Variation in Navajo

1. Introduction

This project investigates synchronic variation in Navajo, *Diné Bizaad*, a Southern Athabaskan language spoken in the American Southwest. Though Navajo is one of the best-documented languages indigenous to North America, there have been to date no systematic investigations of variation. Given the realities of rapid language shift to English, and the aging of the population of proficient speakers, the opportunity to study variation among a sizable number of Navajo speakers is fleeting.

The proposed research seeks to address questions of language change, as well as the role of ideology and social factors in a community undergoing language shift. The primary research questions are:

1. What systematic variation exists in Navajo discourse, and how does this variation pattern with locally relevant social variables?
2. What is the evidence that variants reflect changes in progress?
3. What role do particular linguistic and social factors play in the origin or spread of changes?

The data for this project will include audio-recorded interviews with an estimated 50 participants in order to allow for in-depth analysis of phonological, morphological, syntactic, and discourse-level variation in the speech of a wide variety of participants. These recorded data will comprise a corpus of spontaneous and semi-spontaneous discourse in the form of video elicitation and personal narrative, to be transcribed with the collaboration of Navajo native speakers. Additional data will include the ethnographic and linguistic background of the participants, and elicited words containing phonetic and phonological variables for quantitative acoustic analysis. Once the data are transcribed, I will annotate and analyze tokens in the corpus

to determine which variables indicate an advancing change in the community based on how relevant social and linguistic factors may correlate with the variation.

This study will contribute to the current record of the language with data drawn from a large and diverse sample of Navajo speakers. The status of Navajo as a threatened language underscores the importance of detailed documentation while the language continues to be spoken actively. Recordings and descriptions of variation in spoken Navajo can also contribute to language planning and the development of pedagogical materials for language maintenance. Entrenched beliefs about variation and linguistic innovation have challenged successful implementation of revitalization projects (Holton 2009), and a detailed record and recognition of systematic variation (Rice & Saxon 2002) can help counter ideologies of linguistic purism and emphasize the sustained richness of the language.

2. **Navajo**

Navajo is spoken by around 170,000 speakers, mostly in the Navajo Nation, or *Diné bikeyah* (Lewis et al. 2015), as well as in the many border towns close to the reservation (Lee 2004). These deceptively high numbers distort the sociolinguistic reality, as few children are growing up with Navajo as a first language. Data from 1970 revealed that around 90% of Navajo children entering preschool at that time had no knowledge of English, but in a sharp reversal, by 1990 most preschool children had no knowledge of Navajo (Spolsky 2002). In addition to the lack of intergenerational transmission, in the past few decades contact with the English-speaking world has increased dramatically with the rise of cellular and internet connectivity.

As in many Native American communities, language proficiency is highly correlated with age; older speakers are more likely to be bilingual, while the younger generation is increasingly monolingual in English (Field 1998). Among younger speakers, codeswitching is common, and a

distinct Bilingual Navajo variety, a combination of English and Navajo, has developed (Schaengold 2004). To combat language shift, the community has implemented language programs that range from preschool to university levels.

With respect to linguistic structure, Navajo is a polysynthetic, fusional language with individual verbs often constituting entire clauses. Previous documentation of Navajo includes an excellent grammar and dictionary (Young & Morgan 1987) as well as many books and dissertations on various topics. Much research has focused on the Navajo verb in particular due to its complexity and typologically unusual features. These prior advances in Navajo linguistics provide essential groundwork for the proposed analysis of synchronic variation.

2.1 **Navajo Variation**

Previous qualitative research describes phonological and morphological variation occurring in Navajo (Reichard 1945; Kari 1976; Saville-Troike & McCreedy 1980). Much variation is said to pattern geographically with a Western/Eastern dialect boundary aligning with the Chuska Mountains on the border between New Mexico and Arizona. Figure 1 shows a map of the region.

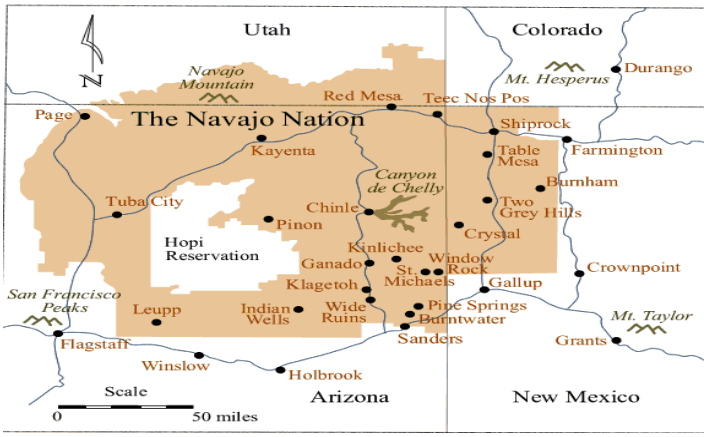


Figure 1. Map of the Navajo Nation and surrounding areas (Hedlund 2004)

One example of cited regional variation is the degree of aspiration of Navajo plosives. Speakers in the Western part of the reservation are said to have stronger aspiration and to pronounce words such as those in example (1) with an initial [t^x], while Eastern speakers favor

[t^h] (Reichard 1945, 1951; Saville-Troike & McCreedy 1980). Other sources describe all voiceless aspirated stops as affricates due to the similarities in duration and timing of the complex segments with other affricates in the language (McDonough 2003).

(1) *tádídíín*
'pollen' (Reichard 1945: 162)

By contrast, the pronunciation of Navajo /tɬ'/ as [tɬ'], [kɬ'] or [k'] exemplifies phonological variation that is not associated with a particular group or region. These same forms occur in free variation in Slave (Rice 1989) and Western Apache (de Reuse 2006), and I have observed this variation among Navajo speakers. Example (2) is typically pronounced with an initial [tɬ'], but some speaker use the alternate [kɬ'] or [k'].

(2) *tɬ'éé=go*
night=SUB
'at night'

A site of morphological variation is the alternation between the synthetic future and perfective verb forms and the use of tense particles *dooleeł* FUTURE and *ńt'éé'* PAST respectively (Chee et al. 2004). The analytical alternates have in use for decades (Sapir & Hoijer 1942), but an *increase* in analytical constructions is a change common to obsolescing languages (Dorian 1973), and the relative frequency of each construction will be explored in these data. The high frequency of these constructions is evident in the ongoing grammaticalization of the tense particles, which originated diachronically as verbs. The future particle *dooleeł* continues to show phonological reduction and often occurs as *doo*. Example (3) illustrates the relevant variants with (3a) displaying the periphrastic construction and (3b) a synthetic construction that conveys a similar meaning.

(3) a. ni-sin doo-leeł
mind-1SG.IPFV.want INCEP.3SG-FUT.be
'I will want/think'

b. di-nées-sį́į́ł
INCEP-mind-1SG-FUT.want
'I will want/think

In addition to linguistic variation, there is ideological variability among speakers of Navajo with differences noted among speakers of different genders, age, clans, and religion (Field 2009). Due to the rapid changes associated with language shift, speaker age will likely emerge as a highly explanatory variable in the proposed analysis, and the association between prevalent ideologies amongst different groups and particular linguistic variables will be examined.

3. **Theoretical Contributions**

This work will contribute to theoretical questions primarily in the domains of sociolinguistics and language change. The project will also expand the record of Navajo through the recording of discourse data together with detailed ethnographic information about each speaker. These recordings will leave room for the potential investigation of future questions beyond those of current interest (Mithun 2001).

3.1 **Sociolinguistics**

Sociolinguistic studies based on small indigenous communities are relatively rare, though extant studies (Foley 1980; Romero 2006; Stanford & Preston 2009; Dorian 2010) suggest that such communities offer important insights about socially meaningful patterns of variation. Navajo speakers, like those in many indigenous communities (Rice & Saxon 2002; Field 2012), show a high tolerance of variation without the social stratification and standardization present in many languages that have been the focus of research in the Labovian tradition (Milroy & Milroy 1998).

In this study I will apply a version of the sociolinguistic interview (Labov 1966) to record different styles of speech ranging from elicited words to video-elicited discourse, to more spontaneous personal narrative. I aim to record data from participants who represent different

locally relevant social variables (Eckert 2012), selected based on my ethnographic experience in the Navajo community. The social variables include gender, age, region, religion, and how often they speak Navajo. Regression analysis will reveal systematic correlations between particular linguistic variants and these social variables, and interview questions will aim to identify circulating linguistic ideologies, including attitudes about particular alternations. I hypothesize that age will be a statistically explanatory variable due to language shift in the community, but interactions between age and the other social variables will indicate how particular forms spread or remain entrenched.

In concert, these sources of data will allow analysis of the social meanings conveyed by particular variants. In her dissertation on Numu, Haynes (2010) notes a gap in research focusing on social attitudes towards specific changes in endangered languages. These attitudes are relevant not only for understanding ideologies in a given community, but also for understanding how attitudes may directly influence the spread of change (L. Milroy 2003) and potentially even the actuation of sound change (Blust 2005). Western concepts of prestige may be less relevant among Navajo speakers than more local notions associated with different characteristics. It is also possible that variation incites no social evaluation (Dorian 2010) or that meaning previously associated with particular variants is disappearing as the language is spoken less (King 1989).

The analysis of longer stretches of discourse will enable the investigation of morphological, syntactic, and discourse-level variation, domains not often explored through the lens of sociolinguistics. Of particular interest is an analysis of how speakers variably use Navajo verbal morphology. The intricate grammar of the verb construction has developed incrementally (Mithun 2011) to fit the communicative needs of speakers, and the high frequency of specific constructions and prefix clusters has resulted in a great degree of abstraction and lexicalization,

in line with the predictions of usage-based grammaticalization theory (Bybee 2010). A proposed sociolinguistic explanation for the immense morphological complexity seen in Navajo is that smaller communities with extensive shared knowledge are more likely to develop highly conventionalized, abstract constructions due to a greater amount of communicative common ground (Trudgill 2010). Navajo speakers (L. Legah pc 2016) support this perspective in describing a phenomenon in which verbs have different meanings in different regions due to lack of shared experiences with a single form. However, as this sociolinguistic context changes and Navajo speakers have more contact with English, changes in the use of Navajo verbal morphology may arise, with implications likewise for syntax and discourse. Similar changes are occurring in North Slavey, a related Northern Dene language, which shows a reduction in the degree of verbal integration for a particular morpheme (Rice 2016).

This study will also include an analysis of phonetic and phonological variables recorded in word lists, and two discourse genres. Variables include variation in the pronunciation of the back vowel /o/, the degree of aspiration of plosives, and the realization of coronal harmony. Fewer sociolinguistic studies investigate consonants (Thomas 2013), and through acoustic analysis, this project will yield meaningful data on the nature of variation for these particular variables and the degree to which it is phonetically gradient or categorical.

3.2 **Language Change**

This research will contribute to the understanding of language change by analyzing internally and externally motivated change at multiple levels of linguistic structure.

In recently proposed models of sound change, variation plays an explicit role (Blevins 2004) with changes in frequency of the variation influencing the structure of the phonemic system and how changes distribute through the lexicon (Bybee 2002). Under these assumptions, the

frequency of words in particular phonetic contexts will influence diffusion of changes. With the recent creation of the Navajo Conversational Corpus (Mithun 2014 NSF-DEL project 0853598), containing approximately 60,000 words, as well as the corpus of discourse that will be collected during sociolinguistic interviews, I will be able to estimate lexical frequencies objectively to assess whether changes occur more in high frequency Navajo words, as suggested by these theories.

Further, acoustic measurements in elicited words will shed light on the degree to which each potential change is gradient or categorical. For instance, though the process of Navajo coronal harmony is variably realized (Sapir & Hoijer 1967; McDonough 2003), evidence suggests that even when the coronals do not assimilate as expected, residual harmony effects are detectable with spectral measurements (Berkson 2010). Example (4) illustrates this variation, whereby sibilants are expected to show anticipatory harmony in anteriority with the rightmost sibilant (in Navajo, orthographic <sh> corresponds to [ʃ]). More data are needed to clarify whether this process is truly gradient (McDonough 2003) and distinct from co-articulation effects, as well as the internal and external factors, such as gradient transfer (Haynes 2010), influencing the variation.

(4) *sik'is ~ shik'is*
shi-kis
'my friend'

In addition to informing theories of sound change, the synchronic variation in connected speech will provide data for investigating theories of grammaticalization. It is only in connected speech that speakers can draw on the range of constructions at their disposal, and changes in relative frequencies can meaningfully indicate the discrete shifts by individuals in context and their relationship to a gradual spread, or not, within the community. These variations may

indicate specific motivations for particular changes that might otherwise be obscured. Historical Navajo texts (Sapir & Hoijer 1942; Young & Morgan 1954) allow for diachronic comparison of the frequency of relevant forms. Though Navajo is undergoing language shift, studies suggest that the language continues to show signs of grammaticalization in tense markers (Chee et al. 2004) and in the development of verbal applicatives (Mithun 2011). By amassing a large collection of personal narratives and video-elicited discourse, I will be able to analyze particular constructions for evidence of ongoing grammaticalization in the original discourse context.

Further, Navajo speakers have previously extended morphological markers to convey discourse-level meaning such as the backgrounding function of the *=go* subordinator (Mithun 2008) and the use of classifiers to bring different topics into focus (McCreedy 1983). Intraspeaker comparison of the discourse data allows for analysis of additional morphological and syntactic constructions that may be extended beyond the clause and are perhaps developing pragmatic, discourse-level functions.

4. **Research Design**

This project will build on a small-scale pilot study, a well-established practice in the field of sociolinguistics (Feagin 2013), which I conducted in November 2016. I will extend this preliminary work to include additional participants, who will more accurately represent the diverse linguistic and social background of the Navajo-speaking community.

4.1 **Interviews**

I will recruit 50 interested participants to take part in a interview that will last around 60 minutes, during which they will be paid at a rate of $20 an hour. I currently have two grant proposals (ELDP small grant and NSF DEL dissertation improvement grant) pending in order to fund this research. Most speakers will be bilingual English/Navajo speakers, and I will conduct the

interviews in cities bordering the Navajo Nation including Gallup, NM, Farmington, NM, Flagstaff, AZ, Cortez, CO, Blanding, UT, and Albuquerque, NM. Many Navajo speakers live in the border towns, and others frequently visit them. The cities will provide a centralized location at which I will efficiently meet speakers to conduct interviews. I plan on spending several weeks in the region in order to recruit a balanced sample of speakers who represent different ages, genders, clans, regions, religions, education levels, and linguistic backgrounds. Based on my conversations with participants during the pilot study, there is a small possibility that a few monolingual speakers may be interviewed with the help of bilingual family members. With these older speakers, I plan on modifying the interview and will only record the ethnographic background questions, personal narratives, and the *Pear Film* discourse if possible.

The interview will consist of four parts. Participants will first be asked to provide the Navajo equivalent of specific words and phrases. The words will be chosen to target phonetic and phonological features for structured comparison across speakers. I will collect audio recordings of the interviews using a headworn microphone to ensure high-quality phonetic data. Next, participants will be shown a six-minute silent movie called *The Pear Film,* which was deliberately created for use in elicitation of discourse across languages (Chafe 1980). After watching the film, participants will be asked to narrate what happened. The film strategically includes different kinds of action in order to elicit a variety of constructions related to referent tracking, topic marking, verbs of motion, simultaneous and sequential action, clause linking, prosodic phrasing, information structure, among others. The use of this methodology will allow for comparison between speakers in order to identify individual and dialectal variation, and also for cross-linguistic comparison with the many *Pear Film* narratives that have already been collected.

Towards the end of the interview, when participants are more comfortable with the format, participants will be asked to recount a short story in Navajo, with likely topics including a childhood event, a previous trip, or plans for the upcoming summer. These topics, or something similar, will be selected for their non-sensitive nature and also for their linguistic relevance in examining how speakers' communicate past and future events. Lastly, participants will answer a series of ethnographic questions about themselves and their experiences with, and attitudes towards the Navajo language.

My sociolinguistic methodology diverges from typical studies in a few ways. First, most sociolinguistic studies are concerned with eliciting the most natural and unmonitored speech and thus most researchers try to employ interviewers who are of as similar a background as possible to the participants in order to reduce likely accommodation effects. However meaningful results are still possible with interviewers of different backgrounds (Drager 2015), and since most participants in this study will be bilingual English/Navajo speakers, I chose to conduct the interviews myself. My sample may also not be as balanced for the specified variables as more controlled studies in large speech communities and will instead likely rely more on a convenience sample (Hill & Hill 1986) due to my status as an outsider in the community. Lastly, my sample may be biased towards a more educated group of speakers who are especially interested in language due to the nature of my connections in the community. All nine participants in the pilot study have attended college and several have earned advanced graduate degrees. During the full study I will try to recruit speakers who reflect diversity in all variables of interest, but this may not be feasible for every category.

Upon completion of the interviews, I will transcribe the English questions and segment the elicited words for acoustic analysis in *Praat*. Ethnographic meta-data will be entered into an

Excel spreadsheet with social variables coded for each participant. I will then work with trained Navajo consultants to transcribe the connected speech from the *Pear Film* and the personal narratives into *Elan* to produce time-aligned transcripts and translations. Two well-qualified Navajo speakers have agreed to work as transcribers on this project: Mr. Leroy Morgan and Dr. Ellavina Perkins. Leroy Morgan is the vice-president of the Navajo Language Academy and a language teacher and activist. Ellavina Perkins has a Ph.D. in linguistics and is also a longtime language teacher and member of the Navajo Language Academy. Both Mr. Morgan and Dr. Perkins are experienced in Navajo transcription and translation, and this summer both were trained in using *Elan* at the 2016 Navajo Language Academy workshop. In addition to these skilled collaborators, I plan on recruiting more consultants to help transcribe and translate. Because transcription is very time and labor-intensive, I plan to devote ample time and resources to transcribing the interview data. During the pilot study three additional participants expressed interest in transcribing.

4.2 **Analysis**

Once the discourse data have been fully transcribed and the acoustic analysis completed, using an *Excel* spreadsheet I will qualitatively and quantitatively annotate variables of interest to determine whether to characterize the variation as an ongoing change and whether it is socially meaningful. I will run multivariate regression analyses using the statistical software *R* to quantitatively evaluate which social and/or linguistic factors may predict such variation. I will include the most relevant of the social variables in the statistical models after a thorough qualitative analysis of the answers to the ethnographic and language attitudes questions. This pairing of quantitative with in-depth qualitative analysis will inform a discussion of the implications of these data for theories of sociolinguistics and linguistic change.

4.3 **Archiving**

Data comprising digital audio files in an uncompressed .wav format, as well as time-aligned transcription and translation files .eaf files, will be archived at the Alaska Native Language Archive in Fairbanks, Alaska. I will acquire appropriate consent for archiving from each interview participant, and therefore materials will be indefinitely available with open access for researchers, community members, and language teachers.

5. **Preliminary Analyses**

The pilot study, conducted over the course of one week in November 2016, included interviews with nine speakers. Information about each speaker is listed in Table 1. Since I hypothesize that age and region will be the most explanatory variables, my preliminary analysis has focused on four speakers (bolded below) who represent combinations of those variables.

Name	Age	Gender	Region
Michelle Lee	**37**	**F**	**Eastern**
Louise Ramone	56	F	Eastern
Eddie Begaye	63	M	Eastern
Johnny Harvey	**65**	**M**	**Eastern**
Leonard Perry	50's	M	Eastern
Wilma Lee	**47**	**F**	**Western**
Leroy Morgan	**62**	**M**	**Western**
Phyllis Jenkins	56	F	Western
Elsie Casados	59	F	Eastern

Table. 1 Pilot Study Participants

5.1 **Linguistic Variables**

Based on earlier studies that cite Navajo variation (Hoijer 1945; Reichard 1945, 1951; Saville-Troike 1980; Young & Morgan 1987; Holm 1996; McDonough 2003; Chee et al. 2004; Field 2009; Berkson 2010), my own conversations with native speakers (L. Legah pc 2016), and a preliminary analysis from a pilot study, I have identified potential variables as candidates for in-depth investigation.

5.1.1 **Phonetic and Phonological Variables**

Several phonetic and/or phonological variables will be represented in the elicited words and analyzed as they arise in the discourse data.

1. Vowel space

Navajo is typologically unusual in having an asymmetric vowel system, and /o/ is said to be phonetically realized as [o] or [u] (McDonough 2003). Many speakers mention vowels as markers of regional dialect, suggesting that this might be a feature that carries salient social meaning. I will take formant measurements using *Praat* to plot the entire vowel space to analyze the vowel in context. Previous studies have also noted variation in phonemic length distinctions between bilingual and monolingual speakers of different genders (McDonough 1994). A plot of normalized F1 and F2 values from vowel tokens in the elicited wordlist is displayed in figure 2. For now I combined all vowels, though non-stem vowels have been found to be statistically different from stem vowels (McDonough 2003).

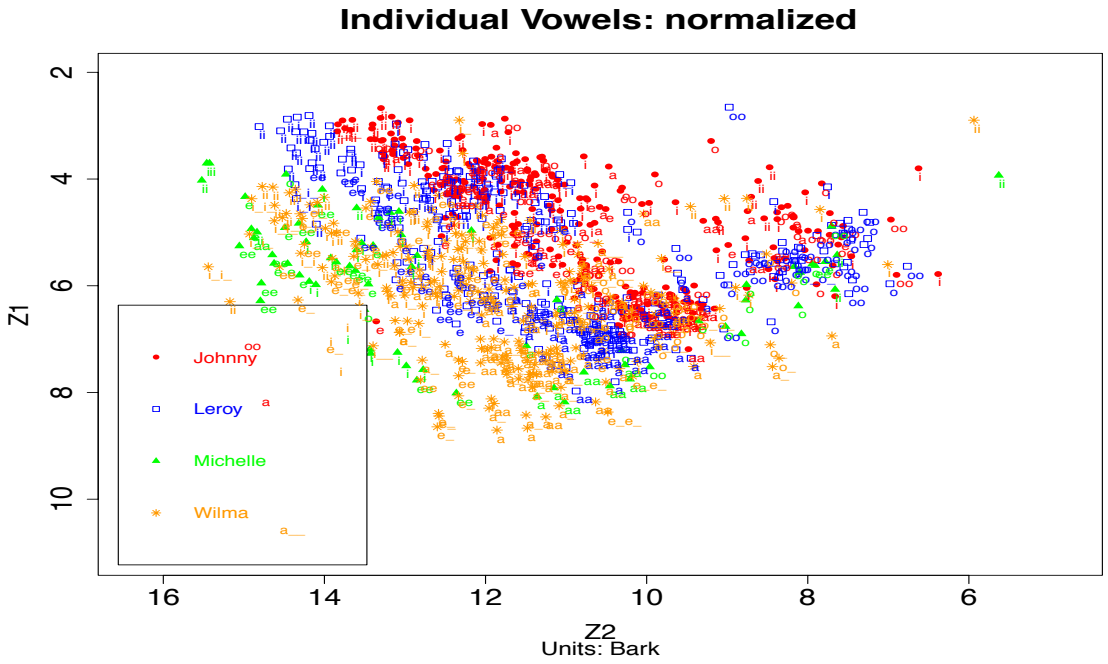


Figure 2. Vowels from wordlist tokens for four speakers

This plot suggests that the four speakers maintain the gap in the high back vowel space, while the question of phonemic length has yet to be explored. The two older speakers, Johnny and Leroy, pattern together with regards to their F1 and F2 measurements, while the two younger speakers, Michelle and Wilma, also pattern together; this visual impression was verified statistically with the ctree function in R. For these vowel measurements, the speakers do not significantly pattern by geographic region. Analysis remains to be done to compare the vowels in the different discourse contexts and to determine if word frequency has an impact on vowel realization. I will also compare these measurements to earlier studies (McDonough 2003) and will investigate the effect of age and contact with English on the vowel qualities.

2. Acoustic analysis of plosives

As mentioned above, some Navajo aspirated stops are aspirated so strongly that they may be phonetically realized as affricates (McDonough 2003). Stronger aspiration has been qualitatively associated with Western speakers, but quantitative investigation has yet to be done. Aspiration will be analyzed with voice onset time (hereafter VOT), intensity and center of gravity spectral measurements. I will also investigate whether contact with English may have impacted the degree of aspiration in younger speakers as compared with earlier measurements. This is a salient variable to some speakers; one speaker specifically mentioned that harsher sounding Navajo [x] reminded her of older speakers. I aim to extend this analysis to the voiced plosives and the ejective plosives to have comparative values of the entire stop series. Figure 3 shows the waveform and spectogram of the word *bitin* 'his ice' with the annotated closure and voice onset time for the aspirated stem-initial /t/. This example comes from Leroy Morgan, the speaker with the longest VOT values.

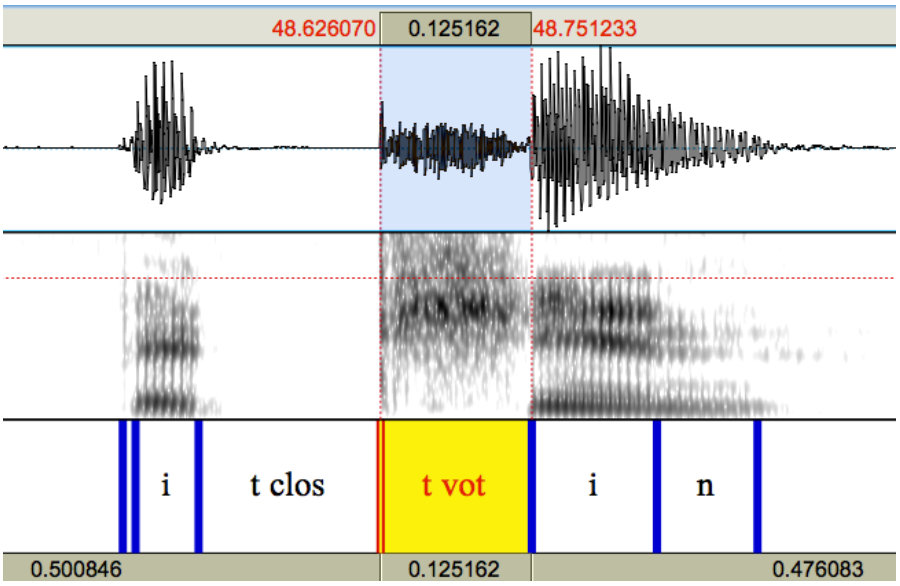
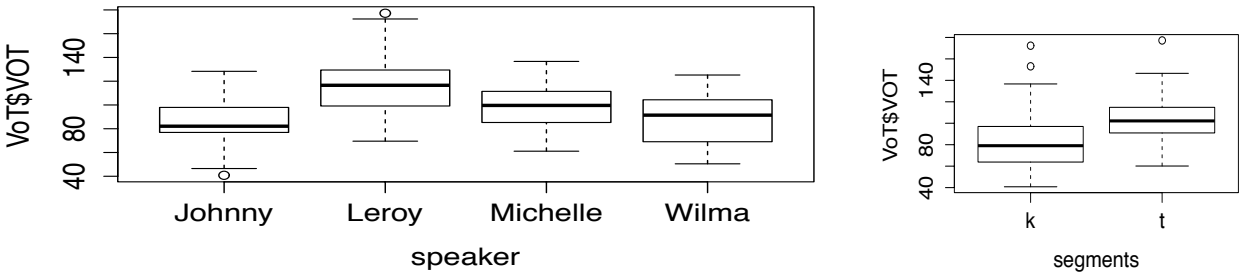


Figure 3. Example of voiceless aspirated /t/ in *bitin*

An unexpected result to emerge from these pilot data is that place of articulation does not correlate with VOT values in the predicted direction. Previous cross-linguistic work consistently finds that VOT values are the longest for velar stops (Cho & Ladefoged 1999), whereas in these results the aspirated coronal stops have longer VOT values. The unaspirated stops do show the predicted pattern, but the values are longer than expected from the earlier study. Table 2 displays my results alongside previous VOT measurements taken from a very similar wordlist. I have not yet measured the glottalized aspirated stops.

English velar stops also have the longest VOT values (Lisker & Abramson 1964) so contact is unable to explain the results. Navajo has been described as having especially long VOT values (Cho & Ladefoged 1999), and these do appear to be shortening, perhaps converging in VOT with the glottalized aspirated stops, whose values are strikingly similar here. McDonough (2003) discusses duration and timing as important perceptual cues for distinguishing the stops, and these differences are maintained with the overall shorter VOT durations. The figures below show VOT values by speaker and by segment. There is no clear explanation for this patterning of speakers

as the two speakers with the largest mean VOT values include an older speaker and the youngest speaker, one from each geographical region.



Figures 4 & 5. VOT in ms by speaker and by segment

The intensity measurements for the same segments are displayed below. The aspirated stops don't differ significantly in intensity for these speakers. The two older male speakers show much higher intensity values, but these differences are also influenced by microphone placement, and voice volume rather than greater aspiration.

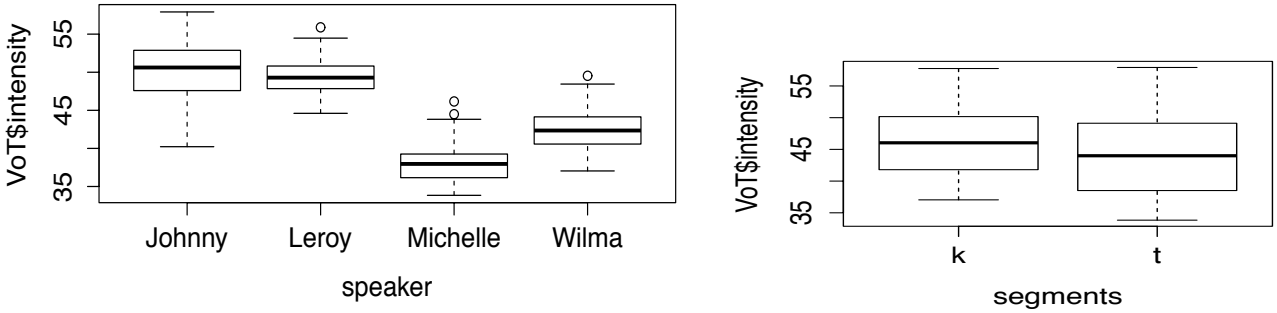


Figure 6 and 7. Intensity of aspirated stops by speaker and segments

The Center of Gravity measurements are not notably different by segment or speaker.

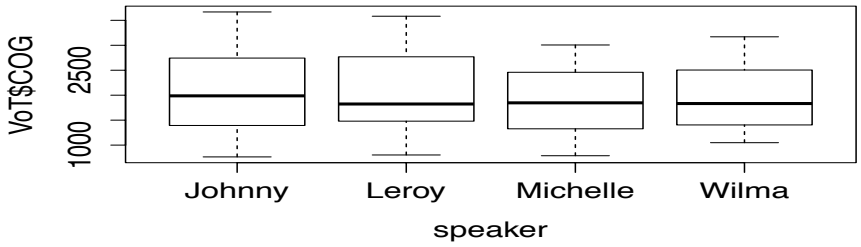


Figure 8. COG measurements by speaker

These results are very preliminary; more data, a closer analysis, and more control for potential confounds like following vowel and word position are needed. Nevertheless initial results warrant further investigation of the full stop series, especially the VOT measurements.

3. Coronal harmony

Consonant harmony is typologically unusual and may be disappearing in Navajo (Berkson 2010), though factors such as adjacency of a sibilant syllable play a role in its realization. As mentioned earlier, further investigation is needed to determine which linguistic factors influence the harmony realization in Navajo and whether the harmony effects are gradient or categorical. Analysis will include center of gravity measurements from each sibilant.

Thus far in my preliminary auditory analysis of coronal harmony, most speakers did not show evidence of coronal harmony in all wordlist items. All speakers did consistently harmonize in example 5, where the harmony in the stem triggered [+ anterior] for the 1SG morpheme -*sh*-.

(5) naaltsoos naa deestsos
naaltsoos naa dees-tsos
paper you-for 1SG.FUT-give.FFO[1]
'I'll give you the paper.'

Verbs with first person direct objects showed more variability, sometimes within a single type. Michelle Lee repeated the tokens below immediately one after another.

[1] FFO stands for flat flexible object.

(6) dashisił dasisił
da-shi-sił da-si-sił
DISTR-1SG.DO-grab DISTR-1SG.DO-grab
'They grabbed me.'

I wasn't able to elicit as many forms with coronal harmony as I had intended since speakers did not use the anticipated 4th person forms (<*ji*>. I may need to alter my wordlist to allow more tokens for analysis and I will also look for examples of coronal harmony in the discourse data.

In particular, the phoneme /dz/ [ts] showed a high degree of variability and was well represented in the data, due to the many tokens of word 'bicycle' *dzi'izí* in the *Pear Film*. The phoneme was at times phonetically realized as [tʃ] and [tʃʰ], violating the anteriority harmony.

4. Realization of /tł/

Based on auditory analysis of /tł/ there is variation in the lateral releases, with some sounding voiced. So far I have recorded no tokens with /kł/ or /k'/ substituted for /tł/. I may discard this variable depending on the data present in the full study.

5.1.2. **Morphological and Syntactic Variables**

A second set of morphological and syntactic variables will not be specifically elicited, but notable patterns in the discourse segments will be qualitatively described and categorical frequencies tabulated, if sufficient tokens occur. Though of current interest, these variables may not occur at all in the recorded discourse segments, and other variables may prove more frequent or relevant in these data. The nature of recording spontaneous speech necessitates more open-ended questions and leaves room for data-driven analysis.

1. Periphrastic tense vs. synthetic aspectual constructions

As described earlier, alternations between a periphrastic construction with a past tense adverb and the synthetic perfective construction suggest that Navajo has developed a tense system (Chee et al. 2004) used in conjunction with the aspectual system or as a replacement for certain

aspectual distinctions. This alternation reflects the somewhat contradictory tendencies of periphrasis developing into bound morphology (Hopper & Traugott 2003), while synthetic forms in shifting languages tend to become more analytic. Navajo speakers alternate, with no salient semantic difference, between the periphrastic and the synthetic constructions, and this project will investigate whether the periphrastic constructions are replacing the synthetic forms or whether their use remains restricted to certain verbs or contexts. Highly frequent verbs may be more lexicalized and may retain the synthetic forms, while less frequent verbs are more prone to generalizing pressures of analogy (Bybee 2002) and thus would be more likely to exhibit a new tense marking system earlier.

In these data there are several tokens of *ńt'éé* occurring with variable pronunciations (*ńt'éé, nt'ę́ę́, ndęę, ndę́ę́, etc.*). The adverb occurs both sentence initially as a clause linker and immediately after the verb as a tense enclitic, but most of the discourse data has yet to be transcribed and translated. Example 7 from Michelle Lee shows both functions within the same sentence with similar pronunciations.

(7) 'Áádóó néé' ałchíní yázhí,
'áádóó ńt'éé ałchíní yázhí
then then children little
Then the children,

łahjigo yiijah néé'.
łahjigo yii-jah ńt'éé'
in.another.direction 3-PROG-3.actors.run PAST
ran in another direction.

Chee et al. (1994) cite the multiple functions of *ńt'éé* as residual layering effects common in grammaticalizing elements. Previous research suggests that *ńt'éé* occurs with imperfective dependent verbs to add a completive sense (Faltz 1998), but also with perfective verbs to contribute a resultative meaning, surprise, or sudden change of thought (Chee et al. 1994).

2. Age-graded Morphosyntactic Variation

An additional group of morphosyntactic variables are likely to show age-graded effects due to structural transfer from and language shift to English. In the pilot study these variables occur only in the speech of Michelle Lee, who at 37 is notably younger than the other speakers. She is also the only speaker who did not grow up with Navajo as her first language, but was instead raised as a bilingual speaker from a young age. The morphosyntactic variation in her speech may reflect ongoing changes of a younger generation of speakers, or they may be idiosyncrasies unique to her speech. More data from younger speakers will be prioritized in the full study data collection.

Structural innovations stemming from English transfer are unsurprising in languages in strong contact situations. The changes documented in this study will contribute to growing work on the typology of changes common in intense contact (Dorian 1973; Trudgill 1983, 2011; Hill 1989; Campbell & Muntzel 1989; Craig 1998; Babel 2009). Despite evidence of similarities in cross-linguistic changes, every language community is unique and the specific changes are themselves quite variable (Cook 1989).

2. Nominal plural *–da*

Example 8 shows the Navajo distributive *da-* occurring with an English noun as a redundant plural marker. Typically *da-* occurs only as a nominal or verbal prefix with a distributive meaning not equivalent to the English plural.

(8) gohwéé́h dóó cookies-da,
coffee and cookies-PL
coffee and cookies, (Field 2009:36)

Similarly, the following example came up in Michelle Lee's personal narrative.

(9) pops dóó chips dóó sandwich-da
and and PL

'pops and chips and sandwiches.'

3. Word Order

Other variables that have arisen in the pilot study and may reflect English influence include unexpected word order in Michelle Lee's response to the English prompt 'they spun yarn' where the verb would typically follow the object, *aghaa'*, if an object is mentioned at all (Young & Morgan 1987:774).

(10) 'Adizgo yaa aghaa.
'a-diz=go y-aa aghaa'
3-IPFV.spin.it=SUB it-on wool
They spin yarn.

4. Independent personal pronouns

Michelle Lee also uses more independent personal pronouns, typically reserved for emphasis.

(11) 'Áádóó pears
'Áádóó pears
then pears
then,

táá'go
táá'=go
three=SUB
three pears,

beiníníl,
ba-yi-ní-nil,
him-it-PFV-PFV.PLO.give
he gave them to him,

bí dóó bik'is biniiyé.
bí dóó bik'is biniiyé.
him and his-friend for.that.reason
for him and for his friends.

5. English codeswitching

Unsurprisingly Michelle Lee also uses more English words in her Navajo discourse than other speakers. This matches the comments that many speakers made about the younger generation using more English. Most of her switches were with English nouns, but she also used an English

verb with a Navajo auxiliary construction noted also in Field (2009). This construction is said to be rare among fluent speakers, but more frequent among younger speakers (Canfield 1980; Field 2009). Example 12 shows this construction.

(12) hike ádiilníił
hike á-dii-l-níił
THEMATIC-1DU-CLF-FUT.make
We will hike.

6. Loss of morphological distinction

Michelle Lee was the only speaker to use the same stem for the dual and third person plural forms of the round trip motion verb when prompted on the wordlist. She extended the plural form (*nisiikai*) to the dual usage as well (*nishiit'áázh*). Speakers of languages in contact often merge categories that are not present in both languages, and Michelle's behavior here is typologically expected (Dorian 1973).

Future analysis will also compare changes in the speech of younger speakers with the changes in diasporic speakers who rarely speak the language. A decrease in domains or frequency of Navajo usage does not necessarily predict convergence with English, as exemplified by a study of Cayuga speakers of Oklahoma compared with more consistent speakers in Ontario (Mithun 1989). The Oklahoma speakers showed many expected effects of language shift including reduction in stylistic variability and in the lexicon, but speakers also maintained the morphological complexity to a surprising extent. Field (2009) predicts that overall the Navajo verb structure is unlikely to change much due to its internal morphological complexity.

5.1.3 **Discourse Variables**

The use of the *Pear Film* for elicitation will allow for comparison of specific alternations that may arise in the speakers' narration of the action in the film. Constructions that will likely arise in the recorded discourse based on the content of the film and the structure of Navajo include:

- Verbs of motion
- Third person referents
- Aspectual derivation
- Clause linking
- Composition and prosodic structure of intonation units
- Use of classificatory verbs
- Locative enclitics
- Topicality

Though most of the discourse data has not been fully transcribed, I have noticed variability in 3rd person referent tracking (*ha-, bi-, yi-*) and variation in the use of classificatory verbs with Michelle's speech showing fewer distinctions than the older speakers. Navajo language teachers (L. Legah pc) have also mentioned this as a feature of their students' speech.

The use of the *Pear Film* methodology in these interviews has resulted in the use of verbs that are very similar, allowing for very close and direct comparison of speakers' use of the constructions. The uniformity is somewhat surprising given results from other experimental approaches to Navajo verb elicitation whereby the derivational prefix complexes tended to vary more between speakers (McDonough & Sussman 2006). An example below from the beginning of the *Pear Film* narratives illustrates this high degree of similarity.

(13)

a. Wilma Lee:

Hastiin,
hastiin
man
A man,

pears náyiidlááho nt'éé.
pears ná-yi-d-łááh=go nt'éé
pears up-SERIATIVE-PFV.collect=SUB PAST
was picking pears.

b. Michelle Lee:

Hastiin nakaii dine'é nahalin léi'
hastiin nakaii dine'é nahalin léi'
man Mexican people looks.like some
A Mexican man,

náyiiláá'.

ná-yii-láá'
up-SERIATIVE-PFV.collect
he picked pears.

c. Johnny Harvey:

Hastiin léi' dzidzétsoh náyiiláá'.
hastiin léi' dzidzé-tsoh ná-yii-láá'
man some berry-big up-SERIATIVE-PFV.collect
A man picked pears.

d. Leonard Perry:

Ashkii,
ashkii
boy
A boy,

hááléi' lá ná'iizláá'.
háá=léi' lá ná-' iiz-láá'
where=some Q up-something-SERIATIVE-PFV. collect
picked pears somewhere.

e. Elsie Casados:

Hastiin léi',
hastiin léi'
man some
A man,

bilasáana nahalinigíí náyiilááho
bilasáana nahalin=ígíí ná-yii-lááh=go
apple looks.like=NMLZR up-SERIATIVE-IPFV-collect=SUB
he is picking the one that looks like an apple,

f. Phyllis Jenkins:

ch'ił,
ch'ił
plant,

łikani,
łikani,

it.is.tasty
pears,

éídi nayiilááho,
éídi ná-yii-lááh=go
that up-SERIATIVE-IPFV.collect=SUB
he's picking pears.

g. Louise Ramone:

bitsee' hólóní neiyiilááho.
bitsee' hólóní ná-yii-lááh=go
tail the.one.with up-SERIATIVE-IPFV.collect=SUB
he is picking pears.

5.2 **Language Ideologies**

The last part of the interview consists of questions designed to investigate circulating ideologies about Navajo speech. The most widespread perception mentioned by all the participants is the notion that there is a small, but salient dialectal difference between Eastern and Western Navajo speakers. Many participants mentioned lexical shibboleths such as *gohwéé́h/ahwéé́h* 'coffee' and *yas/zas* 'snow', while others pointed to specific accent differences such as degree of nasalization, rate of speech, vowels, and glottal realization. Western Navajo is thought to be less influenced by English, probably due to the physical inaccessibility of much of the Arizona reservation relative to the New Mexico side. Eastern Navajo also has had more Spanish influence prior to the rise in English usage. The only participant in this small sample who speaks mostly Navajo lives on the Western side of the reservation.

Another consistent theme to emerge from the interviews was the evaluation of their own speech as less fluent than the elders. Most of the participants in the pilot study are in their 50's and 60's, and all but one grew up with Navajo as a first language until they went to school. In most cases, they are the first generation in their family to be bilingual and do not use the language on a daily basis. Many of them stated that they had been corrected over the years on

their own language and that they still need to watch what they say in order to speak the language properly. Many participants talked about the joy of listening to elders speak and lamented the loss of the older words. The participants also spoke with concern about the future of the Navajo language and the changes they see amongst younger speakers including a slower rate of speech, changes in syntax, more English mixed with Navajo, and overall the younger generation sounding more white. These participants did not show signs of an ideology of 'elder purism' (Field 2009). There is definitely a strong association between older speakers and the Navajo language as found in (Lee 2007), though this is framed as more positively among these middle-aged participants than the teenage Navajo participants interviewed in Lee's earlier work.

Beyond the more positive evaluation of elder speech relative to youth speech, there seems to be an overall tolerance for variation including regional accent, differences in neologisms and verbal constructions, as Johnny Harvey says, "Navajo is how people use it." The following quote, also from Johnny, gives an example of a neologism difference that he has noticed in different regions. Neologisms that vary by region have been documented for other polysynthetic languages (Mithun 1989). In this example he is discussing the verb 'to take a picture'.

(14) So I mean, we prefer I guess the clicking noise, *anishkeed*[2], but there, it's like making a copy of you, *naa nishlé.* So, I think it's basically the same idea so, you're naming it different, different parts of the process.

The connection between the Navajo language and religious practices also emerged as an important theme in several of the interviews. Two speakers said that they thought Native American Church (NAC) members had a distinct style of speaking, in line with previous documentation that mentions that the dominant language of the NAC religion is Navajo (Lee 2007). Leroy mentioned the importance of speaking Navajo in order to communicate with the

[2] Young and Morgan give the literal definition of *anishkeed* as 'I'm causing you to slide away out of sight' (Young and Morgan 1987: d483).

Holy People, while Phyllis talked about the strong association in her family between Navajo and Christianity.

6. Conclusion

These initial results suggest interesting directions to pursue in the full study, with data to be collected in the spring and summer of 2017. Preliminary acoustic analysis of the vowels, the stop series, and the realization of coronal harmony, among others, will be expanded to a much larger and more representative set of data. Future phonetic analysis will also include the discourse data in order to better explore this variation in speech of different degrees of spontaneity. More in-depth morphosyntactic variation will become available as more discourse data is transcribed, and the very preliminary age-graded variation cited here, and other variation that will certainly emerge, will be addressed. The linguistic analyses will be paired with an ethnographic analysis of circulating ideologies present in the Navajo community; a small sample of which was presented in section 5.2.