

Individual conditioning factors and system knowledge contribute to evaluation of phonological systems

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Recent work in Philadelphia describes a shift in the phonology of the /ae/ system. Some native Philadelphian college students are abandoning the local Philadelphian split system in favor of the more geographically-widespread Nasal system (Labov et al. 2013; Prichard and Tamminga 2012). This shift involves changing the conditioning factors that determine which tokens are tense /ae/ and which are lax /ae/, as shown in Table 1.

Environment	Lexical items	Voiceless fricative	/NG/	Intervocalic nasals	Tautosyllabic /m/ or /n/	other
Coding in Figure 1	MBG	aeF	aeNG	aeNV	aeN#	Other
Example	mad	class	hang	manage	plan	Cat
Philly System	TENSE	TENSE	LAX	LAX	TENSE	LAX
Nasal System	LAX	LAX	TENSE	TENSE	TENSE	LAX

Table 1: Six conditioning factors, their corresponding labels in Figure 1, and their status under both systems

Although the change from the Philadelphia system to the Nasal system is a shift from a local system to a supra-regional standard, there is little work done on whether the Philadelphia system is evaluated differently from the Nasal system. In this paper, I investigate the following two questions:

1. Is there a difference in the subjective evaluations of the Nasal system and the Philadelphian system by the community?
2. If so, is this difference caused by the negative evaluation of certain phonological environments or is it caused by the negative evaluation of a system as a whole?

I used a modified magnitude estimation perception experiment to measure system evaluations from 57 native speakers of English who were born and raised in Philadelphia. Magnitude estimation has been shown to be a useful way to obtain acceptability ratings on syntactic forms (Sprouse 2008). For this study, participants were played a reference word (“chocolate”), which was assigned a score of 100. They were then presented with individual auditory stimuli and asked to rate the stimuli for how “well pronounced” they sounded relative to the reference word. Each participant was played an equal number of lax and tense words from each conditioning environment, for a total of 48 target words. An additional 47 tokens, which did not contain an /ae/ token, were used as control (filler) words.

Responses were z-scored by participant. Figure 1 depicts boxplots of participants’ responses to lax (red) and tense (blue) tokens, separated into the six possible conditioning environments. The plot is split into tokens that follow the Nasal system (left), Philadelphia system (right), and neither (middle).

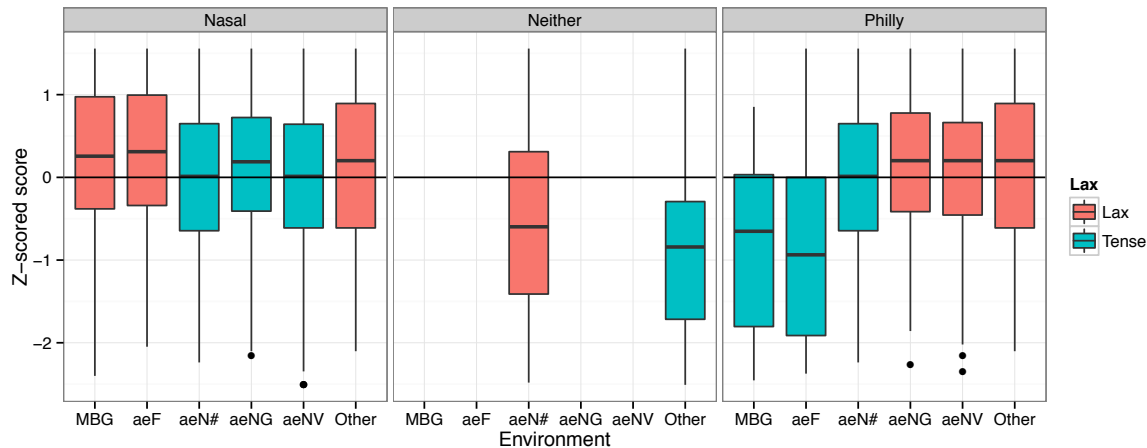


Figure 1: Boxplots of participants' z-scored acceptability judgments for lax and tense tokens in each conditioning environment

I find two overall patterns. First, participants rate tense tokens low except for the tense tokens that follow the Nasal system ($p=.006$). Second, participants rate lax tokens high except for the lax tokens that do not follow either system ($p=.02$). I argue that while participants seem to show a preference for the phonetic quality of lax tokens over tense tokens, this preference is also mitigated by their knowledge of the two systems. While participants prefer lax tokens overall, they also prefer tense Nasal tokens to tense Philly tokens, and tense Nasal tokens to lax no-system tokens.

These findings show that Philadelphians do rate the Nasal system higher than the Philadelphia system, but that their ratings are also sensitive to individual conditioning factors within the system and are not just a reaction to the system as a whole. As a dialect-specific finding, this suggests that the tense environments of the Philadelphia /ae/ system is stigmatized by the community. More generally, these findings show that speakers use both systemic knowledge and individual conditions in evaluating phonological systems.

References

- Labov, W., I. Rosenfelder and J. Fruehwald. 2013. One hundred years of sound change in Philadelphia: linear incrementation, reversal, and re-analysis. *Language* 89:1.
- Prichard, H. and M. Tamminga. 2012. The impact of higher education on Philadelphia vowels. In *University of Pennsylvania Working Papers in Linguistics 18.2: Selected Papers from NWAV40*, 87-95.
- Sprouse, Jon. 2008. Magnitude estimation and the non-linearity of acceptability judgments. In *Proceedings of the 27th West Coast Conference on Formal Linguistics*, ed. Natasha Amber and Jason Bishop, 397-403.