Documentation of Eynu in Xinjiang, China

Siyu Liang
Georgetown University

Eynu is an alleged threatened contact language of Uyghur and Iranian langauges spoken in scattered enclaves in southwestern Xinjiang, China. Previous fieldworks have been done to document the language, notably of two teams headed respectively by Hayasi (Hayasi et al. 1999) and Zhao (Zhao and Aximu 2011). However, these fieldworks only represent a small portion of the area where speakers of Eynu are known to live, and the data are far from complete. The new data collected on this field trip in July and August 2018 provides the most recent documentation on the language since two decades. The results include a working reference grammar, in addition to observation of diachronic change and crucial update on sociolinguistic dynamics.

The extensive geographical area covered during this fieldwork generated a comprehensive picture of the language. Zhao and Aximu hypothesized a Persian origin of the language based on that Eynu's syntax and morphology are mostly identical with Uyghur but has extensive borrowing of the Persian lexicon.

Table 1. Comparison of lexicon in Eynu, Persian and Uyghur (Zhao and Aximu 2011)

Eynu	Persian	Uyghur	Gloss
padɛr	padar	ata	"father"
madɛr	madar	ana	"mother"
zɛn	zan	ajal	"woman"
sɛr	sar	baʃ	"head"

The fact of language contact is further evidenced in this field work. In addition to lexical data that pattern with previous observation, we have also found occurrences of post-nominal modification different from Uyghur's nominal morphology, as shown in (1) through (4), which has possibly come into the language from Persian, a language with similar constructions. An endonym for the language that has not been mentioned before has been instrumental for further analysis: /paːrɪs/, which is used by the group of speakers in the southwest of the Taklamakan Desert. It is evident to observe the etymological connection with "Farsi", the corresponding endonym for Persian.

(1) saʊ kɛmtær
money little
"poor/inexpensive"

(2) ʁɨlmanɛ panaq
nose collapsed
"flat nosed"

(3) kœp pul
many money
"a lot of money" (Uyghur)

(4) pulɛ zjad
money many
"a lot of money" (Persian)

Language contact notwithstanding, the idiosyncratic constructions are not pervasive in the Eynu grammar and the general syntactical structure of Eynu according to its state of use today makes it more reasonable to be classified as a Turkic language, with Uyghur as the superstrate language. Our fieldwork has provided diachronic update of language change since the two previous fieldworks in 1970s and 2000s. We have noted various levels of lexical replacement and converging of original Eynu lexicon toward Uyghur, the dominant language in the region for daily use. In (5) to (7), the Uyghur words for the existence marker has become the preferred form, while the original Eynu usage, a possible cognate of Iranian languages such as /hæst/ "exist.3SG.PST" in Persian, is still comprehensible.

(5) Eynu (Zhao and Aximu 2011)[1]
χani-dɛ mikɛ hɛs mu
house-in goat exist Q
"Is there goat in (your) house?"

(6) Eynu (elicited on this trip)
χajne-dɛ gøspɛnd bar mu
house-in goat exist Q
"Is there goat in (your) house?"

(7) Uyghur
øy-dɛ øtʃkɛ bar mu
house-in goat exist Q
"Is there goat in (your) house?"

Regarding the language change, sociolinguistic factors have played a major role in the process. Specifically, linguistic policy and ethnic tension of the region have arguably contributed to such result. Uyghur, instead of mandarin, is still the dominant language of daily communication, and there has not been any personal or official motive for promoting Eynu. As a result, the previous estimate for the number of speakers of around 30,000 (Simons and Charles 2018) has drastically dwindled to our estimate of around 500 based from our interview. This fieldwork might have been among the last possible attempt of documentation and has important implication regarding language preservation and language policy.

References

Hayasi, Tooru, Rozit Sabit, Muhämmät Tahirjan, and Wang Jianxin. 1999. *A Šäyxil vocabulary: a preliminary report of linguistic research in Šäyxil village, southwestern Xinjiang.* Kyoto: Kyoto University.

Simons, Gary F. and Charles D. Fennig. 2018. *Ethnologue: Languages of the World.* SIL International. Dallas.

Zhao, Xiangru, and Axim. 2011. *Ainuyu Yanjiu.* Minzu Press.

[1] Note: fieldwork for this research took place only in 1970s

Event Descriptions in Attributive Adjective Constructions: A Corpus Study

Samuel Benkelman, Harvard University
benkelman@college.harvard.edu

Abstract

1. Introduction

Predicate modification allows us to account for the meaning of intersective adjectives, and comparison classes allow us to account also for the meaning of subsective adjectives. The only properties that must be considered when deciding if a subsective or intersective reading is possible in an attributive construction are the properties of the *adjective.* That is, "small" is always subsective whether modifying elephant, human, etc., and "American" is always intersective, regardless of its nominal. I contend that a third reading of some attributive adjective constructions is readily available, and not captured by either intersective or subsective analyses. I call it an *event description* reading (referencing Davidsonian event semantics) and further claim that for this reading to arise, crucially, characteristics of the *nominal*—in addition to the adjective—must be taken into account. This abstract presents evidence for event description readings, a corpus experiment finding their distributions with different types of nominals, and a brief discussion.

2a. Event Descriptions

The main intuition with an event description reading is that the adjective in the *adj + nom* structure does *not* modify the entity to which the nominal refers, but rather an *event,* held in the meaning of the nominal. Thus we can explain, e.g., the following discrepancies w.r.t. apparent contradictions:

a) # Sally is a **beautiful woman** who is ugly	(subsective reading)
b) Sally is a **beautiful dancer** who is ugly	(event description reading)

a) feels contradictory because two opposing terms refer to the same entity; b) is fine, because the opposing terms do not refer to the same thing. These also pattern differently w.r.t. entailments:

c) ??? He rarely ever acts, but he is a **young** actor	(subsective, entails actor)
d) He rarely ever acts, but he is a **good** actor	(event descr., does not entail actor)

A subsective reading entails the, at least habitual, truth of the nominal; an event description reading does not. Finally, and importantly, an environment suitable for event descriptions depends not only on the *adjective* in the NP in question, but also on the *nominal itself:*

e)	purple	doctor / talker / elephant / flower	(intersective)
f)	young	doctor / talker / elephant / flower	(subsective)
g)	good	doctor / talker / *elephant / *flower	(event description)

The starred terms in g) give rise to *subsective* readings when alongside "good." It is clear, then, that event descriptions require specific properties of both grammatical components in order to arise; this is quite unlike other types of readings, and is explored more in my corpus experiment.

2b. Corpus Experiment

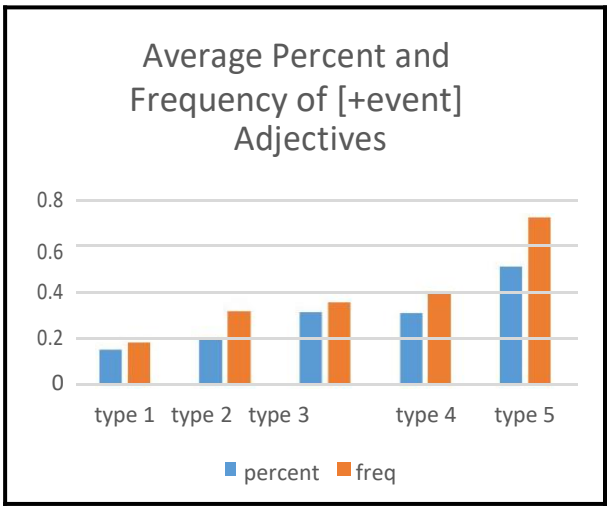
This experiment tests the intuition that event description readings are linked to the presence of a verbal element. Many of the nouns that license this reading (when in the presense of a [+event] adjective) are deverbal agent nouns (talker, walker), which makes sense, since they have verbs

built right into them. Other nouns that commonly license it are those that denote professions (writer, teacher), some of which can be further distanced from a grammatically verbal element (physician, secretary). The hypothesis was that the frequency of occurrences of [+event] adjectives in the corpus attributive to type 1 nouns below would be much lower than to type 3, and 3 than 5.

10 nouns of 5 types (see table below) were inserted into search queries in the Corpus of Historical American English (COHA) of the form: **a/an ADJ [writer, physician, etc.]**

Type 1	Type 2	Type 3	Type 4	Type 5
PHYSICIAN SECRETARY	LAWYER POET	WRITER TEACHER	LIAR LOVER	TALKER WALKER

Type 1 nouns are career titles with no clear link to a related word; type 2 nouns link to a word that is not a verb; type 3 nouns are professions that are also deverbal nouns; types 4 and 5 are deverbal nouns—however, I split them up into two categories because type 4 nouns have colloquial usages divorced from their verbs. I call these "name-calling" nouns: "you are such a liar" are common expressions, different from nouns like walker, which force a reading where the referent is the agent of a walking event.



Graph 3 (at left, from write-up,) shows the Average percentage and frequency of [+event] adjs by noun type for the top 100 query results. (Type **1**: 15.5%, freq. .182; **2**: 20%, .321; **3**: 31.5%, .357; **4**: 31%, .395; **5**: 51.5%, .726)

3. Discussion

Though the study used a small sample size, the results strongly supported my hypothesis, with [+event] adjectives occurring far less frequently next to type 1 nouns than type 3 or 5 nouns, and 3 less than 5. This provides evidence that our semantics needs to have the capacity to take into account the internal composition of its grammatical categories. Additionally, though it is not within the scope of this paper, I would suggest that an event semantics-based analysis of an event description utilize universal quantification to account for my observations above in c) and d), e.g.:

$$[[\text{beautiful dancer}]] = \lambda x.\, \forall e.[\, (\mathbf{Dance}(e) \wedge \mathbf{Agent}(e) = x) \rightarrow \mathbf{Beautiful}(e)\,]$$

References

Chierchia, Gennaro. 1995. 'Individual-level predicates as inherent generics'. In Gregory Carlson & Francis Jeffry Pelletier (eds.), *The Generic Book*. U. of Chicago Press,Chicago.

Davidson, D. (1967) "The Logical Form of Action Sentences," in N. Rescher (ed.) *The Logic of Decision and Action.* (pp. 81 – 120) Pittsburgh: the U. of Pittsburgh Press

Larson, Richard. 1998. 'Events and modification in nominals'. In D. Strolovitch & A. Lawson (eds.), *Proceedings of Semantics and Linguistic Theory (SALT) 12*. CLC Publications, Ithaca, NY.

Morzicky, M. (in prep as of June 2014) "The Lexical Semantics of Adjectives: More than Just Scales," for *Key Topics in Semantics and Pragmatics* Cambridge: U. of Cambridge Press

Functional Effects on Subject Pronoun Realization in Western Andalusian Spanish

Lena Greenberg, University of Pennsylvania

This study compares the use of overt subject pronouns in Western Andalusian Spanish (WAS), a dialect where /s/ in coda position (henceforth /-s/) is lenited, to the use of overt subject pronouns in Castilian Spanish (CS), where /-s/ is preserved. I find that speakers of WAS use more subject pronouns than speakers of CS, but that this cannot be solely attributed to functional/disambiguation factors.

Background: According to the Functional Hypothesis (FH) proposed in Kiparsky 1972, language change tends to preserve key grammatical distinctions at the surface level. If this is true, we would expect to observe this phenomenon in synchronic studies. That is, we would expect speakers of /-s/-leniting dialects of Spanish to use, at a greater rate than speakers of /-s/-preserving dialects, linguistic resources that preserve the grammatical information transmitted by /-s/, which is a plural marker and 2sg verb inflection. However, there is not a consensus as to whether or not this occurs. It is sometimes claimed that vowel shifts in Eastern Andalusian Spanish as a result of /-s/-lenition have acquired phonological value (Salvador 1977), though others argue these shifts are merely allophonic (López Morales 1984, Lahoz-Bengoechea 2006). The literature regarding subject pronoun realization (SPR) as a means of compensation is also inconclusive. Both Puerto Rican Spanish and Andalusian Spanish are /-s/-leniting dialects, yet while Hochberg (1986) interpreted a high rate of SPR in Puerto Rican Spanish (40% of verbs in her study took a subject pronoun) as support for the FH, Ranson (1991) argued against the FH given a 24% rate of SPR in her study of Andalusian Spanish.

Methods: I compare directly between WAS and CS using data from the same source, the Corpus Oral y Sonoro del Español Rural (COSER). The corpus is made up of interviews with elderly speakers in rural Spain. I selected the transcripts of 18 COSER interviews, half conducted in Western Andalusia (Cádiz, Huelva and Sevilla provinces) and half conducted in the autonomous community of Castilla y León. The mean age of speakers was 74.8 years old, and in each dialect group there were three males and six females. Since the speakers are closely matched in terms of demographics, it is likely that any linguistic variation is due to dialect differences. I collected a total of 8,404 verb tokens (362 types), and coded all verbs that could optionally take a subject pronoun according to whether or not this pronoun was realized. Imperatives, verbs with non-specific or non-human referents, verbs used in idiomatic phrases, and verbs in an explicitly contrastive context (e.g. 'you go here and I go there') were excluded. Tokens were grouped according to their potential ambiguity, following the categorizations used in Hochberg 1986 (summarized in Table 1). Type A verbs preserve a formal distinction among all person-number combinations in both dialects; Type B verbs exhibit syncretism between 2sg and 3sg verbs in /-s/-leniting dialects; and Type C verbs exhibit syncretism between 1sg and 3sg verbs in standard Spanish, and among 1sg, 2sg and 3sg verbs in /-s/-leniting dialects.

Table 1: Verb types (Hochberg 1986)

	WAS	CS
Type A	no syncretism: (yo) comí, (tú) comiste, (él/ella) comió	no syncretism: (yo) comí, (tú) comiste, (él/ella) comió
Type B	2-way syncretism: (yo) como, **(tú) come(s), (él/ella) come**	no syncretism: (yo) como, (tú) comes, (él/ella) come
Type C	3-way syncretism: **(yo) comía, (tú) comía(s), (él/ella) comía**	2-way syncretism: **(yo) comía,** (tú) comías**, (él/ella) comía**

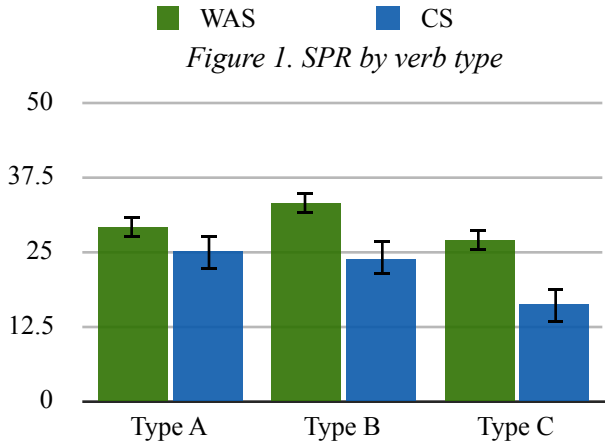


Figure 1. SPR by verb type

Results: The overt subject pronoun was realized in 30% of all verb tokens in WAS, compared to 21% of verb tokens in CS, a significant difference ($\chi^2 = 88$, $p < .05$). As seen in Figure 1, while rates of SPR in the two dialects were relatively close for Type A verbs, they are significantly higher in WAS for Type B and C verbs. Table 2 shows that speakers of WAS use subject pronouns with 2sg verbs, often ambiguous in WAS, significantly more often than speakers of CS. Table 3 shows that speakers of WAS use subject pronouns with 1sg Type C verbs significantly more than with 1sg

Type A or B verbs, as the FH would predict, but contrary to what the FH would predict, there is no significant difference between 3sg Type A and Type B verbs.

*Table 2. SPR by person-number combination**

	1sg	2sg	3sg	1pl	2pl	3pl
WAS	43% (2408)	**37% (231)**	11% (908)	**20% (707)**	30% (70)	10% (539)
CS	36% (1567)	**20% (87)**	9% (482)	**9% (754)**	10% (126)	6% (419)

*Table 3. SPR in WAS by person-number combination and verb type**

	1sg	2sg	3sg	1pl	2pl	3pl
Type A	**43% (403)**	not enough data	**9% (173)**	21% (126)	not enough data	9% (70)
Type B	**41% (1505)**	37% (186)	**8% (297)**	21% (203)	31% (65)	12% (205)
Type C	**51% (500)**	36% (33)	13% (438)	20% (378)	not enough data	9% (264)

Analysis: The greater overall rates of SPR in WAS compared to CS, as well the greater rates of SPR in WAS compared to CS in key categories such as Type B and Type C verbs and 2sg verbs, indicate that functional motivations do have a moderate effect on linguistic variation. However, I argue that the data do not support a strong reading of the FH, for three reasons: (a) The overall rate of SPR in WAS, 30%, is still relatively low, and even the higher rates of SPR with particular verb forms, such as 2sg verbs, are not high enough to suggest that subject pronouns are becoming obligatory with these verbs. (b) SPR rates are much higher in WAS than CS for some verb forms, such 1pl verbs, which are not ambiguous in either dialect; clearly this cannot be the direct result of functional pressures. (c) Some of the results, such as the low rate of SPR with CS Type C verbs (only 16%, much lower than the rate with Type A verbs) and the equally low rates of SPR between 3sg Type A and Type B verbs in WAS, are unexpected given the FH. Admittedly, the discourse context often helps disambiguate the subject of a given verb, meaning that low SPR rates in some areas do not necessarily contradict the FH (since the distinction is preserved by other means). However, adopting this argument does somewhat contradict the functionalist explanation for the differences we do observe in the data: it is difficult to explain why contextual markers would help disambiguate 3sg verbs and not, for example, 2sg verbs (where there is a clear difference in SPR rates between dialects).

I propose that that the overall higher rates of SPR in WAS are due to speakers' desire for regularity in the linguistic system: in this case, comparatively high rates of SPR for certain person-number combinations in WAS, namely the 2sg and 2pl, trigger an increased rate of SPR for all person-number combinations. This would explain the higher rate of SPR for WAS 1pl verbs and other unambiguous forms. The higher rates of SPR with 2sg verbs could be seen as a moderate functional compensation, while the increased SPR with 2pl verbs may be due to a peculiarity of the 2pl in WAS. In this dialect, the formality/familiarity distinction of CS has collapsed such that the 'formal' *ustedes* pronoun may be used with verbs conjugated according to the 'familiar' 2pl inflection, as in '*ustedes queréis*' (rather than taking 3pl, 'formal,' agreement as in '*ustedes quieren*'), a phenomenon which may encourage greater 2pl SPR for pragmatic reasons: the '*ustedes queréis*' construction, with a formal pronoun and familiar verb form, is a neutral way to address people of various social levels in Western Andalusia (Lara Bermejo 2010).

Conclusions: I show that the facts of SPR in WAS do not support a strong reading of the FH. While we cannot rule out that functional factors play a small role in this phenomenon, functionalist approaches alone cannot accurately account for the nuanced patterns we observe in this dataset.

Selected references: **Hochberg,** J. 1986. Functional compensation for /s/ deletion in Puerto Rican Spanish. *Language* 62:609-621. **Lara Bermejo,** V. 2010. *El uso de ustedes por vosotros en Andalucía occidental.* Thesis, Universidad Autónoma de Madrid. **Ranson**, D. 1991. Person Marking in the Wake of /s/ Deletion in Andalusian Spanish. *Language Variation and Change* 3:133-52. **Salvador**, G. 1977. Unidades fonológicas vocalicas en andaluz oriental. *Revista Espanola de Lingüística* 7:1-23.

* Boxes in blue highlight an example of data that support the FH. Boxes in red highlight an example of data that are unexpected given the FH or cannot be explained by the FH. Due to small sample size, I have excluded the formal second-person pronouns, *usted* and *ustedes*, when used with verbs taking 3pl 'formal' inflections. However, the WAS data does include tokens of the '*ustedes queréis*' type.

Effect of Conditioned Mergers on Underlying Representations

John McGahay – University of Pennsylvania

In this project, I investigate whether speakers underlyingly represent flaps faithfully to their orthographic and historic value of /t/ or /d/ even when there exists little to no disambiguating evidence in the linguistic stimulus. An analysis of the Philadelphia Neighborhood Corpus found significant differences between vowel durations before /t/ and /d/-flaps even in ambiguous cases, suggesting that metalinguistic input like spelling may play a significant role in assignment of underlying representations.

Background: Flapping is a conditioned merger found in North American English whereby the alveolar stops /t/ and /d/ are neutralized to a voiced alveolar flap [ɾ] in certain environments, i.e. immediately after a vowel when in coda position and followed by another vowel within the same phonological phrase. Flapping is near-categorical word-internally, occurring in over 90% of cases (Patterson & Connine 2001). Pre-fortis clipping is a process whereby vowels are pronounced with shorter durations before voiceless segments. Numerous researchers find evidence that flapping counterbleeds pre-fortis clipping, so that vowels are longer before underlying /d/-flaps than /t/-flaps in a case of incomplete neutralization (Fox & Terbeek 1977, Patterson & Connine 2001, Herd et al. 2010, Braver 2014). However, vowel durations before /t/ and /d/-flaps have heavily overlapping distributions, and adults are unable to perceptually distinguish flaps based on underlying voicing (Braver 2014).

Problem: By what means does a child learning a language decide between two possible underlying representations (URs) when the stimulus provides insufficient cues for this determination? Unless a reliable means of distinguishing /t/-flaps and /d/-flaps from the linguistic stimulus can be identified, the assumption that speakers consistently assign distinct representations to words like *latter* and *ladder* requires us to assume that metalinguistic evidence such as spelling plays an extensive role in the assignment of URs.

Proposal: Suppose that speakers do not normally refer to spelling when assigning URs to flaps. Then, since /t/- and /d/-flaps are perceptually indistinguishable, faithful assignment of underlying /t/ and /d/ to a flap should only possible where a flap alternates with an unflapped stop. In general, this corresponds to cases where a flap occurs morpheme-finally. Hence, the URs of flaps in words like *betting* and *bedding* (derived from *bet* and *bed* with unambiguous /t/ and /d/) are easily identifiable to the individual in acquisition, while the URs of morpheme-internal flaps in words like *latter* and *ladder* are ambiguous. Regardless of how individuals then arrive at URs in such cases (e.g. by guessing or assigning a "default" /t/ or /d/), this makes reliable faithful representation of morpheme-internal flaps as /t/ or /d/ highly improbable, so any evidence for incomplete neutralization of flapped historic /t/ and /d/ is expected to collapse in these ambiguous cases. Hence, if it can be shown that vowel durations differ before /t/ and /d/-flaps morpheme-finally but not morpheme-internally, we have evidentiary support for this state of affairs. Conversely, if incomplete neutralization is found in morpheme-internal as well as a morpheme-final cases, then we have evidence that individuals make use of spelling in the assignment of URs to ambiguous flaps.

Methodology: Data were extracted from FAVE-aligned sound files from the Philadelphia Neighborhood Corpus, a corpus of sociolinguistic interviews with native Philadelphians conducted between the 1973 and 2012. The durations of primary-stressed vowels before word-internal intervocalic /t/ and /d/ were extracted, and all flaps were coded by word for morpheme-finality. Words where /t/ and /d/ might be followed by a syllabic /n/ (in which case flapping may not occur) were excluded. In total, 11201 pre-flap vowel durations from 317 speakers were included in the final data set.

Results: Controlling for vowel phoneme, following syllable nucleus, speech rate, and lexical frequency, vowels were significantly longer before orthographic *d* than *t* in both morpheme-final and morpheme-final cases, with $p < 0.01$ in a t-test in both cases. However, the difference between vowel durations before morpheme-final flaps was over twice as great as that between morpheme-internal flaps (15.6 vs. 7.6 ms).

(1) Effect of a following /t/-flap on duration by vowel (excluding /ɔ/, /aʊ/, /oɪ/, and /ʊ/, which were missing some conditions), extracted from output of linear regression models. Significant observation are in bold.

	Before Morpheme-Final Flaps					Before Morpheme-Medial Flaps				
Vowel	# /t/-flaps	# /d/-flaps	Effect (ms)	SE (ms)	T-Value	# /t/-flaps	# /d/-flaps	Effect (ms)	SE (ms)	T-Value
All Vowels	**1296**	**560**	**-15.591**	**4.931**	**-3.162**	**7239**	**2106**	**-7.619**	**2.748**	**-2.772**
/ɪ/	34	10	-5.779	13.279	-0.435	3675	339	-6.882	5.853	-1.176
/ɛ/	695	31	-8.408	16.159	-0.520	329	369	2.036	5.103	0.399
/eɪ/	21	58	5.513	18.620	0.296	786	535	26.306	20.574	1.279
/æ/	12	61	-5.158	20.636	-0.250	735	121	0.688	10.693	0.064
/u/	135	16	11.762	19.743	0.596	325	50	-5.100	20.474	-0.249
/i/	104	139	-12.215	10.177	-1.200	70	142	3.974	10.979	0.362
/aɪ/	**177**	**142**	**-47.988**	**10.971**	**-4.374**	**44**	**88**	**-104.547**	**20.263**	**-5.160**
/ɑ/	14	2	20.373	50.928	0.400	**227**	**184**	**-12.036**	**6.521**	**-1.846**
/oʊ/	24	9	19.347	12.508	1.547	**230**	**62**	**-41.233**	**7.433**	**-5.547**
/ʌ/	5	48	25.493	29.936	0.852	51	140	24.136	25.437	0.949
/ɜ/	67	7	25.493	29.936	0.852	64	31	24.136	25.437	0.949

When vowel phonemes are looked at individually, however, the statistical significance of duration differences by-and-large collapses, in spite of large sets of data in many cases. Only /aɪ/ shows a significant duration difference in both conditions, and /ɑ/ and /oʊ/ both show differences in the morpheme-medial, but not the morpheme-final conditions. The behavior of /aɪ/ is not surprising, since it has a distinct raised allophone [əɪ] before underlyingly voiceless consonants in Philadelphia, which might be expected to have a shorter duration. Furthermore, the quality difference of the nucleus of the /aɪ/ diphthong might also provide a sufficiently salient cue for identification of the underlying voicing of a flap, not shared by other vowel phonemes, potentially accounting for this phoneme's distinct behavior. Why /ɑ/ and /oʊ/ should also be unique in having statistically significant duration differences in the morpheme-medial condition is more difficult to account for without referring to the influence of spelling on UR assignment. It may also seem unexpected that these two vowel classes show differences in the morpheme-medial, but not the morpheme-final condition (which is expected to have more evidence for UR), though this can likely be attributed to the low sample size in that condition.

On the whole, these data seem to suggest that speakers do faithfully represent flaps as /t/ and /d/ above chance levels even in the morpheme-internal cases that lack linguistic cues for underlying voicing. This in turn would suggest that metalinguistic factors like orthography play a role in the assignment of URs to flaps. However, there is some reason for skepticism of this finding, given that significant duration differences do not persist for more individual vowel phonemes. Putting this concern aside, the fact that the duration difference is smaller in the morpheme-internal condition may also seem to suggest that UR assignment of this type through spelling is less reliable (since noise in the data introduced by misidentification of /t/ as /d/ and vice versa would narrow the gap between the pre-flap vowel duration targets). However, if we exclude /aɪ/ tokens, then the duration difference in the morpheme-final case falls below levels of significance, so we cannot make this claim on the basis of the available data.

Conclusion: Pre-flap vowel durations in the Philadelphia Neighborhood Corpus provides evidence that flaps are represented faithfully to their orthographic values even in the absence of salient cues for their underlying voicing in the stimulus. This suggests that spelling plays a role in UR assignment, though the fact that the evidence for this claim comes from a restricted subset of cases indicates that further investigation is called for, possibly in the form of an experimental study.

References:

Braver, A. (2014). Imperceptible incomplete neutralization: Production, non-identifiability, and non-discriminability in American English flapping. *Lingua*, *152*, 24-44. **Fox**, R. A., & **Terbeek**, D. (1977). Dental flaps, vowel duration and rule ordering in American English. *Journal of Phonetics*, *5*(1), 27-34. **Herd**, W., Jongman, A., & Sereno, J. (2010). An acoustic and perceptual analysis of /t/ and /d/ flaps in American English. *Journal of Phonetics*, *38*(4), 504-516. **Patterson**, D., & Connine, C. M. (2001). Variant frequency in flap production. *Phonetica*, *58*(4), 254-275.