

2. METHOD

2.1. Participants

Ten native speakers (5 males) of Western Canadian English aged 17-30 (mean: 22.4) were recruited. This English dialect exhibits /

7],

as the target vowel /
no history of speech or hearing impairments.

2.2. Materials

, kid, cod, cud,

/, /

, respectively, in the context of /kVd/ were used. The production of each token was recorded in isolation in conversational and clear speaking styles.

2.3. Procedures

The stimuli were recorded in a sound-attenuating booth at a sampling rate of 48 kHz. A Shure KSM

304ms; / /: 177ms; /u/: 360ms; / /: 193ms) were longer than their conversational productions (/i/: 263ms; / /: 151ms; /

The duration increases for each vowel pair were further compared in *t* tests. The results showed that the increase was greater in magnitude for tense vowels than for lax vowels [/i/ (71ms) vs. / / (26ms): $t(9) = 3.92$, $p = .004$; / / (42ms) vs. / / (20ms): $t(9) = 2.35$, $p = .044$; /u/ (73ms) vs. / / (31ms): $t(9) = 4.49$, $p = .002$].

4. DISCUSSION

The results of this study showed that F2 and vowel duration yielded greater conversational-to-clear modifications for tense vowels. For vowel duration results, not only were clearly produced vowels on average longer than conversationally produced vowels, consistent with previous findings [1, 2, 3], but also the lengthening of vowels from conversational to clear speaking style was greater for tense for

6. REFERENCES

- [1] Ferguson, S. H., Kewley-Port, D. 2007. Talker differences in clear and conversational speech: acoustic characteristics of vowels. *J. Speech Lang. Hear. Res.* 50, 1241-1255.
- [2] Bradlow, A., Torretta, G., Pisoni, D. 1996. Intelligibility of normal speech I: Global and fine-grained acoustic-phonetic talker characteristics. *Speech Communication* 20, 255-272.
- [3] Ferguson, S. H., Kewley-Port, D. 2002. Vowel intelligibility in clear and conversational speech for normal-hearing and hearing-impaired listeners. *J. Acoust. Soc. Am.* 112, 259-271.
- [4] Lu, Y., Cooke, M. 2008. Speech production modifications produced by competing talkers, babble, and stationary noise. *J. Acoust. Soc. Am.* 124, 3261-3275.
- [5] Kondaurova, M. V., Bergeson, T. R. 2012. Effects of deafness on acoustic characteristics of American