

Gender and Formality Effects on the Production of Vocal Fry

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Results

Question

Who uses vocal fry (creaky voice) more often, men or women? Does the use of vocal fry differ with different tasks? Which produces more vocal fry: a careful reading task or a sociolinguistic interview?

Background

Vocal fry is roughly equivalent to what many linguists call “creaky voice.” It is characterized by low frequency and damped glottal pulses (Epstein 2002). Compare the following modal vowel (Figure 1) to the creaky vowel (the second portion of Figure 2). Both vowels have the same amplitude.

Figure 1

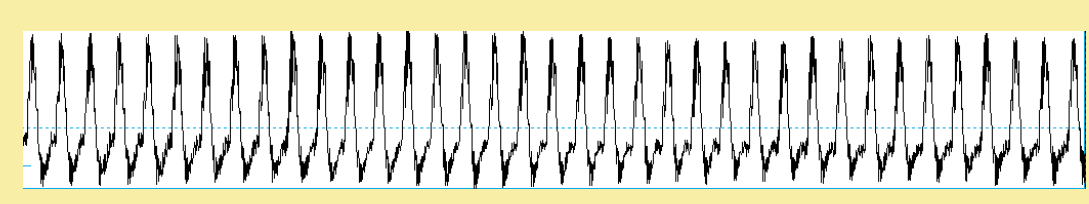
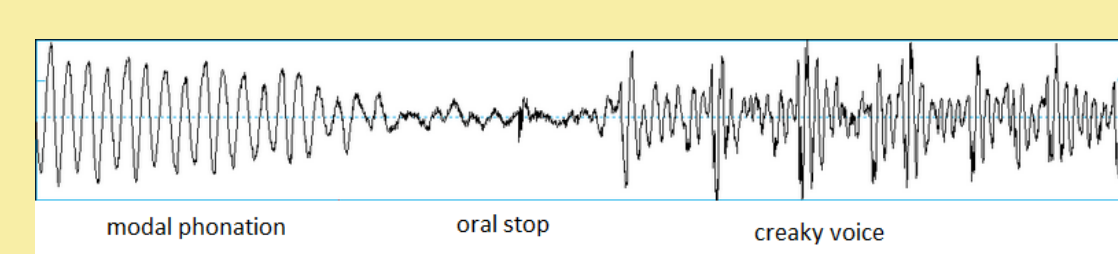


Figure 2



Most literature mentions that there is a tendency for vocal fry to occur utterance-finally, especially preceding glottalized consonants (Garellek, 2011a)

Wolk et al (2011) found that most college-aged women use vocal fry at the end of declarative sentences

Other studies have found that women tend to use vocal fry more than men in informal contexts in the Washington DC area and California (Podesva, 2011; Yuasa, 2010). There are no such studies for Michigan speakers, or for the Midwest more broadly.

Not much work has been done on vocal fry and its use across various tasks

Based on previous work on vocal fry and gender, it would be expected that women use vocal fry more often in both informal contexts and during the rainbow passage

Methods

Participants

16 college-aged speakers of Native English from Michigan

Task

Participants were first asked to read a short passage called “the Rainbow Passage.” They were instructed to read it carefully, and try not to make any mistakes.

The participants then underwent a sociolinguistic interview.

Subjects were recorded in a sound-attenuated lab. They were interviewed in the early afternoon to avoid the effects of tiredness on their phonation.

Analysis

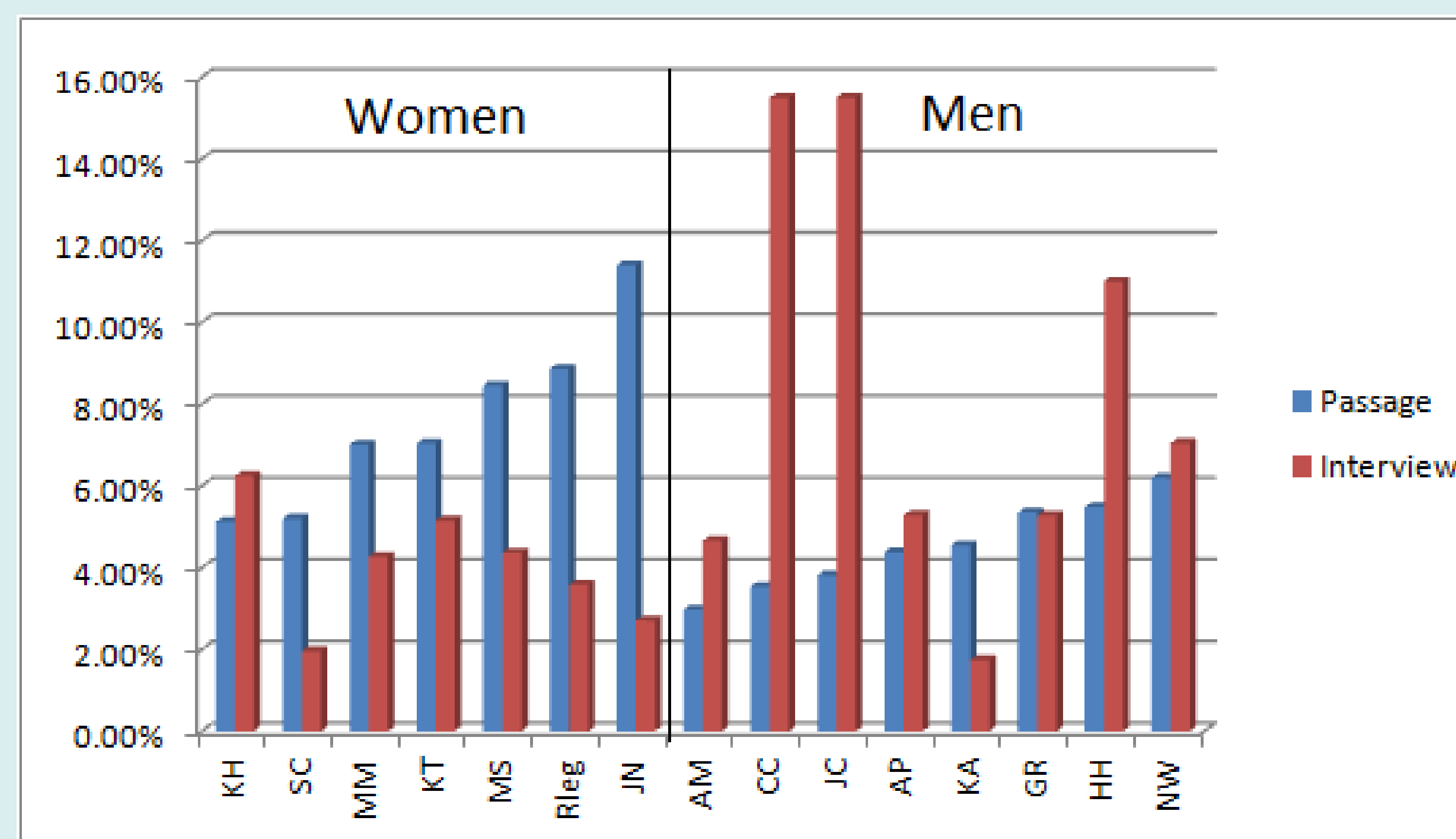
The total duration of the passage was recorded, and the duration of vocal fry throughout the passage was recorded

Five minutes (300 seconds) from the 10-15 minute mark were coded from the sociolinguistic interview

In addition, generalizations about where vocal fry occurs in the various tasks were recorded and compared statistically

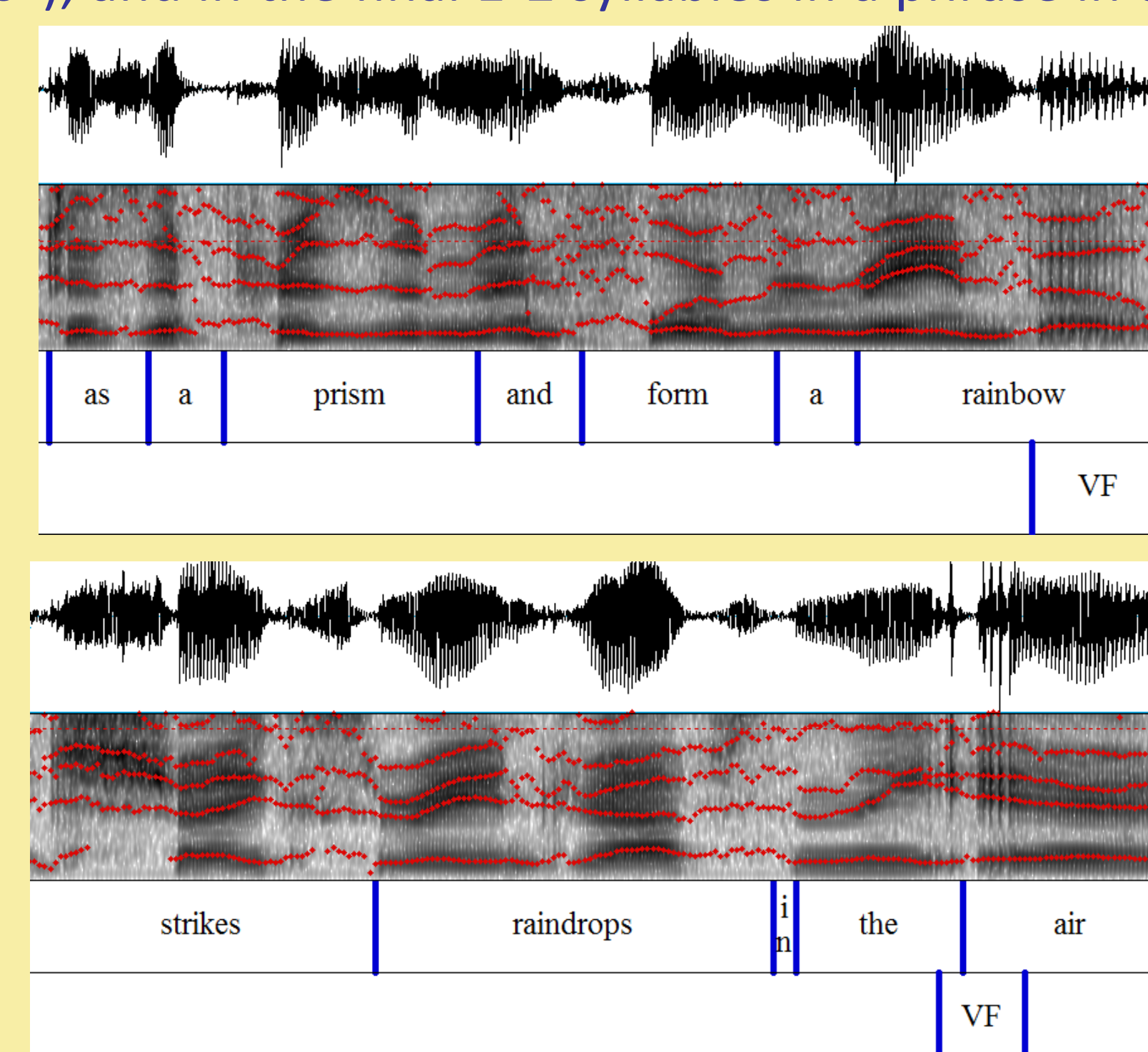
Passage Data			
	Duration of Vocal Fry	Total Duration	Percent
AM	3.04	101.98	2.98%
CC	3.3	93.13	3.54%
JC	4.48	117.43	3.82%
AP	4.55	103.95	4.38%
KA	4.57	100.4	4.55%
KH	5.28	102.95	5.13%
SC	5.72	109.97	5.20%
GR	6.73	125.68	5.35%
HH	7.67	139.78	5.49%
NW	5.95	96	6.20%
MM	9.1	129.79	7.01%
KT	7.39	104.94	7.04%
RL	8.08	112.06	7.21%
MS	8.11	95.88	8.46%
Rleg	8.25	93	8.87%
JN	12.18	106.83	11.40%

Interview Data			
	Duration of Vocal Fry	Total Duration	Percent
KA	5.23	300	1.74%
SC	5.88	300	1.96%
AM	8.12	300	2.71%
Rleg	10.77	300	3.59%
MM	12.81	300	4.27%
MS	13.09	300	4.36%
CC	14.01	300	4.67%
KT	15.46	300	5.15%
GR	15.83	300	5.28%
AP	15.85	300	5.28%
KH	18.76	300	6.25%
NW	21.17	300	7.06%
HH	33.02	300	11.01%
JN	41.85	300	13.95%
JC	46.52	300	15.51%

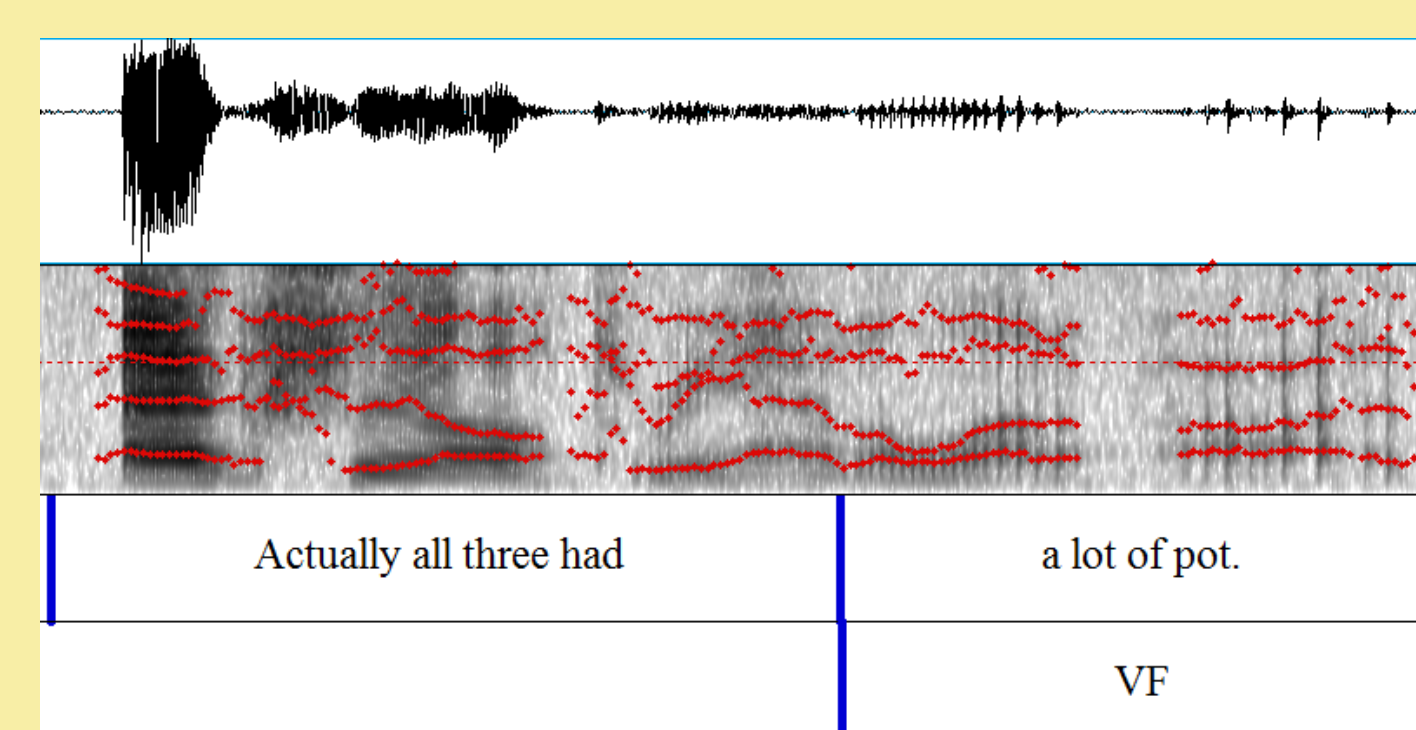


Where was vocal fry used?

Vocal fry tended to be used in syllables with final glottal consonants, between two words with adjacent vowels (for example, the final vowel of “rainbow” and first vowel of “is” in “rainbow is”), and in the final 1-2 syllables in a phrase in the passage portion



In the interview, participants were likely to use vocal fry in all of the places where they used it in the passage, but they were also likely to use vocal fry for whole phrases at a time, especially when slightly embarrassed or sharing something secretive, or that they had some type of negative feeling about. These were usually quieter phrases, as well.



Discussion

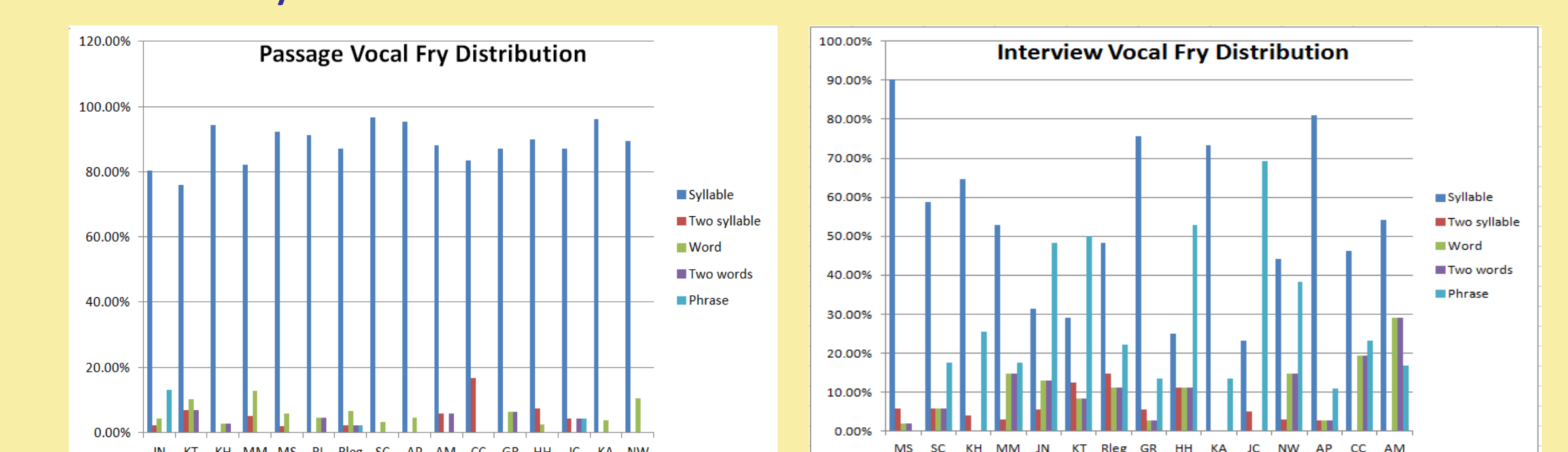
Was there a difference between the genders and the contexts?

To investigate the overall gender effect and the overall task effect, a **repeated measures ANOVA** was used, where **gender** was the **between-subject** variable and the **task** was the **within-subject** variable. To investigate the **gender effect within each test**, an **independent t-test** was used for each task.

It was found that there was no overall statistical difference for duration of vocal fry between either gender or task

However within the careful reading task, women used more vocal fry than men

Shannon’s Entropy showed that there was a significant difference in the distribution of vocal fry between tasks – vocal fry in the reading task tended to fall on the final 1-2 syllables of a phrase, whereas in the interview speakers were more likely to use vocal fry in a more varied way.



Despite the findings of previous research in California and Washington DC, it seems that speakers in Michigan do not differ with regard to gender in their usage of vocal fry

This could possibly be a regional difference, a sound change in progress, or both

Men could be catching up to women, as women are normally the innovators in sound changes (Labov 1990).

It is also striking that speakers use vocal fry in different ways for the contexts. Both men and women use vocal fry for whole phrases when coupled with lower volume to signify something “secretive” or slightly embarrassing.

References

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Acknowledgements

Thank you to my advisor Carmel O’Shannessy for guiding me in this project. Thank you to the Michigan Undergraduate Committee for funding this project. Thank you also to my second reader Robin Queen, Pam Beddor, and the SoConDi Discussion Group at Michigan for their valuable comments.