

Pre-voicing and Aspiration in Southern American English

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This paper reports on an investigation of voicing and aspiration of stops in Southern American English (SAE) and discusses theoretical implications of the findings for the features of contrast in SAE. We suggest that for the SAE speakers in this study, the contrast is between stops that are specified as privative [voice] and stops that are specified for privative [spread glottis] ([sg]).

Languages that have a two-way voicing contrast for stops generally fall into two categories: voicing languages (Russian, Dutch, Spanish) and aspirating languages (German, English, Mandarin). Many phonologists have recently suggested that aspirating languages have a [spread glottis] ([sg]) contrast and true voice languages have a [voice] contrast (Beckman, Jessen, & Ringen 2013, Iverson & Salmons 1995, among others). Assuming privative laryngeal features, this means that in voicing languages the stops are either [voice] or [Ø] (unspecified) for the lenis and fortis series, respectively, but in aspirating languages the features are [Ø] and [sg] for lenis and fortis stops, respectively. The surface phonetic cues are intrinsically connected to these phonological features so that the occurrence of prevoicing or aspiration in certain environments implicates the phonological feature [voice] or [sg] (Beckman et al. 2013).

In utterance-initial position, voicing languages have lenis stops that have negative VOT (prevoicing) and fortis stops with short-lag VOT, while aspirating languages have lenis stops with short-lag VOT and fortis stops with long-lag VOT (aspiration). However, Helgason & Ringen (2008) show that Swedish, with a two-way laryngeal contrast, has surface phonetic cues of both [sg] and [voice]; they propose that Swedish has a two-way phonological contrast between stops that are specified [voice] and stops that are specified [sg]. Support for this proposal comes from rate effects (Beckman, Helgason, McMurray, & Ringen 2011). When speakers slow down, prevoicing increases in languages with privative voice (e.g. French) while aspiration increases in languages with privative [sg] (e.g. German), but the unmarked stops show little or no rate effects. In Swedish, however, both prevoicing and aspiration increase in slower speech. These rate effects can be understood if, in slower speech, the duration of the phonetic cue for the specified feature(s) is increased.

Lisker & Abramson (1964) found that English lenis stops are generally produced with short-lag VOT while fortis stops are produced with long-lag VOT. Overall, only 20.5% of lenis tokens in isolated words were produced with prevoicing, 95% of these from 1 speaker. Other English VOT studies consistently find that speakers produce both short-lag and prevoiced lenis tokens, with the majority being short-lag (Flege 1982, Smith 1978, Westbury 1979). This contrasts with what has been found for true voice languages such as Russian, in which 97.5% of utterance-initial lenis stops were prevoiced (Ringen & Kulikov 2012) while the fortis stops were produced as voiceless unaspirated stops. However, some true voice languages do not consistently prevoice lenis stops, e.g., Dutch, where overall only 75% of initial lenis stops were prevoiced (Van Alphen & Smits 2004).

This study analyzed utterance-initial lenis and fortis stops across all places of articulation from 13 speakers of Southern American English from Mississippi and Alabama. Overall, 77.8% of the 951 lenis stop tokens for the SAE speakers were prevoiced in utterance-initial position (see Figure 1), with a mean VOT of -92.0 ms for lenis stops (see Figure 2); this percentage of prevoiced tokens far exceeds the prevoiced tokens found in Lisker & Abramson (1964) and is comparable to the percentage of prevoiced tokens found for Dutch, a [voice] contrast language.

Our findings also show that SAE speakers have fortis VOT values comparable those of aspirating languages such as NAE (Northern American English). The mean fortis VOTs for SAE speakers were 65.7 ms for bilabials, 77.8 ms for alveolars, and 74.8 ms for velars. These values are comparable to the aspirated stop VOTs found by L&A, which were 58 ms for bilabials, 70 ms for alveolars, and 80 ms for velars. Thus, if prevoicing implicates the feature [voice] in phonological representations and aspiration implicates [spread glottis], then SAE appears to have both, as is argued for Swedish in Helgason & Ringen (2008) and Beckman et al. (2011).

Most other studies of English have focused on NAE (but see Jacewicz, Fox, & Lyle (2009)) and

have found little or no prevoicing of lenis stops. We suggest that in NAE, the contrast is between stops that are specified as [sg] and stops that are unspecified, as suggested by Iverson and Salmons (1995). But in SAE the stop contrast is different: lenis stops are specified as [voice] and fortis stops are specified as [sg].

Figure 1: Word-initial prevoiced and voiceless tokens.

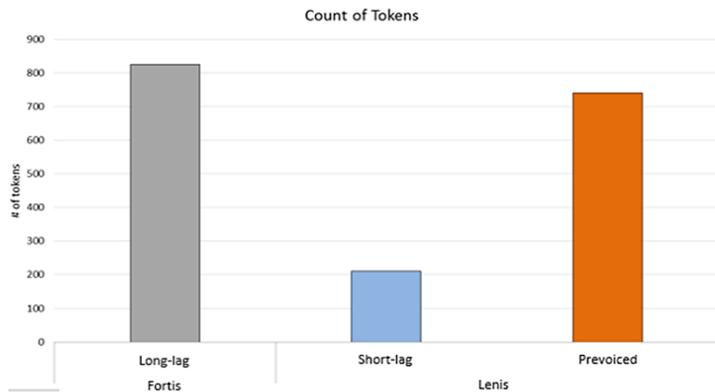
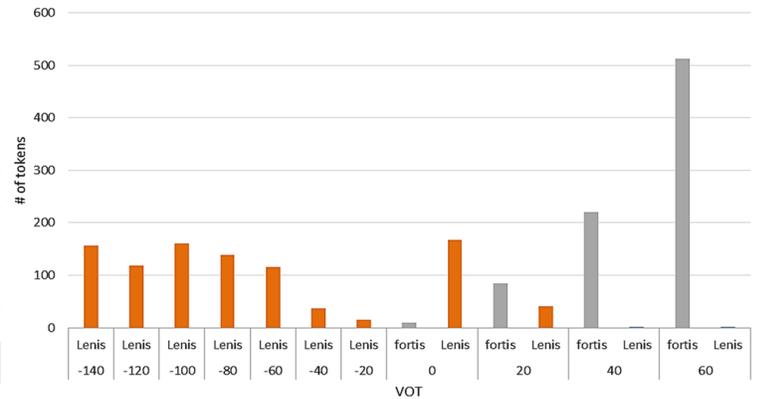


Figure 2: VOT of initial lenis and fortis



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