A phonotactic analysis of /th/-fronting in AAVE production data

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/th/-fronting is the substitution of [f] for [θ] in words like *both → bofe* and *athlete → aflete*, as well as the substitution of [v] for [ð] in words like *brother → bruvva* (cf. Wells 1982; Trudgill 1988). In this study, we investigate the phonological environments which promote /th/-fronting in African American Vernacular English (AAVE), showing that both syllable position and stress are important factors governing fronting. We formalize the results of our quantitative study of AAVE production data with a phonological rule describing the environments involved.

Previous work on AAVE has described /th/-fronting as occurring "at the ends of words or syllables" (Labov et al. 2013), or "word medially or word finally" (Green 2002, Labov et al. 1968). However, no quantitative analysis of /th/-fronting in AAVE production data has been conducted. The current study revisits the phonotactic constraints on /th/-fronting in AAVE by examining over fifteen hours of production data from 21 AAVE speakers from the Philadelphia Neighborhood Corpus (PNC) to investigate the rates of /th/-fronting across different phonological environments. Included in the investigation are word position, as well as the additional parameters of syllable position and stress position. 1875 tokens of /th/ and 756 tokens of /dh/ were coded auditorily for acoustic realization.

We find that the reported word position constraints on /th/-fronting in AAVE are borne out, with fronting possible in word-medial and word-final position but not in word-initial position. These broad phonotactic constraints become more complex when tokens are analyzed for syllable and stress position: fronting is attested in coda-position tokens as well as in post-sonorant tokens which are followed immediately by a stressless sonorant. We formalize these findings in the phonological rule in Figure 1, which produces the attested tokens, predictions, and prohibitions outlined in Table 1.

$$/\text{th}/ \rightarrow [+\text{front}] \; / \; \left\{ \begin{array}{l} [\; +\text{sonorant} \;] \; \underline{\quad} \; (\text{C})\$ \\[2ex] [\; +\text{sonorant} \;] \; \underline{\quad} \left[\begin{array}{l} +\text{sonorant} \\ -\text{stress} \end{array} \right] \end{array} \right\}$$

Figure 1: Phonotactics governing /th/-fronting in AAVE.

Attested	Predicted	Prohibited
mother	toothache	pathetic
athlete	synthesize	synthetic
either	breathy	authority
nothing	Anthony	authentic

Table 1: Attested tokens and predictions.

Additionally, we find that the two environments described by the rule in Figure 1 are in a relationship of implicational hierarchy. Every speaker who produces /th/-fronting in intersonorant position (e.g. *mother* also produces them in coda position (e.g. *athlete* and *tooth*). This accounts for 12 of the 21 speakers. The remaining 9 out of 21 speakers who exhibit /th/-fronting in coda position have not extended their fronting environments to include intersonorant position. The hierarchy suggested by this data is also supported by the differing rates of fronting in these two contexts among the 12 speakers who front in both contexts. For these 12 speakers, 29% of coda position tokens are fronted, while only 7.9% of intersonorant nonstressed tokens are fronted.

These findings indicate that an analysis of /th/-fronting in AAVE is incomplete without a consideration of both syllable position and stress. Furthermore, these findings also suggest an implicational hierarchy in the two environments that allow for /th/-fronting in this subset of AAVE production data. This finding in production data calls for closer investigation of both native-speaker intuitions for both contexts as well as perception data to supplement the suggestions made by this study.

Word Count: 490