1. Merseyside Background

- Liverpool English = low prestige variety [1, 2] spoken in Liverpool & surrounding areas, NW England [3].
- Said to have ‘ousted’ the traditional variety of the Wirral [4].
- Yet, ‘different kinds of Merseyside Englishes’ exist [5] with subtle phonetic distinctions between them [6, 7].
- Liverpool is urban with strong working class associations; Wirral more rural and affluent.
- Question: do ‘plastic Scousers’ from the Wirral distinguish themselves from Liverpool speakers phonetically?
- Here looked at in terms of laryngeal setting.

2. Voice Quality - Laryngeal Setting

- Laryngeal setting linked to social factors, e.g. gender, age & class [8, 9, 10, 11].
- In British English varieties, pre-aspiration & breathy voice more common in females [9, 10, 11, 12]; pre-glottalisation & creak in males [9, 12, 13].
- Not just physiological; used in identity work & stance taking [14, 15].

What are pre-aspiration and pre-glottalisation?

Pre-aspiration:
- Turbulent airflow through glottis resulting in aspiration noise prior to stop closure [11, 12].

Pre-glottalisation (synonymous with ‘glottalisation’):
- Creaky voice in the vowel terminus prior to stop closure [17, 18].

3. Methods

- 16 people in final year of 6th form from across the Wirral and Liverpool tested.
- Participants read wordlist twice: 24 CVC words incl. coda /t/, 23 coda /k/ (x2).
- Praat textgrids created [19]. Auto-aligned in FAVE [20].
- Pre-aspiration and pre-glottalisation (creak) manually annotated. Coded for presence vs absence.

Waveform and spectrogram showing a pre-aspirated production of ‘cut’ by Wirral male, WR3. ‘br’ = breathy voice, evident through the appearance of low intensity formants and a sinusoidal waveform structure. ‘pre-’ = pre-aspiration, visible as a portion of ‘friction noise’.

- Band Pass Filtered Zero Crossing Rate (BP ZCR) also obtained (using script provided by Olga Gordeeva) = no. times per sec signal passes through zero.
- Previously applied to breathy voice and pre-aspiration [11, 16, 21]. Higher BP ZCR, noisier signal.
- If pre-aspiration pre-glottalisation present, vowel onset set as endpoint of laryngeal phenomenon.
- Vowels preceding /t/ and /k/ divided into 5 points. Mean BP ZCR in final 5th of vowel examined.

4. Results

Presence versus absence of pre-aspiration and pre-glottalisation

Model:
- Generalised Linear Mixed

<table>
<thead>
<tr>
<th>Location</th>
<th>Pre-aspiration</th>
<th>Pre-glottalisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liverpool</td>
<td>2.113 0.008**</td>
<td>3.199 0.001**</td>
</tr>
<tr>
<td>Wirral</td>
<td>2.014 0.003*</td>
<td>3.561 0.001**</td>
</tr>
</tbody>
</table>

Dependent Variables:
- Presence vs absence of 1) pre-aspiration and 2) pre-glottalisation.

Random Effects

Location: Liverpool, Wirral. Males show greater rates of pre-aspiration than Wirral speakers.

BP ZCR

Males show greater rates of pre-aspiration than females. Overall, /t/ shows greater pre-aspiration than /k/.

5. Conclusions

- Liverpool and Wirral speakers differed in rates of pre-aspiration and pre-glottalisation displayed.
- Pre-aspiration more common in Liverpool speakers; pre-glottalisation more common in Wirral speakers.
- But, high levels of individual variation shown.
- In the acoustic measure, BP ZCR, location differences were not significant (despite graphical similarity between proportional rates of pre-aspiration & BP ZCR).

REFERENCES

[16] Pre-aspiration pre-glottalisation present, vowel onset set as endpoint of laryngeal phenomenon.
[17] Vowels preceding /t/ and /k/ divided into 5 points. Mean BP ZCR in final 5th of vowel examined.
[18] Waveform and spectrogram depicting a pre-glottalised production of the word ‘means’ by Wirral female, WF2. ‘creak’ = creaky voice, evident in the waveform and spectrogram as irregular glottal pulsing.
[19] Band Pass Filtered Zero Crossing Rate (BP ZCR) also obtained (using script provided by Olga Gordeeva) = no. times per sec signal passes through zero.