A study of rhythm in London: Is syllable-timing a feature of Multicultural London English?

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N WAV 39 San Antonio
Rhythm in speech

- Syllable-timed languages
  - Duration of units (e.g. syllables, vowels) is near equal
    - Mandarin, Spanish, French
- Stress-timed languages
  - Larger durational variability of units
    - English, German, Dutch
- Continuum from syllable- to stress-timed languages
Pairwise Variability Index (PVI)

• Low et al. (2000), Grabe & Low (2002)
  ▫ Average relative difference (e.g. duration) between successive pairs of units

• Low PVI
  ▫ Regularity from unit to unit
  ▫ Considered more syllable timed

• High PVI
  ▫ Lack of regularity from unit to unit
  ▫ Considered more stress timed
Different languages and vocalic PVI
(Deterding 2001, Grabe & Low 2002)

<table>
<thead>
<tr>
<th>Language</th>
<th>PVI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandarin</td>
<td>27.0</td>
</tr>
<tr>
<td>Spanish</td>
<td>29.7</td>
</tr>
<tr>
<td>French</td>
<td>43.5</td>
</tr>
<tr>
<td>Singapore English</td>
<td>52.3</td>
</tr>
<tr>
<td>British English (RP)</td>
<td>57.2</td>
</tr>
<tr>
<td>German</td>
<td>59.7</td>
</tr>
<tr>
<td>Dutch</td>
<td>65.5</td>
</tr>
</tbody>
</table>
New Zealand English

- Szakay (2008) examined vocalic PVI for Maori and Pakeha NZ English
- Maori NZ English was significantly more syllable-timed than Pakeha NZ English
  - Maori is mora-timed: considered more syllable timed
  - Effect of language and dialect contact on rhythmic patterns

<table>
<thead>
<tr>
<th>Language</th>
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<tbody>
<tr>
<td>Maori NZ English</td>
<td>46.4</td>
</tr>
<tr>
<td>Pakeha NZ English</td>
<td>57.2</td>
</tr>
</tbody>
</table>
PVI and speech rate in Pakeha NZE

- Correlation between vocalic PVI and speech rate
- Speech rate goes up, vocalic PVI goes down
  - Faster speech is more syllable timed for Pakeha NZ English speakers
  - Faster articulation rate is a feature of syllable-timed languages (Arvaniti 2009, Dauer 1983)
London
Multicultural London English (MLE)

- Linguistic innovation in inner London
  - Young male non-Anglo speakers in lead
- Dialect and language contact a probable cause
  - Innovations spreading to majority ethnic groups via multicultural friendship groups
- Innovation documented for phonological, grammatical and discourse features
London: vowels

Elderly Anglo speaker

Young non-Anglo speaker
London: discourse features
Suprasegmental innovation?

• Dialect and language contact lead to more syllable-timed rhythm in NZ English
  ▫ Inner-London speakers should be more syllable timed than outer-London and RP speakers
  ▫ Non-Anglo speakers should be more syllable timed than Anglo speakers
Data

- 36 young speakers from Hackney
  - Born 1986-88
- 7 old speakers from Hackney
  - Born 1918-38
- 4 speakers from Eva Sivertsen’s Hackney data
  - Born 1874-92
- 7 old speakers from Havering
  - Born 1914-43
Methodology

• 45-90 seconds of uninterrupted speech
  ▫ Narratives to control for stylistic variation
• Segmentation of vocalic and consonantual elements and pauses
  ▫ >10,000 vocalic elements
Time-aligned segmentation
Vocalic PVI: groups of speakers
Vocalic PVI: inner vs. outer London

Old Hackney more syllable-timed than Old Havering

N=14, Wilcoxon-test: W=11, p=0.09, not quite significant
Vocalic PVI: ethnicity

non-anglo group is more syllable-timed

Wilcoxon-test W=488.5, p<0.012
Vocalic articulation rate: age

old anglo group has lower speech rate

Wilcoxon-test: W=177, p=0.001
Correlation vocalic PVI and articulation rate

Articulation Rate predicts PVI (non-anglo group)

Faster speech => more syllable-timed (Spearman's rho = -0.55, p=0.008)
Conclusions 1

- Inner London is more syllable timed than outer London
  - Hackney speakers in relation to Havering
  - Havering is more similar to the PVI value for RP (Grabe & Low 2002)
  - The data suggest that inner London has been more syllable-timed for a long time
Conclusions 2

• Young non-Anglo speakers are more syllable timed than young Anglo speakers
  ▫ More syllable-timed rhythm may be a feature of MLE

• Fast speech is a feature of MLE?
  ▫ Correlation between PVI and articulation rate for non-Anglos
Comparison with work elsewhere

• More syllable-timed rhythm is a feature of contact varieties of English
  ▫ Maori NZ English
  ▫ Singapore English

• Multicultural Copenhagen Danish appears to be more syllable timed than Copenhagen Danish (Hansen & Pharao 2010)
References