Street; the main street in town. You’ll go past a big school called Cleveland High School, right between a church with a yellow door and a church with a blue steeple. There is a small alley just past the church with the blue steeple. Take this alley for several blocks, and turn left onto the third road you come to. Eventually, the road will split in two. Take Fillmore Boulevard, which is the one on the right. A block and a half later you’ll see the sign for Gina’s Pizza Shop, also known as the best pizza in town.

• Korean speakers read a Korean translation of one of these paragraphs containing 10 repeated words and phrases.

Analyses:
• All fluent English paragraphs were prosodically labeled, encoding all target words as accented or unaccented. The experimenter determined accent status through auditory perception of prominence and visual inspection of the spectrogram and pitch contour, as described in the ToBI labeling guidelines (Beckman & Ayers Elam, 1997).
• The durations of target words in fluent paragraphs were measured. All the speakers’ durations were averaged together to get a single duration for each mention of each word.

Results: IE and AE Second Mention Deaccenting

IE speakers tended to accented more words than AE speakers, so their pattern of accenting was closer to AE Clear speech than AE Plain speech, even though the IE speakers were not given any explicit instructions about what speech style to use.

IE speakers deaccented second mentions less than AE speakers (Sign Test, p < .05). In fact, the majority of IE speakers in this study accented the same numbers of 1st and 2nd mentions.

Examples: Accenting vs. Deaccenting

These images illustrate acoustic and articulatory aspects of deaccenting in addition to shortening, glottalization, amplitude reduction, and pitch range reduction.

Results: IE, AE, and Korean Second Mention Duration Reduction

IE, AE, and Korean speakers all produced significantly shorter second mentions than first mentions.

Future Directions

• We found support for the idea that probabilistic effects on duration appear at a gradient level, not mediated by prosodic prominence.
• Indian English speakers deaccent second mentions significantly less often than American English speakers, and the majority of Indian English speakers in this study had identical accenting rates for first and second mentions.
• Despite their reduced second mention deaccenting, Indian English speakers still produced significant second mention reduction like American English speakers.
• Similarly, Korean speakers produced significant second mention reduction although their language does not have pitch accents.
• This provides evidence that second mention reduction may be a universal phenomenon which allows efficient communication by reducing the speech signal at more predictable points in the speech stream.
• American English speakers and listeners may also use second mention deaccenting to communicate information about new vs. old information.
• Indian English speakers’ failure to deaccent second mentions may lead to confusion when they are trying to communicate with American English speakers.

Summary/Discussion

• A prosodic analysis of the Korean recordings is required to see whether first and second mentions are appearing in the same positions with regards to phrase breaks.
• A great deal more work is needed on the phonetic realization of Indian English pitch accents.
• It is possible that some of the words that were judged as accented by the prosodic transcriber (an American English speaker) would be judged as unaccented by Indian English speakers.
• Once perceptual tests determine which words are prominent to Indian English speakers, we can examine which phonetic features (e.g. duration, pitch change, volume) correlate with words judged as accented.
• An important continuation to this study is an examination of Indian English speakers with different language backgrounds, to determine the extent to which they share a single dialect or speak many different sub-dialects.
• Wiltshire and Hansberger (2006) studied two groups of Indian English speakers; one group consisted of Gujarati native speakers, and the other consisted of Tamil native speakers. They found different proportions of rising and falling pitch accents for the two groups.
• Perceptual studies are also required to determine whether American and Indian English listeners interpret accented words differently (e.g. whether American listeners are more likely to interpret accented words as new information).

References