Structured Heterogeneity of English Stress Variants

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Abstract

This is an attempt to show structured heterogeneity of English stress variants by applying a Labovian quantitative study to suprasegmental variation. Compared with the relatively frequent occurrence of segmental variation such as [in] ~[in] in -ing, the low frequency of suprasegmental variation makes it difficult to observe differences of pronunciation in different styles. A detailed analysis of the recorded speech of twenty-one subjects suggests that the apparent anomalous distribution of stress variants is by no means random, and acoustic measurements reveal two kinds of strategies available to the speaker for avoiding stress clash.

Index Terms: English stress, stress clash, variation

1. Introduction

Previous studies based on the analysis of the recorded data of twenty-one native speakers of British English [1] have shown that distribution of stress variants of adjectives (e.g. applicable, comparable, formidably, preferable) mentioned in the literature falls into one of the following types:

(i) categorical

contexts: 1 2 3 4 5 6 7

speaker A: OOOOOOO

speaker A: OOOXOXO

(where ‘O’ means old stress patterns and ‘X’ means innovative.)

(ii) variable

contexts: 1 2 3 4 5 6 7

speaker B: XXXXXXX

speaker B: XOOXOXO

Non-initial stress in (i) would cause stress clash (i.e. [PREmature BABies]), so initial stress in (i) should be most plausible. Non-initial stress in (ii) is widely observed in predicative use. Initial stress in (ii) can be attributed to stress-clash avoidance (i.e.[PREmature [FALL frosts]]. The behavior of Subject #16 in (ii) (i.e. [premTURE [FALL frosts]]) is by no means random once we take into consideration the way the syntactic boundary after the adjective is realized.

2. Methods

In a quantitative analysis, a certain amount of spontaneous speech is collected, and then correlation between variation and factor groups is examined [2]. Because of the low frequency of stress variation, the procedure is reversed. The sentences to be presented to twenty-one native speakers of British English include adjectives in various rhythmic and syntactic structures – carefully selected using the Wordbanks online corpus to represent potential stress variation.

3. Inter- and intra-speaker variation

As an illustration of inter- and intra-speaker variation of English stress, part of the distribution of stress variants of premature is presented in Table 1, where ‘1’ refers to initial stress (PREmature) and ‘2’ to non-initial stress (premTURE) and/or double stress. The figures in the top row refer to the subject identification number; the figures in the leftmost column refer to various linguistic contexts such as the following:

(i) Parents of premature babies are being given training to allow them to care for their children at home. (2)

(ii) The long-term effects of a cloud that slowly thins out could include late spring and premature fall frosts. (iii) The final judgement was premature, but this captures…

4. Eurhythmy in English

Table 1: (part of) Distribution of inter- and intra-speaker variation of premature.

|   | i | i | i | i | i | i | i | i | i | i | i | i | i | i | i | i | i | i | i |
|   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

Figure 1: Waveform and F0 track of premTURE fall frosts (Subject #16).

Figure 2: Waveform and F0 track of PREmature fall frosts (Subject #19).

Compared with the behavior of the rest of the subjects that show initial stress in (ii) (see Figure 2), it is clear that Subject #16 avoids stress clash by (a) lengthening -TURE, i.e. the syllable immediately preceding the syntactic boundary and (b) a reset of the F0 of the noun phrase (fall frosts) immediately after the syntactic boundary, both of which are attested in the literature.

5. Conclusion

The apparent anomalous behavior of a subject that shows non-initial stress in so-called stress clash context exhibits phonetic adjustments to obtain eurhythmy in English.

6. References