Gender, Oration, and Variable Affrication in Ende

Katherine A. Strong
University of Hawaiʻi at Mānoa

Kate L. Lindsey
Boston University

Katie Drager
University of Hawaiʻi at Mānoa

Gender, Oration, and Variable Affrication in Ende

Abstract

This paper explores sociophonetic variation in Ende, a Pahoturi River (Papuan) language spoken by the Ende tän, and adds to a growing body of variationist work taking place in southern New Guinea. We examine variable affrication of Ende retroflex obstruents through conducting an auditory analysis of spontaneous speech produced by 16 speakers of Ende, and we consider what linguistic and social factors are linked with this variation. Specifically, we highlight the locally relevant social factor of participation in community oration, a prestigious practice in Ende society. The research thus provides a much-needed contrast and comparison with dominant sociolinguistic theories. The results provide evidence that retroflex obstruents in Ende are more likely to be realized as stops when produced by those who perform orations. Among the orators, the frequency of stop realizations is linked with age and gender, such that older, women orators produce more stops. In contrast, no age- or gender-based differences are observed among the non-orators. We argue that women orators are using the stop variant to assert symbolic power in a community where oration is one of the few avenues of power available to women.

Gender, Oration, and Variable Affrication in Ende

Katherine Anne Strong, Kate Lynn Lindsey, and Katie Drager[*]

1 Introduction

This paper discusses a study of sociophonetic variation in Ende, a Pahoturi River language spoken by the Ende *tän* in Western Province, Papua New Guinea. This study explores the distribution of Ende retroflex obstruents [ʈ͡ʂ~ʈ] and [ɖ͡ʐ~ɖ], and what social and linguistic factors may be linked with their variable affrication. This work also highlights the locally relevant social factor of community orator, a prestigious role through which individuals in the Ende community perform daily public orations in a long-standing practice called *kawa* (Lindsey 2019a:242–243). Including this factor in the analysis allows us to consider how gender and power operate within the community and map onto linguistic variation. This work speaks to the dual necessities of (1) studying variation in understudied linguistic settings, including indigenous, minority, endangered, under-documented, or otherwise underrepresented languages, and (2) ensuring that, in doing so, locally meaningful social categories and community-specific social structure are considered alongside more commonly studied demographics. With these goals in mind, we follow a second wave variationist approach (Eckert 2012) in that our analysis draws on a local practice identified through ethnographic methods. This study contributes to a new but growing body of work looking at variation in southern New Guinea (cf. Ellison et al. 2016, Schokkin 2017, 2018, Barth et al. 2019, Kashima et al. 2019, Lindsey 2019b) and emerges from the mutually beneficial intersection of variationist sociolinguistics and language documentation (cf. Hildebrandt et al. 2017, Meyerhoff 2017, Nagy 2009).

2 Studying variation in minority languages

Since the inception of the variationist framework in the 1960s (Labov 1966, 1969), sociolinguistic studies have centered around the more well-studied languages predominant in Western contexts, and have focused primarily on the speech of monolingual English communities (Hildebrandt, Jany, and Silva 2017, Nagy and Meyerhoff 2008). There is concern about the generalizability of dominant sociolinguistic theories when they are based on such a small subset of the world's languages (Smakman and Heinrich 2015:270). Indigenous, minority, endangered, and otherwise under-represented languages are frequently overlooked, but the potential for differences in social stratification is high in these contexts (e.g., Barth et al. 2019, Clarke 2009, Skilton 2017, Suokhrie 2016). Mansfield and Stanford (2017:117) call this the Principle of Sociolinguistic Distance, arguing that the greater the distance between a lesser-studied community and traditional sociolinguistic settings, the higher the likelihood that such research will pose challenges to current sociolinguistic theories. Further, it is ideal for variationist analyses to be conducted on understudied languages not only to contrast and compare with existing models, but also to arrive at theories of language that are representative of other populations than only those situated easily within reach of the Western academic institution.

Variationist analyses most often focus on a small set of predetermined social categories, some of which (e.g., sex and gender) have been historically conflated in the literature. While predetermined categories of age, gender, ethnicity, and socioeconomic status have consistently been found to be closely linked with socially-conditioned phonetic variation (e.g., Eckert 1989, Labov

1990, Wassink 2015), they are inadequate for describing variation in every language variety. Through ethnography, researchers can identify and center additional or alternative social categories that are meaningful to the speech community.

Variationist studies that involve ethnography have revealed differences in the sociolinguistic patterns produced by English-speaking Jocks and Burnouts at a Detroit high school (Eckert 2000), Mandarin-speaking yuppies and government employees in Beijing (Zhang 2005), and English-speaking Mobile Black Professionals, Hood Kids, and Bikers in the African American community of Rochester, New York (King 2018). Examples from lesser-studied languages include Skilton (2017), who outlines phonological and morphological variation in Máíhɨ̃ki (Peru) through the lens of speaker membership in early life communities of practice, and Clarke (2009), who investigates phonological variation in the aboriginal Sheshatshiu community (Canada). Such work highlights the benefits of ethnographic documentation in understudied speech communities and demonstrates how social categories identified through this approach can be incorporated into variationist analyses.

The current study draws on a previous analysis of phonetic variation in Ende, in which Lindsey (2019b, forthcoming b) demonstrates how final /n/-elision in Ende can be best understood through strong associations with the local practice of community oration. To meet the need for more work that is "pattern-driven, rather than variable-driven" (Hay and Drager 2007:88), the present study examines the relationship between orator status and a second variable: retroflex affrication. This study furthers our understanding of the variation of retroflex obstruents in the context of Ende more broadly, and examines how this particular variable aligns with, or contradicts, greater patterns of variation in the language. If community orator status is linked with patterns of realization for multiple variables, this may allude to a relationship between style and social categorization, necessitating a "third wave" examination of orator speech style in further research (Eckert 2012).

3 Ende

3.1 Language Background

Ende (ISO 639-3 code: kit) is spoken by the Ende *tän* ('tribe') primarily in the villages of Limol, Malam, and Kinkin in Western Province, Papua New Guinea. The Ende Language Committee was established in 2003 by Warama Kurupel (Suwede) with Wagiba Geser and Tonny (Tonzah) Warama for the primary aim of Bible translation and community literacy. The committee currently engages in on-going community-emergent linguistic work to document the Ende language, among other programs such as orthography development, technology workshops, and literacy-building efforts. All of the data analyzed in this study are drawn from the Language Corpus of Ende and other Pahoturi River Languages (Lindsey 2015), which contains over 100 hours of recorded material in Ende collected between 2015 and 2018. There are between 600 and 1,000 speakers of Ende (Lindsey 2019a:123). A type of regional egalitarian multilingualism is commonplace among Ende speakers where no local language holds more prestige than another. Along with English as the primary medium of education and religion, surrounding local languages Gogodala, Kawam, Taeme, Em, and Bitur are also commonly spoken by the Ende population due to long-standing traditions of marriage exchange among clans, subclans, and neighboring settlements (Lindsey 2019a:241).

3.2 Gender among the Ende *Tän*

In the Ende patriarchal social system, men hold primary power. Community defined leadership roles, such as chief, community secretary, and community treasurer, as well as paid government positions, such as judge (magistrate), police officers, and health workers, are positions restricted to men. Leadership roles for women are limited to pastors, teachers, and positions in local women's committees.

Daily work is heavily segregated, with women doing most of the heavy lifting including raising the children, obtaining food and water, maintaining the home, and caring for neighbors and the elderly. Daughters are coveted for the amount of labor they perform for the family. Men begin hunting and cutting grass as teenagers and learn to build houses, shape canoes, fall large trees, and build garden fences when they start their own families.

A traditional marital practice of extra-local sister exchange, by which two men exchange their

sisters (usually across village lines) in order to marry, is a grave impediment for women seeking upward mobility. Because of this practice, many women find themselves after marriage in communities where they are cultural and linguistic outsiders with extremely limited avenues to power. Even Ende women who do marry within the Ende *tän* struggle to gain leadership roles. From an early age, daily chores take precedence over their education, which is a requirement for a paid government position. In adulthood, these same chores often prohibit them from engaging in leadership activities. Thus, the main avenue to power for women is to reduce one's duties through marriage to an employed man or by having an abundance of children and gardens. A husband's employment may bring in money or influence that can offset the women's labor. Similarly, an abundance of children provides daughters, or sons who marry and bring women into the family, who can assist in the daily labor. A surplus of food can also be used to barter for other women's work. Once women achieve a high enough social status through such avenues, they can begin to influence the community through the practice of *kawa*, thereby gaining even higher status within the community.

3.3 Kawa Public Oration

In the Ende community, there is a traditional practice of public oration called *kawa* (see Lindsey 2019a: Appendix B.5.1 Public Oration for more details). Practitioners of *kawa* make daily speeches, typically in the early morning, about local news, teachings, goings-on, and other matters of importance in the village. These speeches can be performed while walking, in a public square, or outside of specific houses whose inhabitants are the intended recipients of the particular speech. *Kawa* performances are highly prestigious. As described by *kawa* practicioner, Wagiba Geser, "[…] members of the community, particularly those in positions of respect and leadership, instruct other members of the community in best practices for living a good life" (Lindsey 2019a:242). In this way, speakers use *kawa* to command respect and act on the responsibility of instructing, informing, admonishing, and persuading the broader community. An orator is not an official status within the community, unlike, for example, clan affiliation. However, throughout this paper, we follow Lindsey (2019b) in using the category *orator status* as a way to distinguish those who have been observed practicing *kawa* and those who have not.

Given that previous work demonstrates a link between orator status and n-elision (Lindsey 2019b), it is possible that other variables may also be used to index orator identity. Thus, to build a foundation to consider more deeply the relationship between orator status, identity, and patterns of linguistic variation, we aim in the current study to evaluate whether we see a relationship between those who practice *kawa* and a second variable: retroflex obstruents.

3.4 Retroflex Obstruents in Ende

The variable examined in this study is the Ende retroflex affricate, of which there is a voiceless /$\widehat{\text{tʂ}}$/ and a voiced phoneme /$\widehat{\text{dʐ}}$/ (Lindsey forthcoming a). These obstruents are variably realized as affricates [$\widehat{\text{tʂ}}$, $\widehat{\text{dʐ}}$] and stops [ʈ, ɖ] in production. For example, compare the stop in Figure 1 with the affricate in Figure 2, both of which are drawn from the speech of a single individual.

Variation between retroflex stops and affricates is attested for other languages but is described as free variation (see, e.g., Echeverría and Contreras 1965:133 for Araucanian). We hypothesize that the variation among retroflex obstruents in Ende is constrained by some of the linguistic factors outlined in Section 4.4 or some of the social factors examined: gender (Section 3.2), orator status (Section 3.3), and age. Age was included to explore the possibility that the observed variation reflects a change in progress. If Lindsey's (2019a:140) suggestion that retroflex obstruents in Pahoturi River languages can be reconstructed as stops in the proto-language, is correct, then variable retroflex affrication in Ende could be a sound change in progress. In that case, we would expect older speakers to produce a higher proportion of tokens as stops and younger speakers produce a higher proportion as affricates.
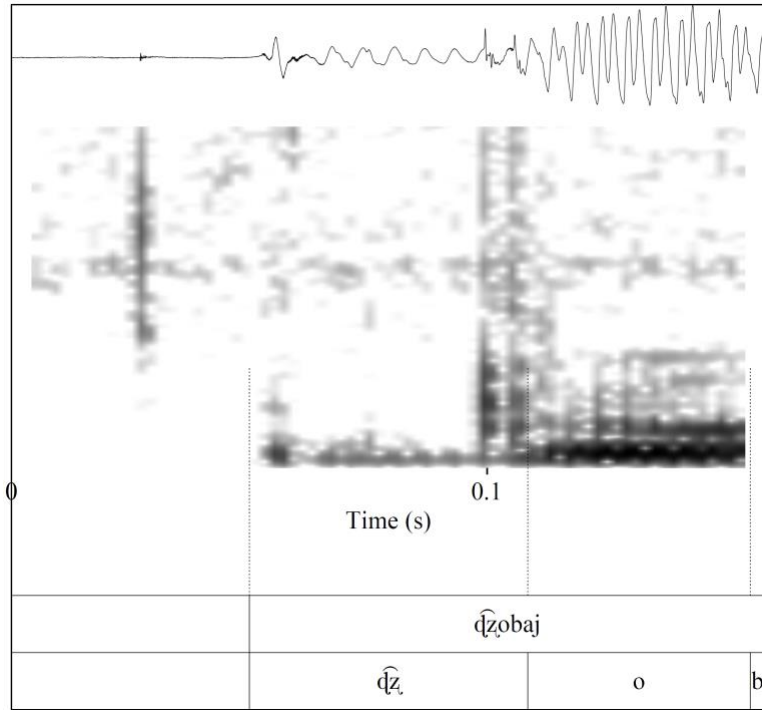
Figure 1: Waveform and spectrogram of [ɖo] from the word *ddobae* 'really, very', with realization of the variable as a stop.
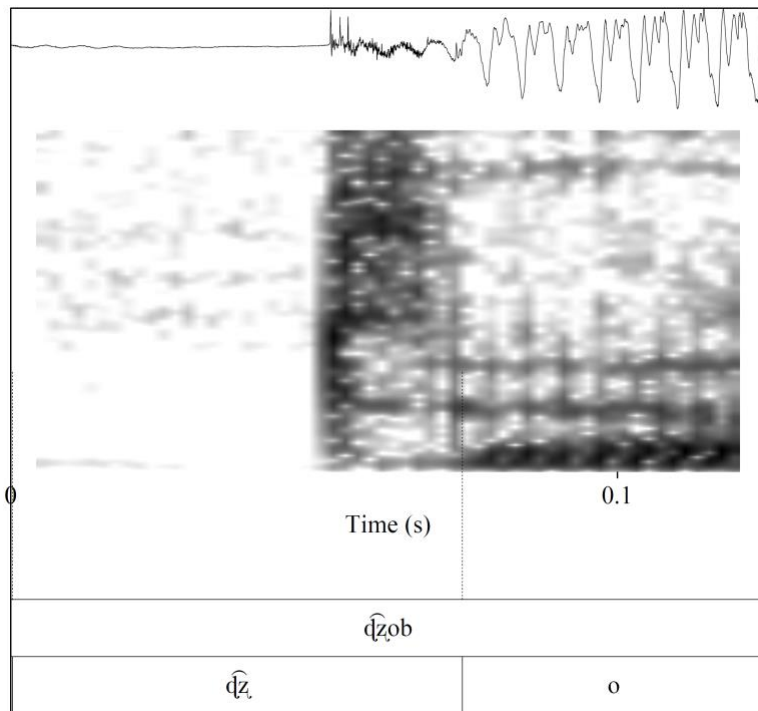
Figure 2: Waveform and spectrogram of [ɖ͡ʐo] from the word *ddob* 'some, other', with realization of the variable as an affricate.

4 Methods

4.1 Data

To address whether Ende retroflex obstruents show variable affrication, this study used auditory analysis to examine the spontaneous speech data of 16 speakers from Limol village. The data are drawn from sociolinguistic questionnaires recorded in 2018 for the Ende Language Corpus (Lindsey 2015), with durations of about 20–40 minutes per speaker. The questionnaire, which was conducted monolingually in Ende by the second author, was tailored to investigate particular social and linguistic practices of the community, drawing on both instruction from Wagiba Geser and Warama Kurupel (Suwede) and eleven months of ethnographic fieldwork by the second author in Limol. Moreover, the questionnaire was adjusted during collection to reflect new insights gathered from speakers within the community. In this way, we learned that the numerical measure of someone's age is not culturally significant; instead, speakers group themselves into four generations or cohorts based on speaker home village, education, and shared life history (Lindsey 2019b). Similarly, we found that clan affiliation seems to be losing relevance within the community with many younger speakers unaware of their mothers' or even their own clan group.

4.2 Speakers

Of the 73 individuals who participated in the interviews in total, 16 were selected for the current study. The following social variables were annotated for each speaker: age, gender, orator status, hometown, marital status, and (sub-)clan affiliations. The demographic information is provided by Lindsey (2019a:146) and is summarized for age, gender, and orator status in Table 1. Age as a factor is categorized into the four emic groups described by Lindsey (2019b). Gender is categorized as "man" and "woman" based on self-reporting and social presentation; we do not have data from non-binary or transgender people that we are aware of at this time. Orator status is based on speaker observance as a *kawa* practitioner between 2015 and 2018.

	Age 15-29		Age 30-45		Age 46-61		Age 62+		Sum
	Man	Woman	Man	Woman	Man	Woman	Man	Woman	
Orator	-	-	2	-	2	2	2	1	9
Non-orator	2	2	-	2	-	-	-	1	7
Total	4		4		4		4		16

Table 1: Summary of demographic information from 16 speakers, shown across age, gender, and orator status. The speakers analyzed for the current study were MSK, WFF, AKD, WWK, GWK, NKK, JJD, TTW, KTG, WGG, KDD, WKS, DKS, SSK, KMM, and PKS.

4.3 Extraction and Auditory Analysis

Tokens containing retroflex obstruents were extracted from recordings of the sociolinguistic interviews in ELAN using a structured search with regular expressions. Ffmpeg audio converter commands were then utilized to process the extractions into individual audio files. We treated the variable as categorical and binary (affricate or stop), and the first author coded all tokens by listening to each individual audio file over headphones (SONY dynamic stereo MDR-7506).

This study examined 1,542 tokens in total, with 64% of tokens coded as an affricate (n=981) and 36% coded as a stop (n=561). Each token was annotated for multiple linguistic and social factors, outlined below. Five tokens were removed prior to further analysis due to ambiguity or elision of the variable of interest. The third author coded 10% of the tokens to check for intercoder reliability. The coders agreed on 74% of the total tokens, with the second coder identifying more of the tokens as stops. Models were fit to a more restricted data set (n=1,428) in which tokens were removed if they were identified by either coder as containing an alternative realization or being near the coder's perceptual boundary between a stop and an affricate. Since the same factors reached significance in all models, the models fit to all data coded by the first author are presented herein. Future research will include acoustic analysis and will revisit the possibility of restricting the data.

4.4 Linguistic Factors

In addition to each speaker's age, gender, and orator status, the following linguistic factors were annotated for each token: voicing, prenasalization, type and quality of the preceding and following segments, position within the syllable, position within the word, preceding retroflex in the same utterance, lexical frequency, and grammatical category.

5 Results

The results provide evidence that the likelihood of producing a stop is linked with at least two linguistic factors: voice (voiceless vs. voiced obstruent) and position within the syllable (onset vs. coda), and three social factors: speaker age (four age groups), gender (women vs. men), and orator status (orator vs. non-orator). The data were visualized using the R packages ggplot2 (Wickham 2016), and statistical analysis was performed using the package lme4 (Bates et al. 2019; R Core Team 2019). Models were fit with glmer(), and tested for best fit using anova() to run type I sum of squares comparisons on nested models.

  The analysis presented herein focuses on two logistic regression models with mixed effects. Both are the maximal models that converged and were justified through model comparisons using anova, in line with recommendations by Barr and colleagues (2013). The first model was fit to data from all 16 speakers, with obstruent realization (stop vs. affricate) as the dependent variable. Orator status, voicing, and syllable position were the independent variables, and the model included random intercepts of word and speaker, with a by-subject random slope for voice. Convergence was not reached when both age and gender were included as fixed effects, and gender alone did not improve the fit of the model so was removed. The model output is presented below in Table 2.

Fixed Effects	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	0.4318	0.5766	0.749	0.4539
Orator = yes	1.6641	0.3836	4.338	<.0001
Voicing = voiceless	-1.5132	0.3383	-4.473	<.0001
Syllable position = onset	-1.2605	0.4719	-2.671	<.01

Table 2: Output of model fit to data from all 16 speakers: glmer(Affricate.vs.Stop ~ Orator.Status + Voicing + Syllable.Position + (1 | Word) + (Voicing | Speaker), data=Endedata, family=binomial).

As this model demonstrates, there is a significant effect of orator status (*p*<.0001) on the likelihood of affrication. Tokens are more likely to be realized as a stop by speakers who are orators compared with non-orators, as evident in Figure 3.
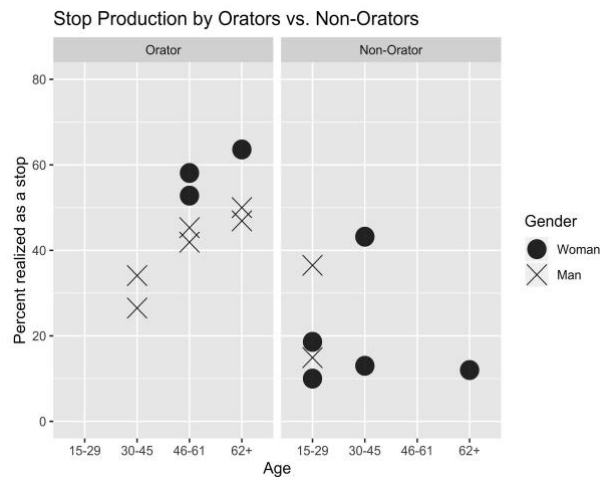

Figure 3: By-speaker percent of tokens realized as stops by orators (left panel) versus non-orators (right) across age, with women shown as filled circles and men as "X"s.

In order to test whether the observed trends among the orators reach statistical significance, a second model was fit to data from only the nine orators. In this more restricted model, obstruent realization was the dependent variable, and gender, age, and voicing were included as independent variables. The model additionally considers an interaction between gender and age (uncentered), and has the same random effects structure as the first model.

Fixed Effects	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	0.3491	0.4475	0.780	0.435
Gender = man	-0.7817	0.2882	-2.712	<.01
Age = 46-61	0.6280	0.4256	1.476	0.140
Age = 62+	1.1472	0.3141	3.653	<.001
Voicing = voiceless	-1.2899	0.3747	-3.442	<.001
Gender * Age	0.4019	0.4042	0.994	0.320

Table 3: Output of model fit to data from the nine orators: glmer(Affricate.vs.Stop ~ Gender * Age + Voicing + (1 | Word) + (Voicing | Speaker), data=oratordata, family=binomial)

The restricted model indicates that women orators are more likely than men orators to realize a token as a stop (p<.01) and that orators in the oldest age group are significantly more likely to produce stops than those in the youngest group (p<.001). There is no interaction between age and gender (p=0.32) among the orators. No age- or gender-related effects were observed among the non-orators when evaluated with a similar model.

6 Discussion

Auditory analysis of Ende retroflex obstruents reveals that the likelihood of affrication is linked with a combination of social factors: speaker age, gender, and participation as a community orator. Compared with non-orators, orators are more likely to realize retroflex obstruents as stops. Among the orators, women and older speakers are more likely to realize tokens as stops compared with younger speakers and men.

Together with earlier findings that orators are less likely to use n-elision than non-orators (Lindsey 2019b, forthcoming b), the tendency for orators to produce a higher proportion of the retroflex obstruents as stops compared to non-orators suggests that there may be a cluster of linguistic variants in Ende that together form an orator style. Given the prestige associated with being an orator and that the only women who practice oration are those who have achieved a high status through other avenues, it stands to reason that the forms orators use may carry some level of prestige.

In the Ende community, women have less power than men. There are strong gender roles, and the roles empower men and assign them the highest status positions in the village. We argue that the higher rates of stopping observed among the woman orators stem from the women harnessing the prestige associated with the variants in an effort to access symbolic power. This interpretation is consistent with work on widely spoken languages in the West (Labov 1966, 1992, Eckert 1989, Labov 1990), which demonstrates that, in linguistic changes from above, women tend to use standard variants more often than men. Eckert (1989:265) argues that the tendency arises in cases when women use prestige variants as a way to access symbolic power when real power (e.g., socioeconomic, political) is not available to them. Given this link between gender and power, we argue that women orators in Ende produce the stop variant as a way of accessing symbolic power.

It is noteworthy that the effect of gender is observed only among orators; no effect of gender is observed among people who are not orators. To understand why, it is important to consider that an individual's social identities are inherently intersectional (Crenshaw 1989). Indeed, the difference may be particularly expected if non-orator women hold positions of lower status and less power in the village. If they were to attempt to access symbolic power through the use of particular linguistic forms, it might be perceived negatively, such as being interpreted as inauthentic.

Lastly, how can we characterize the relationship between the variable and speaker age? Some

might be inclined to interpret this relationship as evidence of change in apparent time. This is not entirely supported by the data, however, as no effect of age is observed among the non-orators. Therefore, a more likely interpretation may be age-grading, where orators produce more stops as they advance in their position as a community orator. Future directions that analyze oration speech events and longitudinal data may help clarify the nature of the relationship between age, orator status, and the realization of retroflex obstruents.

7 Conclusion

In this study, we have demonstrated that retroflex obstruents in Ende are realized variably as stops and affricates and that this variation is best accounted for by an individual's status as a community orator. Within this locally relevant social factor, the effects of more commonly studied demographics, like age and gender, are revealed.

The observed effects of age and gender among the orators could easily have gone unnoticed if orator status was not previously identified as a relevant local social factor, highlighting the importance of including locally relevant social factors in quantitative variationist analysis. Further, the inclusion of a locally-relevant factor in a variationist description of an understudied language allows us to consider how the relationships between social factors and linguistic variables may differ from those described in hegemonic contributors to linguistic theory. Our ability to explore the relationships between *kawa* oration and linguistic behavior in this paper has been reliant on the diligent collection of a range of ethnographic metadata related to the community-specific cultural context, and that these materials have been made accessible. Future work that draws on ethnographic documentation to explore broader patterns of variation in understudied languages will enhance, and likely challenge, our understanding of dominant sociolinguistic trends.

References

Barr, Dale J., Roger Levy, Christopher Scheepers, and Harry J. Tily. 2013. Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory & Language* 68:255–278. doi:10.1016/j.jml.2012.11.001.

Barth, Danielle, Dineke Schokkin, Catherine Travis, Kate L. Lindsey, and James Stanford. 2019. Variation off the Beaten Path: expanding our understanding of social structures. Workshop at NWAV 48, University of Oregon.

Bateman, Nicoleta. 2011. On the typology of palatalization. *Language & Linguistics Compass* 5:588–602.

Bates, Douglas, Martin Maechler, Ben Bolker, and Steve Walker. 2019. Package 'lme4'. R package version 1.1–21. https://cran.r-project.org/web/packages/lme4/lme4.pdf.

Bucholtz, Mary. 1999. "Why be normal?": Language and identity practices in a community of nerd girls. *Language in Society* 28:203–223.

Buizza, Emanuela, and Leendert Plug. 2012. Lenition, fortition and the status of plosive affrication: the case of spontaneous RP English /t/*. *Phonology* 29:1–38. doi:10.1017/S0952675712000024.

Carrera-Sabaté, Josefina. 2009. Variation in Lleidatà: A sociophonetic case study. In J. N. Stanford & D. R. Preston (Eds.), *Variation in Indigenous Minority Languages*, 77–108. Amsterdam/Philadelphia: John Benjamins Publishing Company.

Chambers, J.K., and Schilling, Natalie. 2013. *The Handbook of Language Variation and Change.* [Second Edition]. West Sussex: Wiley-Blackwell.

Clarke, Sandra. 2009. Sociolinguistic stratification and new dialect formation in a Canadian aboriginal community: Not so different after all?. In J. N. Stanford & D. R. Preston (Eds.), *Variation in Indigenous Minority Languages,* 109–128. Amsterdam/Philadelphia: John Benjamins Publishing Company.

Crenshaw, Kimberle. 1989. Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics. University of Chicago Legal Forum. Feminism in the Law: Theory, Practice and Criticism, 139–168.

DiCanio, Christian, Hosung Nam, Jonathan Amith, Rey Castillo García, and D. H. Whalen. 2015. Vowel variability in elicited versus spontaneous speech: Evidence from Mixtec. *Journal of Phonetics* 48:45–59. doi:10.1016/j.wocn.2014.10.003.

Drager, Katie. 2010. Sociophonetic Variation in Speech Perception. *Language and Linguistics Compass* 4:473–480. doi:10.1111/j.1749-818X.2010.00210.x.

Docherty, Gerard J. 2008. Inter- and intra-speaker variation: some methodological consequences for sociophonetic research. *The Journal of the Acoustical Society of America* 123(5): 3067. doi:10.1121/1.2932827.

Docherty, Gerard J., and Paul Foulkes. 2014. An evaluation of usage-based approaches to the modelling of sociophonetic variability. *Lingua* 142:42–56. doi:10.1016/j.lingua.2013.01.011.

Duranti, Alessandro. 1992. Heteroglossia in Samoan oratory. *Pacific Studies,* 15:155–175.

Echeverría, Max S., and Heles Contreras. 1965. Araucanian Phonemics. *International Journal of American Linguistics* 31:132–135.

Eckert, Penelope. 1989. The whole woman: Sex and gender differences in variation. *Language Variation and Change* 1:245–267. doi:10.1017/S095439450000017X.

Eckert, Penelope. 2011. Language and Power in the Preadolescent Heterosexual Market. *American Speech* 86:85–97. doi:10.1215/00031283-1277528.

Eckert, Penelope. 2012. Three Waves of Variation Study: The Emergence of Meaning in the Study of Sociolinguistic Variation. *Annual Review of Anthropology* 41:87–100. doi:10.1146/annurev-anthro-092611-145828.

Ellison, T. Mark, Nicholas Evans, Eri Kashima, Dineke Schokkin, and Daniel Williams. 2016. Do shared norms cross language boundaries? A case study from multilingual Southern New Guinea. Paper presented at NWAV Asia-Pacific 4, National Chung Cheng University.

Haeri, Niloofar. 1991. Sociolinguistic Variation in Cairene Arabic: Palatalization and the qaf in Speech of Men and Women. Doctoral dissertation, University of Pennsylvania.

Hamann, Silke R. 2003. The Phonetics and Phonology of Retroflexes. Doctoral dissertation, Utrecht University. https://dspace.library.uu.nl/handle/1874/627.

Hay, Jennifer and Katie Drager. 2007. Sociophonetics. *Annual Review of Anthropology* 36:89–103. doi:10.1146/annurev.anthro.34.081804.120633.

Hildebrandt, Kristine A., Carmen Jany, and Wilson Silva (Eds.). 2017. Documenting Variation in Endangered Languages [Special Issue 13]. http://hdl.handle.net/24754.

Hilton, Nanna H., and Alexandra N. Lenz. (Eds.). 2012. New horizons in sociophonetic variation and change. [Special Issue]. *Lingua* 122:749–752.

Kampstra, Peter. 2008. beanplot: A Boxplot Alternative for Visual Comparison of Distributions. *Journal of Statistical Software, Code Snippets* 28:1–9. http://www.jstatsoft.org/v28/c01/.

Kashima, Eri. 2019. Tvenzo Nmbo Zi (Our own Nmbo language): Language ideologies of an indigenous multilingual community in Southern New Guinea. Paper Presented at Wellsprings Symposium 2019.

Kashima, Eri, Kate L. Lindsey, Dineke Schokkin, and Katherine Strong. 2019. Variationist studies in southern New Guinea. Workshop presented to Current Trends in Papuan Linguistics, Langues et civilisations à tradition orale.

Keating, Elizabeth. 2005. The sociolinguistics of status in Pohnpei. *International Journal of Sociology in Language* 172:7–30. doi:10.1515/ijsl.2005.2005.172.7.

Khatiwada, Rajesh. 2007. Nepalese retroflex stops: a static palatography study of inter- and intra-speaker variability. In *Interspeech-2007*, 1422–1425.

King, Sharese, 2018. Exploring Social and Linguistic Diversity across African Americans from Rochester, New York. Doctoral dissertation, Stanford University. http://purl.stanford.edu/gj305vh0690.

Labov, William. 1969. Contraction, deletion, and inherent variability of the English copula. *Language* 45:715–62. doi.org/10.2307/412333

Labov, William. 1972. *Sociolinguistic patterns.* Philadelphia: University of Pennsylvania Press.

Labov, William. 1990. The intersection of sex and social class in the course of linguistic change. *Language Variation and Change* 2:205–254. doi:10.1017/S0954394500000338.

Labov, William. 2001. *Principles of Linguistic Change: Vol. II: Social Factors*. Oxford: Blackwell.

Labov, William. 2006 [1966]. *The Social Stratification of English in New York City* (2nd edition). Cambridge: Cambridge University Press.

Lindsey, Kate L. 2015. Language Corpus of Ende and other Pahoturi River Languages (LSNG08). Digital collection managed by PARADISEC. [Open Access]. http://catalog.paradisec.org.au/collections/LSNG08.

Lindsey, Kate L. 2019a. Ghost Elements in Ende Phonology. Doctoral dissertation, Stanford University. https://purl.stanford.edu/ys194fp6634.

Lindsey, Kate L. 2019b. Variation and spreading in Pahoturi River final-/n/ realization. Poster presented at the 93rd Annual Meeting of the Linguistic Society of America, New York.

Lindsey, Kate L. Forthcoming a. Ende (Illustration of the International Phonetic Alphabet). *Journal of the International Phonetic Alphabet*.

Lindsey, Kate L. Forthcoming b. Variable /n/-realisation in Ende. In E. Kashima & M. Meyerhoff (Eds.), Special Issue of *Asia-Pacific Language Variation.*

Mannell, Robert. 2008. Speech spectra and spectrograms 6: Some consonant spectra. http://clas.mq.edu.au/speech/acoustics/speech_spectra/affricates.html. (Accessed 7 March 2019).

Mansfield, John, and James Stanford. 2017. Documenting Sociolinguistic Variation in Lesser-studied Indigenous Communities: Challenges and Practical Solutions. In K. A. Hildebrandt, C. Jany, and W. Silva (Eds.), *Language Documentation & Conservation: Documenting Variation in Endangered Languages* [Special Publication No. 13], 116–136.

Marotta, Giovanna. 2014. New parameters for the sociophonetic indexes: Evidence from the Tuscan varieties of Italian. In Celata, Chiara & Calami, Silvia (Eds.), *Advances in Sociophonetics,* 137–168.

Meyerhoff, Miriam. 2017. Writing a linguistic symphony: Analyzing variation while doing language documentation. *Canadian Journal of Linguistics/Revue canadienne de linguistique* 62:525–549. doi:10.1017/cnj.2017.28.

Moore, Emma, and Paul Carter. 2015. Dialect contact and distinctiveness: The social meaning of language variation in an island community. *Journal of Sociolinguistics* 19:3–36. doi:10.1111/josl.12107.

Ohala, John J. 1989. Sound change is drawn from a pool of synchronic variation. In L. E. Breivik & E. H. Jahr (Eds.), *Trends in Linguistics: Language Change: Contributions to the Study of its Causes [Studies and Monographs 43]*, 173–198. Berlin, New York: Mouton de Gruyter.

Palakurthy, Kayla. 2018. The role of similarity in sound change: Variation and change in Diné affricates. Paper presented at NWAV 47, New York University.

R Core Team. 2019. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. http://www.R-project.org/.

Schokkin, Dineke. 2017. Capturing inherent variability while doing language description: the case of the Idi auxiliary. Paper presented at Association for Linguistic Typology 12, Australian National University.

Schokkin, Dineke. 2018. Towards a sociogrammar of Idi: Exploring final nasal deletion in verbs. Paper presented at NWAV Asia-Pacific 5, University of Queensland.

Simonsen, Hanne Gram, Inger Moen, and Steven Cowen. 2008. Norwegian retroflex stops in a cross linguistic perspective. *Journal of Phonetics* 36:385–405. https://doi.org/10.1016/j.wocn.2008.01.001.

Skilton, Amalia. 2017. Three speakers, four dialects: Documenting variation in an endangered Amazonian language. In K. A. Hildebrandt, C. Jany, & W. Silva (Eds.), *Language Documentation & Conservation: Documenting Variation in Endangered Languages [Special Publication No. 13]*, 94–115.

Smakman, Dick, and Patrick Heinrich (Eds.). 2015. *Globalising Sociolinguistics: Challenging and Expanding Theory*. New York: Routledge.

Stanford, James N. & Dennis R. Preston. 2009. The lure of a distant horizon: Variation in indigenous minority languages [Introduction]. In J. N. Stanford & D. R. Preston (Eds.), *Variation in Indigenous Minority Languages*, 1–22. Amsterdam/Philadelphia: John Benjamins Publishing Company.

Suokhrie, Kelhouvinuo. 2016. Clans and clanlectal contact: Variation and change in Angami, *Asia-Pacific Language Variation* 2:188–214.

Wassink, Alicia Beckford. 2015. Sociolinguistic patterns in Seattle English. *Language Variation and Change*, 27:31–58. doi.org/10.1017/S0954394514000234

Weismer, Gary, and Ruth E. Martin. 1992. Acoustic and perceptual approaches to the study of intelligibility. In R. D. Kent (Ed.), *Intelligibility in speech disorders*, 67–118. Amsterdam: John Benjamins BV.

Wickham, Hadley. 2016. ggplot 2: Elegant Graphics for Data Analysis. Springer-Verlag New York. https://ggplot2.tidyverse.org.

Department of Linguistics
University of Hawai'i at Mānoa
Honolulu, HI 96822
strongka@hawaii.edu
kdrager@hawaii.edu

Department of Linguistics
Boston University
Boston, MA 02215
klindsey@bu.edu