Changes in intelligibility of English in a multilingual community

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accommodation

• participants in conversation converge (accommodate)
  – phonologically, phonetically, stylistically
  – to increase “entrainment” and decrease social distance
  – e.g. “map task” conversation (Pardo, 2006)
• also without social context
  – word shadowing task (Goldinger, 1998)
• subconscious and automatic (Trudgill, 2008)
accent change

• also phonetic convergence of “accents” (varieties) (e.g. Evans & Iverson, 2007)
• similarly in new Dutch polders (Kamphuis, 1992)
• and requiring only brief exposure (Delvaux & Soquet, 2007)
perceptual effects

- shifts or changes in production
- also similar changes in perception?

- intelligibility of post-accommodated speech predicted to be higher than that of pre-accommodated speech
- within same talker
University College Utrecht

- bachelor college in Anglosaxon fashion
  - 3 year undergrad program
  - academic *Bildung*
  - ca 3x220 students + 60 exch
- selective, competitive, intensive
- English used as lingua franca
- also intensive social life
UCU English Accent

- multilingual, students’ L1s are 10% English, 60% Dutch, 30% others
- *English-only policy*
- no pronunciation training
- minimal environmental effects
- unique (distinct) blend of L1/L2 English
LUCEA: Longitudinal Corpus of UCU English Accents

• 4 cohorts:
  2010 (n=72), 2011 (n=78),
  2012 (n=72), 2013 (n=55)
• 5 interviews (rounds) over 3 year
• total ~850 recordings, each ~20m
• metadata
  from questionnaires and audiometry
LUCEA

• EN read texts
  Rainbow Passage (Fairbanks, 1960),
  Wolf Story (Deterding, 2006),
  prosody sentences (White & Mattys, 2007),
  **intelligibility test sentences** (Van Wijngaarden ea, 2002),
  *UN Decl Human Rights* (UN, 1948; Bradlow ea, 2011)

• L1 read texts
  *UN Decl Human Rights*

• EN/L1 unscripted monologues

• EN unscripted dialogue
voorbeelden

- S109
- S060
- S121
Numbers of talkers in LUCEA corpus

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Year/Month of recording

Speech Reception Threshold

• measure of intelligibility expressed as **Sp/Noi Ratio (SNR)** in dB
• list of 13 sentences, presented in noise
• response correct? next SNR −2 dB
  response incorrect? next SNR +2 dB
• average SNR over last 10 sentences of list
• inefficient
  – entire list yields single SRT
factors

• **Round** (R1, R2, R3)
  – R1: Year 1, Month 1 (Sept 2010)
  – R2: Year 1, Month 8 (Apr 2011)
  – R3: Year 2, Month 1 (Sept 2011)

• **Talker’s L1** (9 Eng, 15 Dutch, 6 Ger)

• **Listener’s L1** (5 Eng, 33 Dutch, 7 E+D)
listeners

- L1 Dutch (n=33)
  - all very proficient in English
  - 18 inside UCU, 15 outside UCU
  - no differences, will be pooled in results
- L1 English (n=5)
  - all inside UCU
- biling/mixed English+Dutch (n=7)
  - all inside UCU
counterbalancing

- some lists of sentences were held back from talkers
- some talkers also participated as listeners
- listeners never heard a list which they themselves had spoken
- listeners never heard their own voice
- Lists, TalkerL1, and Round counterbalanced over listeners
results

listeners pooled

better

worse

Round

SRT (dB)
LMM: fixed factors

- Round (R1, R2, R3)
- Talker’s L1 (9 E, 15 D, 6 G) *unequal numbers*
- Listener’s L1 (33 D, 5 E, 7 D+E) *unequal numbers*
LMM: random

- 3 random effects (crossed): Talker (30), Listener (45), List (6)
- random intercepts
- **random slopes** of Round at levels of talker and of listener
  - effects of (speaker’s) Round allowed to vary across talkers and across listeners
  - heterogeneous variances allowed
LMM: fixed

- R2: $\beta = -0.5$ ($p = .045$)  
i.e. intell better than at R1
- R3: $\beta = +0.2$ (n.s.)  
i.e. intell same as at R1
- German talkers: $\beta = +0.7$ ($p = .044$)  
i.e. intell worse than of Du or Eng talkers
- listener groups: no effects
- talker $\times$ listener: no interaction effect ($F < 1$)
LMM: random

- variances between talkers: $s^2 = 1.182, 0.317, 0.640$
- variances between listeners: $s^2 = 0.110, 0.003, 0.006$
- variance in intelligibility is lowest for stimuli from R2 recordings
- random slopes of Round increase fit of LMM
  [Likelihood Ratio Test, $\chi^2(5)=17.3$, $p=.0040$]
convergence

• same talkers are more intelligible after phonetic convergence (R2) than before (R1)
  – lower average SRT
  – less variance in SRT
    (between talkers and between listeners)
  – phonetic convergence not attested here

• summer break (between R2 and R3) annihilates effect of previous convergence
interlanguage benefit

• no benefit observed (no interaction)
  – contra Bent & Bradlow (2003) and many others
• L1 listeners used to L2 accent
  – exposed to Dutch-accented English
    on and off campus
• L2 talkers already very proficient
  (Hays-Harb et al, 2008; Van den Doel & Quené, 2013)
conclusions

• accommodation within community does increase talkers’ intelligibility within that community
• makes conversations more efficient
• accents remain plastic, after long period of accommodation (9m)
THANK YOU