VARIATION IN BRITISH ENGLISH /t/: PRELIMINARY STUDY

MÍŠA HEJNÁ, LAUREN BRAMLEY, SADIE MAHER & SIOBHAN PATERSON
What is the phonetic realisation of /t/ in British English?
- post-aspiration, glottalling, glottalisation, affrication, spirantisation, pre-aspiration, tensing in particular

Why should we care?
- allophonic patterns often involving post-aspiration and glottalisation
  - but are there actually more allophonic patterns?
- How much consistency is there in the allophonic patterns cross-dialectally?
- Is the foot-initial position the most stable (the least variable)?
  - (Docherty 1995: 258; Smith 2002)
METHODOLOGY

- 6 regions:
  - Bangor, Aberystwyth, Bridgend; Manchester, Birmingham, Kent

- 6 speakers:
  - all females
  - 20-22 years old
  - parents from the same area (excepting Bridgend)
METHODOLOGY

- 6 regions: Bangor, Aberystwyth, Bridgend; Manchester, Birmingham, Kent

- 6 speakers:
  - all females
  - 20-22 years old
  - parents from the same area (excepting Bridgend)
words in isolation

- word-initial /\textit{t}/: \textit{tat} 8 x 6 (48)
- word-medial /\textit{t}/: \textit{tatter} 13 x 6 (78)
- word-final /\textit{t}/: \textit{tat} 11 x 6 (66)
  - exploratory analysis (192 tokens in total)

- vowel = /\textit{a}/ in the English accents & Bangor, and most often in the Welsh accents
- occasional differences in the vowels in the Welsh accents not confounds
POST-ASPIRATION
POST-ASPIRATION

- word-initially obligatory
- e.g. *tat*
- purple = presence of post-aspiration
- word-medially obligatory absence for many
- e.g. *tatter*
- purple = presence of post-aspiration
POST-ASPIRATION

- word-finally only in Welsh English
- e.g. tat
- purple = presence of post-aspiration
AFFRICATION

t

af post pr

tan
AFFRICATION

- word-initially obligatory
- e.g. *tat*
- purple = presence of affrication
AFFRICATION

- word-medially obligatory in Welsh English
- e.g. *tatter*
- purple = presence of affrication
AFFRICATION

- word-finally obligatory in Welsh English
- e.g. *tat*
- also in Kent
- purple = presence of affrication
SPIRANTISATION

before that

th a t
**SPIRANTISATION**

```
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>a</td>
<td>k</td>
<td></td>
<td>t</td>
</tr>
<tr>
<td>br</td>
<td>pre</td>
<td>clo</td>
<td>post</td>
<td>clo</td>
</tr>
</tbody>
</table>
```
Spirantisation

- none initially
- word-medially only Kent & Manchester
- e.g. tatter
- purple = presence of spirantisation
SPIRANTISATION

- word-finally only in Manchester
- e.g. tat
- purple = presence of spirantisation
GLOTTAL REPLACEMENT / GLOTTALLING
GLOTTAL REPLACEMENT

- none initially
- word-medially only in Birmingham
- e.g. tatter
- purple = presence of glottalling
GLOTTAL REPLACEMENT

- word-finally only in Birmingham
- obligatory
- e.g. tat
- purple = presence of glottalling
GLOTTAL REINFORCEMENT
GLOTTAL REINFORCEMENT

- none initially (because no sound!)
- medially only in Bridgend
- in the preceding sound
- e.g. *tatter*
- purple = presence of reinforcement
- finally obligatory in Kent
- e.g. *tat*
- purple = presence of reinforcement
■ increase of energy in the higher frequencies in the spectrogram
TENSING

- only finally
- Manchester & Kent
- e.g. tat
- purple = presence of tensing
PRE-ASPIRATION

- none initially (no sound!)
- obligatory medially
- e.g. *tatter*
- not obligatory in Birmingham
- purple = presence of tensing
PRE-ASPIRATION

- obligatory finally in Aber
- e.g. tat
- present only in Welsh English
- purple = presence of tensing
HOW DO THESE FEATURES FIT IN?

**Bangor**
- **tat** \([t^{s(h)}a^{(h)}t^{s(h)}]\)
- **tatter** \([t^{s(h)}a^{h}t^{s(\theta)}]\)

**Aberystwyth**
- **tat** \([t^{sh}a^{h}t^{s(h)}]\)
- **tatter** \([t^{sh}a^{h}t^{s(h)}\theta]\)

**Bridgend**
- **tat** \([t^{sh}a^{(h)}t^{s(h)}]\)
- **tatter** \([t^{sh}a^{(\theta)}t^{s(\theta)}]\)

**Manchester**
- **tat** \([t^{sh}a^{?}t^{(s)}]\)
- **tatter** \([t^{sh}a^{h}t^{(\theta)s}\theta]\)

**Birmingham**
- **tat** \([t^{sh}a^{?}\rangle\rangle]\)
- **tatter**
  - a. \([t^{sh}a^{?}\theta]\)
  - b. \([t^{sh}a^{(h)}t^{(sh)}\theta]\)

**Kent**
- **tat** \([t^{sh}a^{?}t^{s(\theta)}]\)
- **tatter** \([t^{sh}a^{(\theta)}t^{s(\theta)}]\)
ALLOPHONIC PATTERNS

- more allophonic patterns
- accent-specific to some extent
- Welsh accents predominantly lax laryngeal structures
- Kent & Manchester mixture (tense foot-finally, lax foot-medially and -initially)
- Birmingham (tense foot-finally and -medially, lax foot-initially)
## Allophonic Patterns

<table>
<thead>
<tr>
<th></th>
<th>Bangor</th>
<th>Aberystwyth</th>
<th>Bridgend</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>tat</em></td>
<td>[tʰɑtʰ]</td>
<td>[tʰɑtʰ]</td>
<td>[tʰɑtʰ]</td>
</tr>
<tr>
<td><em>tatter</em></td>
<td>[tʰɑtʰ]</td>
<td>[tʰɑtʰ]</td>
<td>[tʰɑtʰ]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Manchester</th>
<th>Birmingham</th>
<th>Kent</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>tat</em></td>
<td>[tʰɑtʰ]</td>
<td>[tʰɑtʰ]</td>
<td>[tʰɑtʰ]</td>
</tr>
<tr>
<td><em>tatter</em></td>
<td>[tʰɑtʰ]</td>
<td>a. [tʰɑtʰ]</td>
<td>b. [tʰɑtʰ]</td>
</tr>
</tbody>
</table>

a. [tʰɑtʰ]
b. [tʰɑtʰ]
IS THE FOOT-INITIAL POSITION THE MOST STABLE (THE LEAST VARIABLE)?

- yes, both within and across speakers
- all foot-initial /t/ obligatorily
  - affricated
  - and post-aspirated as well
DEGREE OF VARIABILITY

- foot-initial < foot-medial < foot-final
- when all evidence is taken into consideration
Manchester English (Hejná & Scanlon 2015)

- Could the newly reported allophony be explained by relationship between pre- and post-release gesture?
- Glottalised /t/ would be unaspirated
- Pre-aspirated /t/ would be post-aspirated and/or affricated

- NO
VOT (VOICE ONSET TIME)

- Increases as the place of articulation becomes more anterior
- Many /t/’s are not post-aspirated but affricated
- Affrication (oral & glottal) ≠ aspiration (glottal)
- /t/ often reported to have longest VOT and most pre-aspiration
  - e.g. Morris 2010, Hejná 2015
FURTHER RESEARCH

- geographical isoglosses for lax vs tense laryngeal structures?
- global phonation affecting (supposedly) allophonic patterns?
- global phonation feeding into allophonic patterns?
- more data (which would be statistically valid)

- more speakers, regions, (generations, styles…)
- other places of articulation & lenis plosives as well


