t-flapping in present-day Northern English: implications for sociophonological change

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Overview

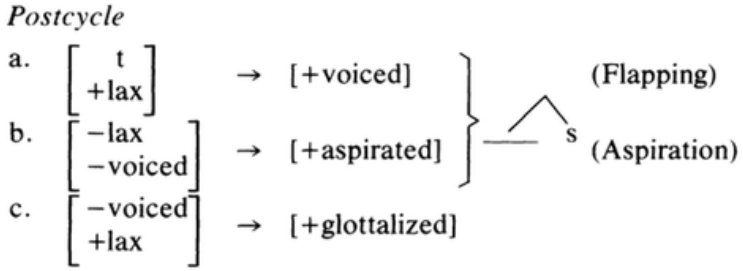
- Synchronic analysis of /t/ realisations in Northern English (Blackburn, Lancashire)
  - Variety that has variation between:
    - Standard [t]
    - Modern/urban glottal [ʔ]
    - Traditional/local flapped [ɾ]
- Looking at sociophonological variation
  - Constraints on flapping give us insight into phonological life cycle
  - Sociophonological variation suggests pathways to change

t-flapping in North American English

- t-flaps when intervocalic (intersonorant) and non-foot-initial

across word boundaries: *get in* [gɛr ɪn]

word-internally: *getting* [gɛrɪŋ]



Kiparsky (1979)

- Non-foot-initial /t/ is laxed at the word level
- Lax /t/ is voiced at the phrase level

t-flapping in Blackburn, Lancashire

- Auditory observation indicates the same pattern as American English, although highly variable
  - Flap is in competition with glottal stop
- Somewhat conservative variety
  - Still rhotic (Turton 2015)
  - Low population movement
- Younger speakers more likely to use glottal stop
- Flap potentially associated with older speakers

How did it get into British English?

- Historical data from Minkova (2014: 147) provide evidence of flapping/voicing in England as early as the 15th century.
  - [t] > [d] > [ɾ]
  - *water* spelt *wader*
  - Very early indications of voicing in OE potentially
- Dickens' drunken characters t-flap (Haugen 1938: 76)
  - Elphinston associates pronunciations like *proddestant* as London vulgarisms
  - Wright (1905), Wyld (1936) mention flapping in various descriptions of British English
- It seems, in Blackburn at least, it's been around for a while

Patterns of sound change

- Yet flapping never reached a categorical rate of application in this variety (or any British English variety)
- Synchronic data from varieties which show some level of flapping will allow us to monitor the conditions on variation.
- This may give us an insight into how this sound change, and change in general, progresses along a historical trajectory

- **Complication:** it now it faces competition from the glottal

The life cycle of phonological processes

- Framework which can account for the relationship between synchronic and diachronic patterns
- A process begins its life by applying at lower levels of the grammar, over time advancing to progressively higher levels
- **Domain narrowing:** A process may move from applying at the phrase level (level most associated with flapping), to word and then stem
- **Rule generalisation:** A process ascends through a prosodic path (syllable, foot, colon, prosodic word etc.)

Bermúdez-Otero (2015)

Domain narrowing: English /l/-darkening

	light	*helium*	*heal-ing*	*heal it*	*heal*	
RP	[l]	[l]	[l]	[l]	[ɫ]	Cruttenden (2008); Jones (1966)
Am. Eng. 1	[l]	[l]	[l]	[ɫ]	[ɫ]	Sproat and Fujimura (1993); Gick (2003)
Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Stage 1: /l/ darkens in the coda at the phrase level

Adapted from Bermúdez-Otero (2007)

Domain narrowing: English /l/-darkening

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Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Stage 2: /l/ darkens in the coda at the word level

Adapted from Bermúdez-Otero (2007)

Domain narrowing: English /l/-darkening

	light	*helium*	*heal-ing*	*heal it*	*heal*	
RP	[l]	[l]	[l]	[l]	[ɫ]	Cruttenden (2008); Jones (1966)
Am. Eng. 1	[l]	[l]	[l]	[ɫ]	[ɫ]	Sproat and Fujimura (1993); Gick (2003)
Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Stage 3: /l/ darkens in the coda at the stem level

Adapted from Bermúdez-Otero (2007)

Life cycle: Domain narrowing

- Ascending through the stem, word and phrase levels
  - Might expect more flapping word-internally (*better*) than across word boundaries (*get in*)
  - More levels of derivation
- Complication: tokens of /t/ that lax at the word level, but are not intervocalic at the phrase level still show other forms of lenition:
  - Lenition pathways (Bermúdez-Otero 2015: 399)
    - Urban British English /t/-glottalling
    - Pre-glottalisation/pre-aspiration?
    - Affrication/spirantisation (Scouse, Honeybone 2001)
      - Although this maybe looks more like flapping (more advanced in intervocalic position)

t-flapping's lifespan: domain narrowing

- When compared to /t/-glottalling, the lifespan makes opposing predictions about the rates of application
  - Words which meet the conditions of application at more cyclic levels will show a higher rate of application overall; Guy 1991)
- Slightly different: flapping did start in coda position
  - Phonetically favourable pos rvocalic

Or maybe *better >= get it?*

For variable progression through the levels see Turton (2016)

T-GLOTTALLING	/t/ in coda?		
	stem	word	phrase
get it	✓	✓	
getting	✓		
better			

FLAPPING	/t/ intervocalic?		
	stem	word	phrase
get it			✓
getting		✓	✓
better	✓	✓	✓

Rule generalisation: English /l/-darkening

- Phonological processes may operate with prosodic spans of different sizes

	light	*helium*	*heal-ing*	*heal it*	*heal*	
RP	[l]	[l]	[l]	[l]	[ɫ]	Cruttenden (2008); Jones (1966)
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Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Coda level darkening

Adapted from Bermúdez-Otero (2007, 2015)

Rule generalisation: English /l/-darkening

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	light	*helium*	*heal-ing*	*heal it*	*heal*	
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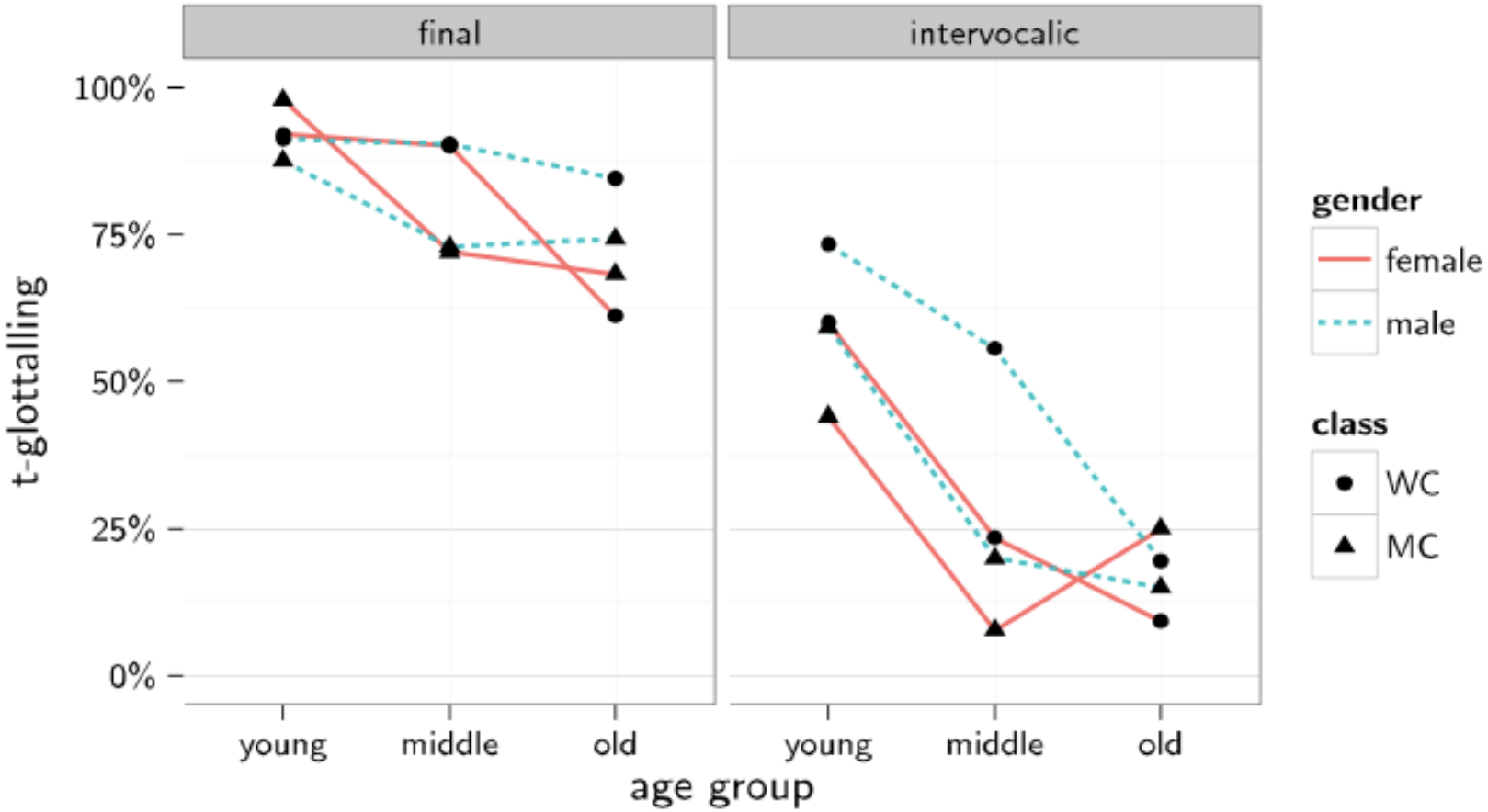
Am. Eng. 2	[l]	[l]	[ɫ]	[ɫ]	[ɫ]	Olive et al. (1993)
Am. Eng. 3	[l]	[ɫ]	[ɫ]	[ɫ]	[ɫ]	Hayes (2000); Yuan and Liberman (2011)

Foot level darkening

Adapted from Bermúdez-Otero (2007, 2015)

Rule generalisation: t-glottalling advancing from syllable to foot

Manchester (Baranowski & Turton, 2015)



Rule generalisation: t-glottalling advancing from syllable to foot

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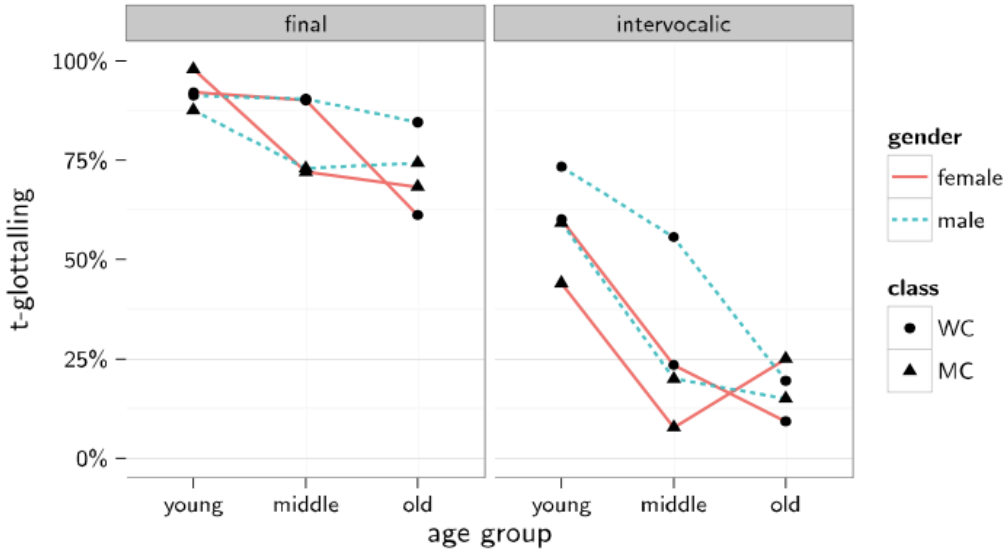


- /t/ glottals in coda position
- Advances to non-initial in the foot over time
- glottalling in *get* much more advanced than in *better*
- Not shown here:
  - *get* > *get out*
  - *get out* > *getting*
- More socially stigmatisation of glottal intervocalically (Foulkes & Docherty 2007)
- PDE urban t-glottalling shows typical advancement of coda application by domain narrowing, but also through rule generalisation to the phonological foot

Rule generalisation: flapping and preceding vowel

New Zealand basilect vs. acrolect (Bye & de Lacy 2008)

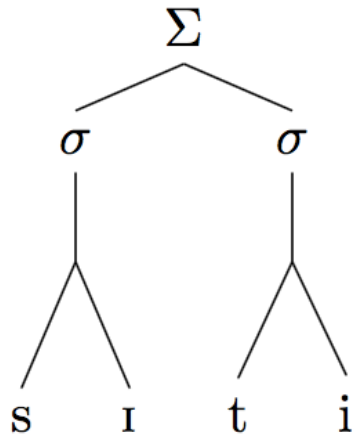
- NZ basilect speakers show flapping patterns similar to American English
- Acrolect has flapping after short vowels only
  - Basilect represents the more advanced stage of the dialect
  - Acrolect represents the more conservative stage
- Vowel length preceding intervocalic consonants has important role to play in lenition environments (Balogné Bérces & Honeybone 2012)

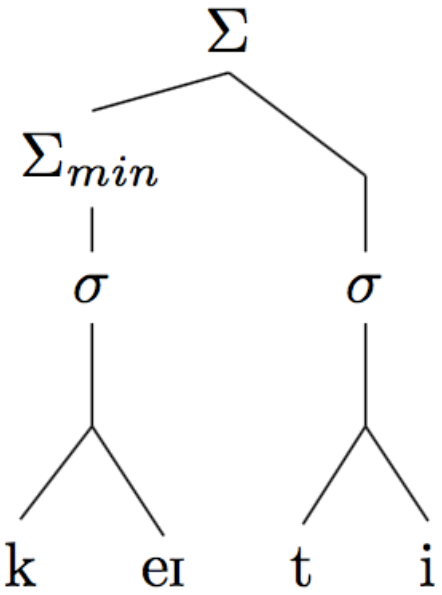
T-FLAPPING	acrolect	basilect
city	✓	✓
Katie		✓
attack		

Minimal foot projection as a stage of rule generalisation

- This pattern is interesting as it shows that, although more advanced dialects flap when non-initial in the foot, the more conservative dialect flaps only in the minimal foot projection
- Suggests a mid-stage of rule generalisation:
  - minimal foot projection
    - flaps in *city* but not *Katie*

  THEN
  - maximal foot projection
    - flaps in both





Life cycle and /t/ patterns: Blackburn data

- What will we find in Blackburn today – a variety with both flapping and glottalling?
- The life cycle makes opposing predictions about the rates of lenition by glottalling vs. flapping
- This is because of the levels of the derivation in which they occur.
  - Flapping: the /t/ must be intersonorant:
    - so in a word like *better*, the /t/ is in the required environment at the stem, word and phrase levels,
    - but in *got it*, the /t/ is in the required environment only at the phrase level
    - flapping: *better > get it*
  - Glottalling is the opposite. We expect a pattern like in Manchester:
    - *get > get it > better*

Flapping vs. glottalling in British English

- Different conditioning and constraints

T-FLAPPING	Is /t/ intervocalic?		
	stem	word	phrase
get it			✓
getting		✓	✓
better	✓	✓	✓

Or maybe *better >= get it?*

T-GLOTTALLING	syllabic hierarchy /t/ in coda?			prosodic hierarchy /t/ non-initial in foot?
	stem	word	phrase	all levels
get it	✓	✓		✓
getting	✓			✓
better				✓

For variable progression through the levels see Turton (2016)

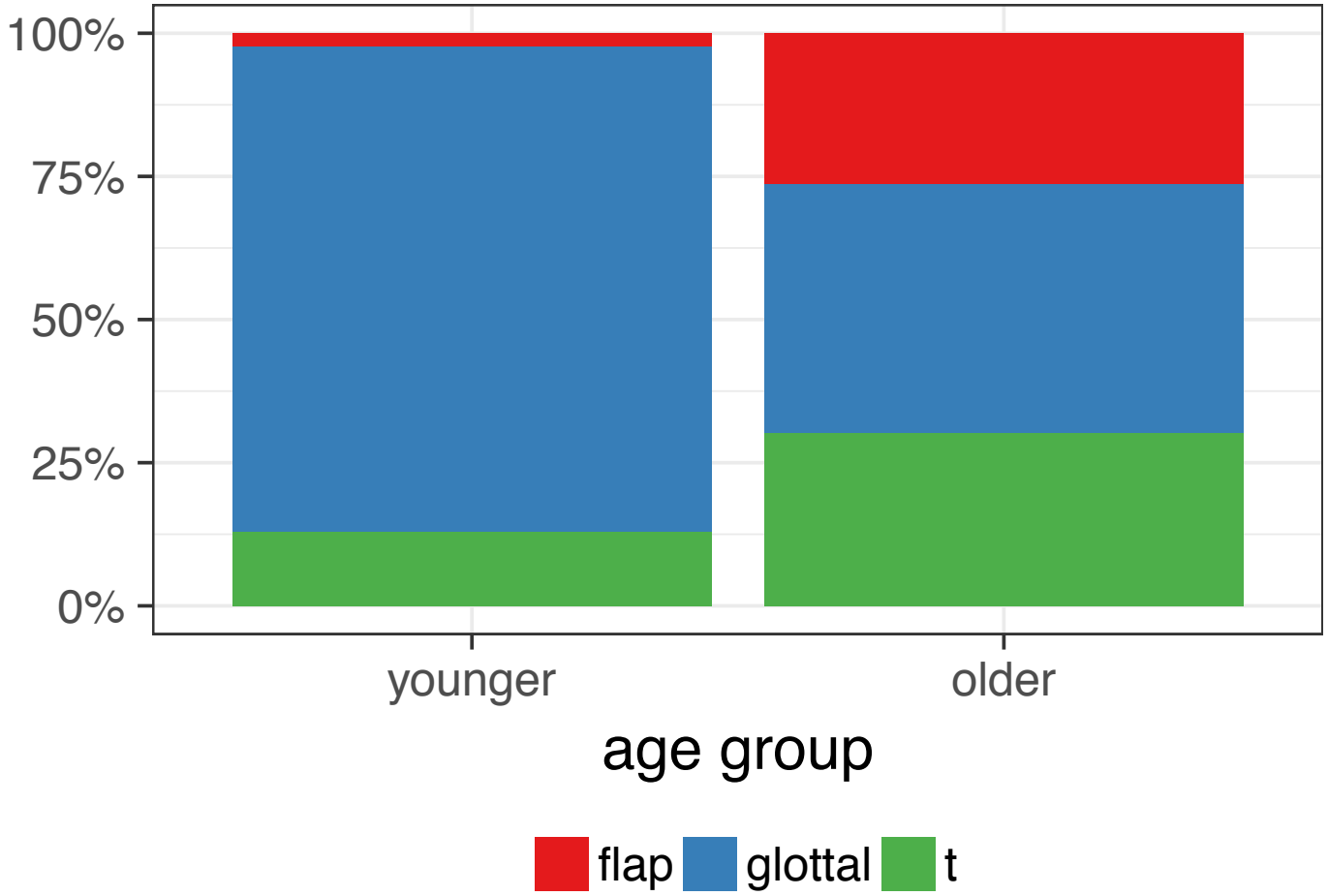
Blackburn data

Blackburn data

- Town in Lancashire, North-West England
- Auditorily coded by me and two postgraduate researchers
- Coded for [t], glottal, voiced and flapped, deleted
  - Collapsed voiced and flapped
  - Deleted deleted

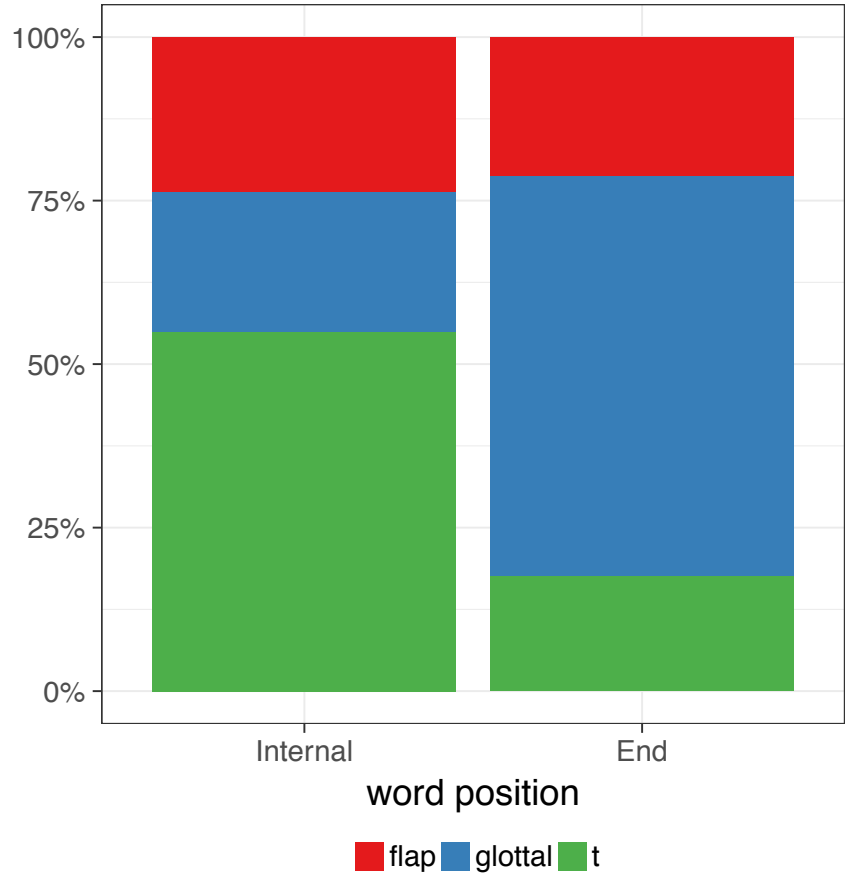
- Data from 12 speakers
  - 4 young < 35, 8 “old”
- Intervocalic contexts only
- Syllabic /n/ contexts removed e.g. *cotton* (/l/ left in)
- Tokens that don’t reduce in this variety removed:
  - *tattoo, settee*
  - *politics, lunatics*
- Leaving 2350 tokens of /t/

Overall distribution across dataset



- As expected, younger speakers don’t flap their /t/s as much
- Glottalling has really taken over for them

Position



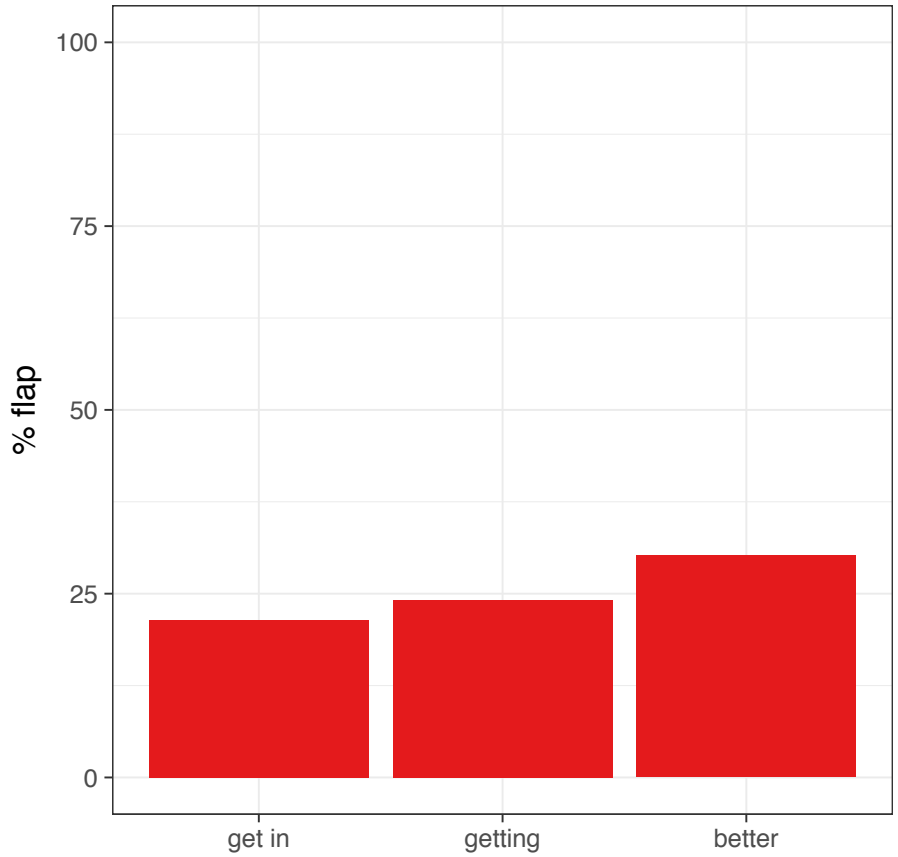
- As expected, more glottalling at the end of words than internally
- More flaps internally than at the end

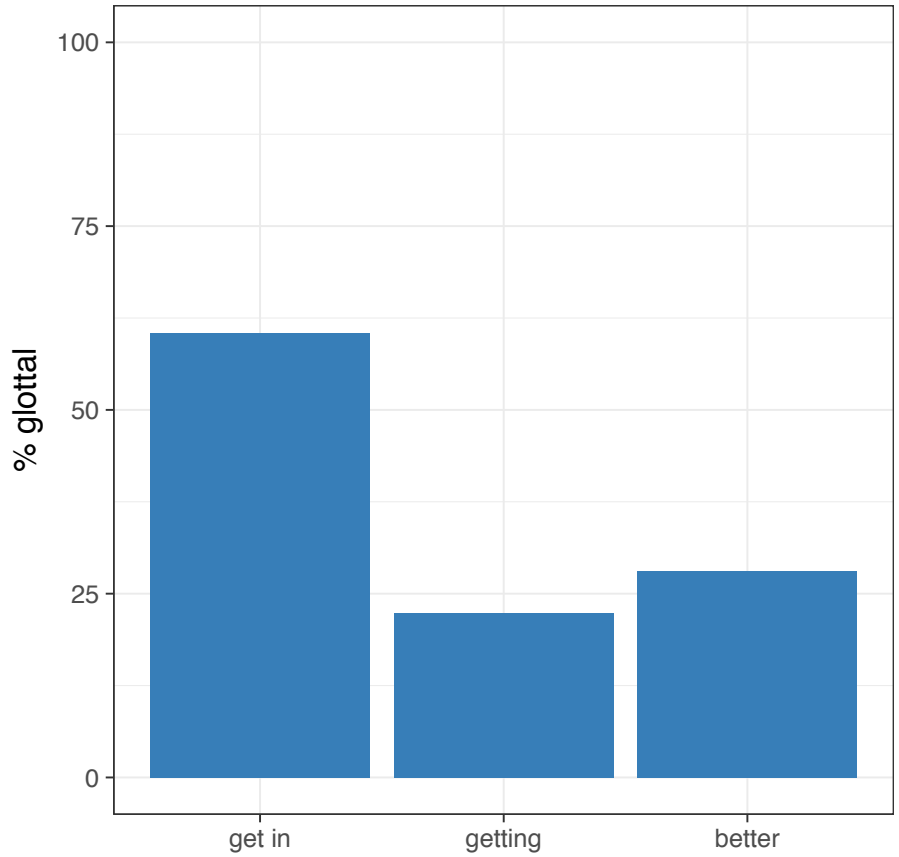
  but

- The two are inversely correlated anyway

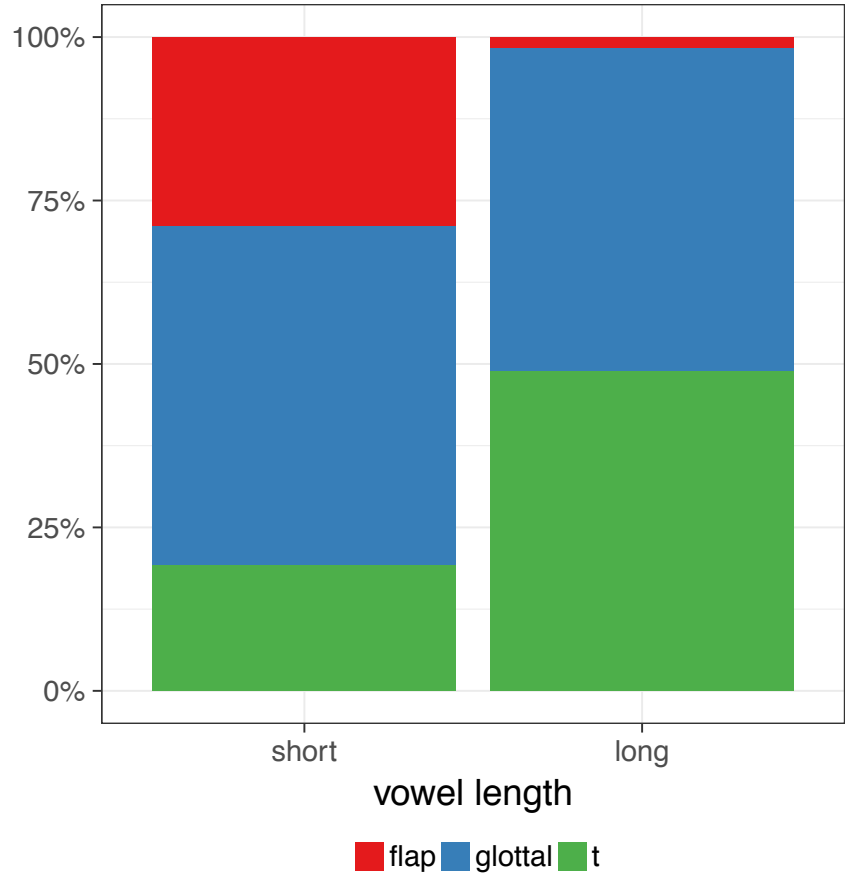
	glottalling	flapping
getting	✓	✓✓
get off	✓✓	✓

Flaps vs. glottals across contexts



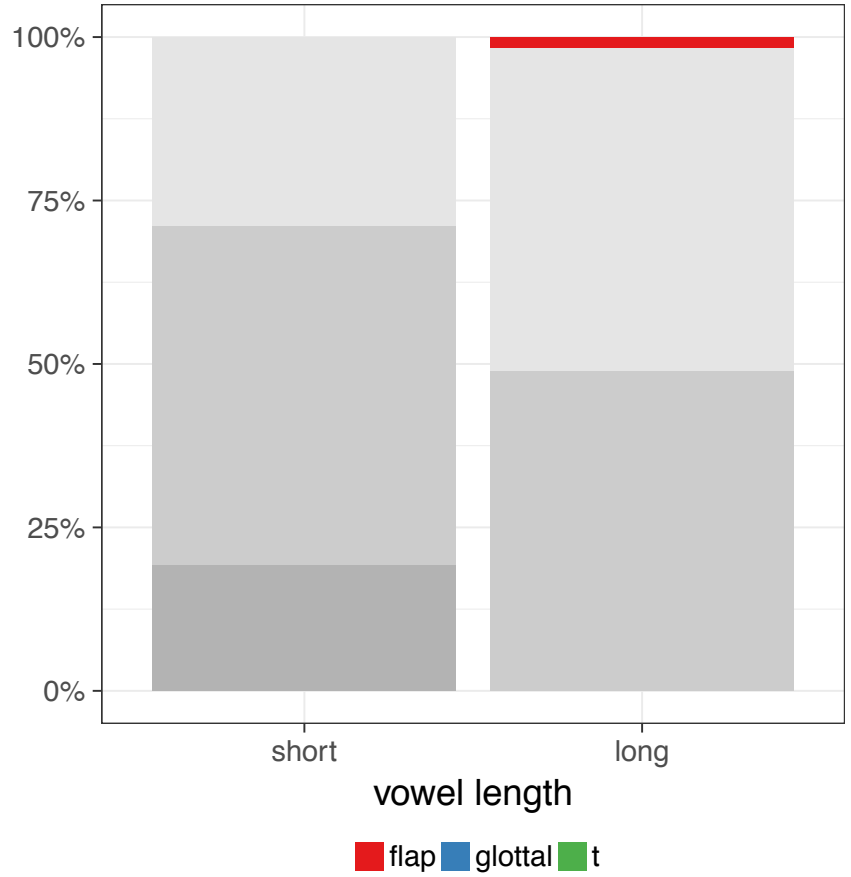


Preceding vowel length



- Speakers can't seem to flap after a long vowel
- Flaps in *city, get it, getting, protestant, pretty, little*
- But not in *Katie, computer, totally, caught it*
- Preceding stage of sound change?

Preceding vowel



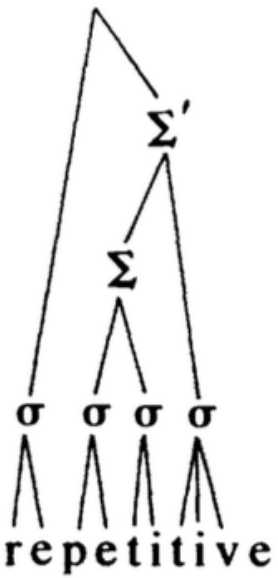
- Ten tokens of flapping after a long vowel
- *Waiting, thought about, outta, quite a, forty*
- Only uttered by old males in the dataset
- This advanced stage of flapping does seem to be associated with older males

Blackburn Lancashire

- /t/ flaps when non-initial in a minimal foot-projection
  - the /t/ of (cí.ty) flaps because it is contained in the minimal foot-projection (and non-initial),
  - the /t/ of ((Ká)tie) doesn't.
    - Although it is non-initial in the foot, it is not the minimal foot
- Some older (so far male) speakers can also flap when non-initial in the maximal foot projection
  - Only ten tokens
  - Judgement elicitation from community suggests this might be an advanced form found in older generation
- Same as New Zealand basilect and acrolect (Bye & de Lacy 2008)
- Older Blackburn males are (variably) like American English speakers today, as are NZ basilect speakers, showing more advanced pattern
- Evidence of **rule generalisation**

Lenition and the minimal foot

- The difference between foot-initial and foot-internal is well accepted
- Further distinction between the minimal foot and a position outside the minimal domain has been argued for by some
    - For discussion of intervocalic consonants and preceding long vs. short vowels see Balogné Berces & Honeybone (2012), Balogné Berces (2015)
  - few examples of its role in the progression of sound change
- Perhaps most commonly discussed with reference to *compe**t**i**t**ive* reduction
    - Second /t/ can only be lenited if the first is: **repe[t]i[r]ive,* **compe[t]i[r]ive* (McCarthy 1982; Harris & Kaye 1990)



Old men leading sound change?

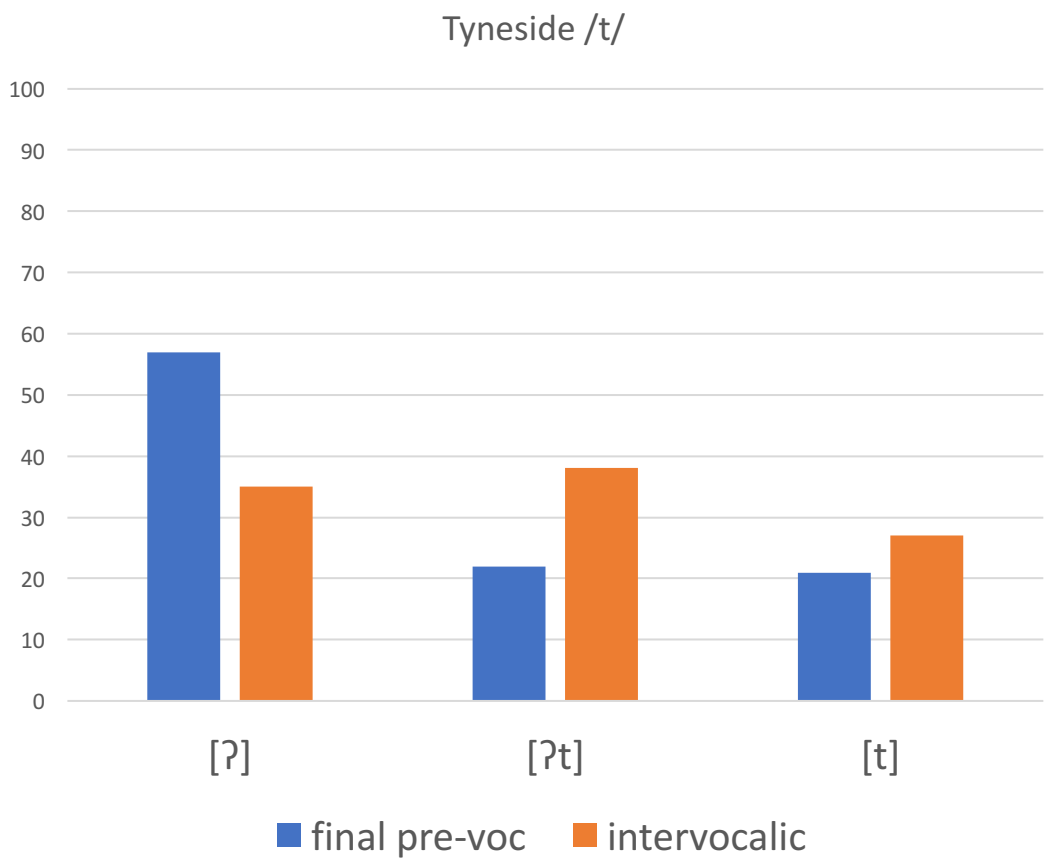
- Well, they're the most advanced users in phonological terms
  - Older women flap at a similar rate, but only within the minimal foot
- But they're not leading a sound change.
- It's stopped (probably fairly stable anyway)
  - Curtailed by a competitor form: t-glottalling
- This older generation reflects the furthest this sound change went in the area
  - And it was only variable to begin with
- Male-led innovations tend to even out gender-wise
  - e.g. *fight* Philly (Conn 2005)
  - Word final t-glottalling UK
    - What will happen to intervocalic glottalling?
- If they don't get that far, and new developments come in e.g. t-glottalling, they are fixed

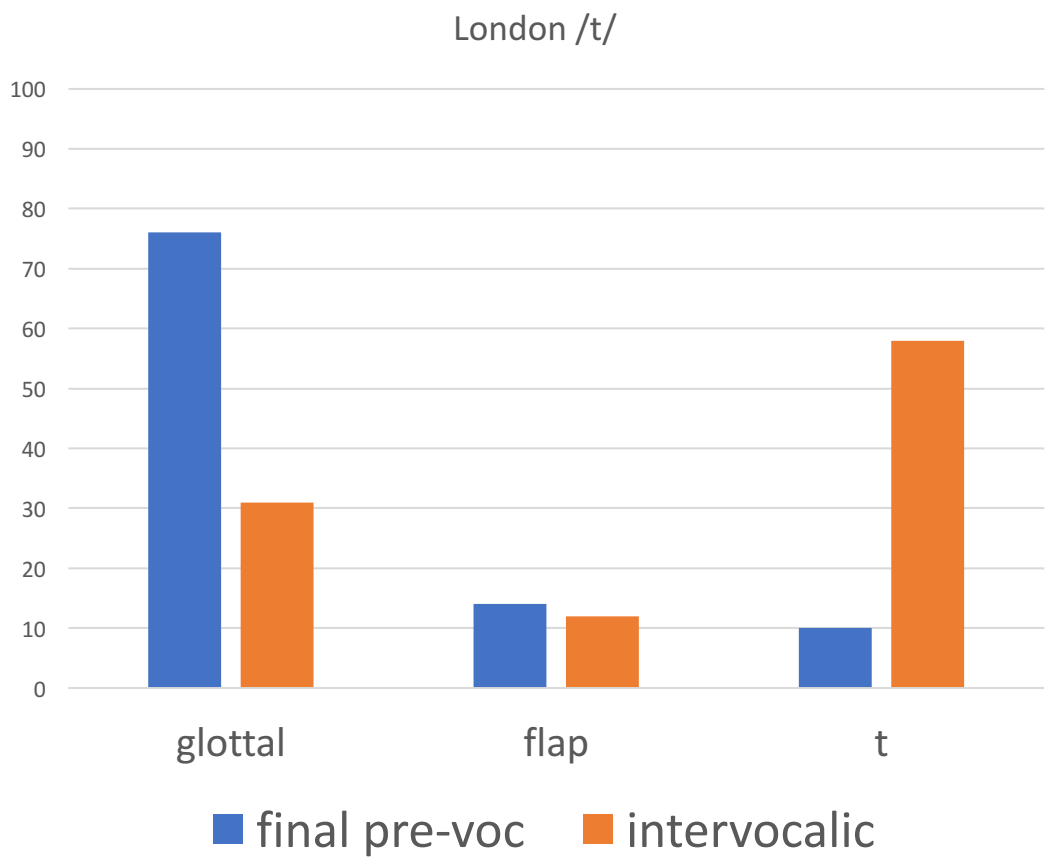
Sidenote

Intervocalic /t/ in other present day English English varieties

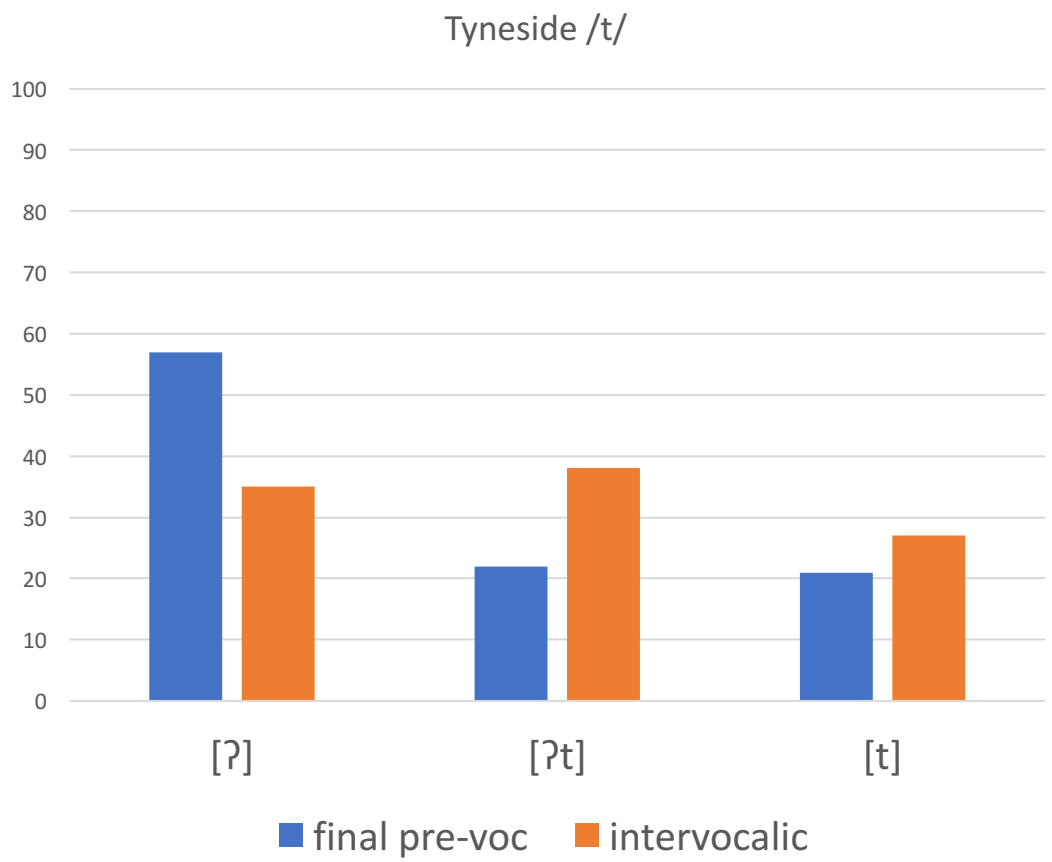
Tyneside and London intervocalic /t/-patterns

(SEL3094 students; Baugh 2017)





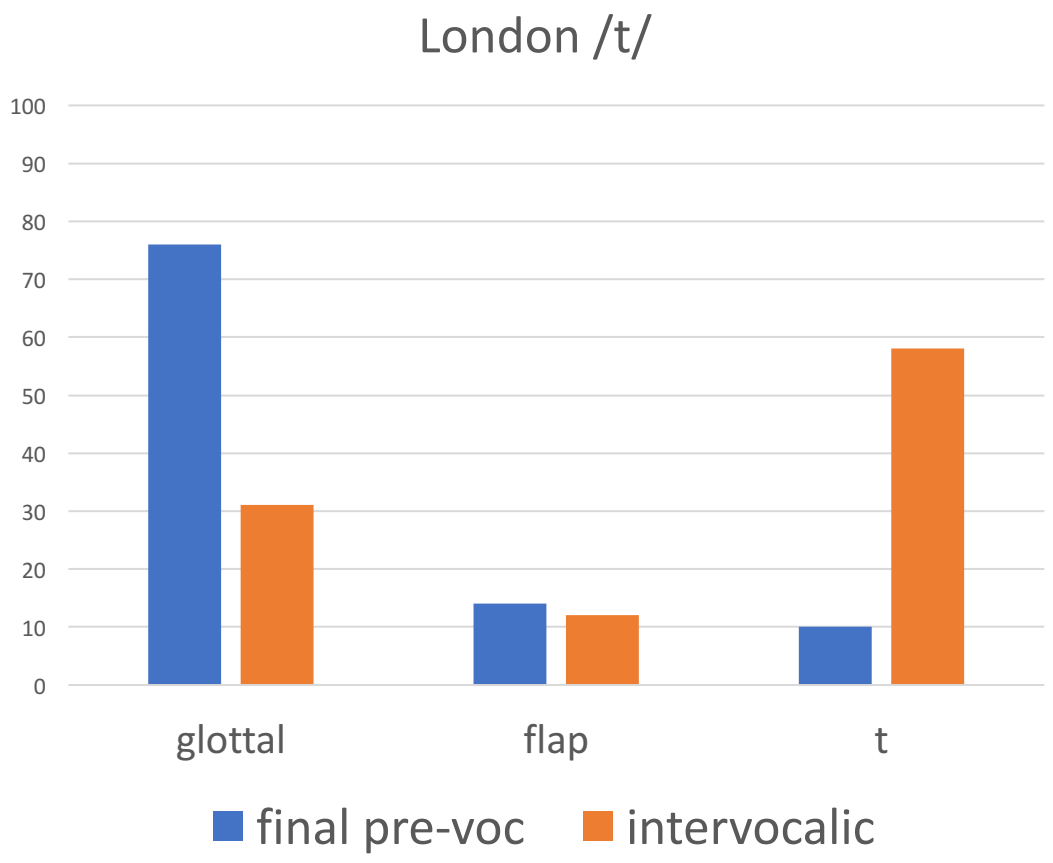
Tyneside vs. London /t/



- Tyneside's traditional variant occurs only in intersonorant position
  - Described as pre-glottalised, glottally reinforced, glottal masking...
- Present day situation is complicated:
  - Docherty & Foulkes (2005) say next to no full glottal
  - In 2017, younger speakers show UK-wide glottal stop variant word-finally and internally
- Rates of traditional reinforced variant are exactly what we expect:
  - higher in *getting* than in *get off*

Tyneside vs. London /t/

- London is famous for glottal replacement, in all non-foot initial /t/s
- Speakers in Baugh (2017) upwardly mobile student types
- Glottalling less likely word-medially
- More evidence of /t/-flapping in South-East "educated" varieties (Hagyard 2015, Jell 2016)
  - Newer phenomenon?
  - How would the phonological application work?
  - It mirrors glottalling application here
  - Can flapping "piggyback" onto glottalling, whilst remaining intervocalic/sonorant?
  - Evidence after long vowels too



Baugh (2017)

t-to-r

- *gerroff* for *get off*
  - See Honeybone (2014)
- This variant is reported in Liverpool (Clark & Watson 2011), Newcastle (Buchstaller et al. 2013), Yorkshire (Broadbent 2008) and Manchester (me, pc).
- The Blackburn speakers do not seem to exhibit this at all
- Can someone who taps /r/ in t-to-r t-flap?
- Does their rhoticity play a role?

Next...

- N-flap contexts
  - Possibly only across word boundaries?
  - Highly frequent in tag questions *didn't it* [dɪndɪt], more voiced than flapped
- Durational differences?
  - Can we differentiate between voiced and flapped with a more fine-grained analysis?
- Lenition trajectories: harsher lenition (flapping) at lower levels compared to weaker lenition (voicing; Bermúdez-Otero 2015:§22.3.2)
- Judgement elicitations
  - on *Katie* vs. *city*
  - on *t-to-r*

Summary

- Patterns of t-flapping in Northern English provide evidence for an intermediate stage of rule generalisation
  - t-flaps only in minimal foot projection for most speakers
  - Some advanced speakers show evidence of moving to the next stage
- The rates of glottalling and flapping are consistent with the expectations of domain narrowing
  - Flapping occurs most in the *better* set
  - Glottalling occurs most in the *get in* set
  - Although the inverse relationship between the two makes the picture murkier
- Other varieties with intervocalic /t/ processes help fill in the gaps
  - Judgement data on /t/-related phenomena will help further
- The picture makes a lot of sense once considered from the perspective of its diachronic trajectory and life cycle.

Thanks to…

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New Zealand basilect vs. acrolect (Bye & de Lacy 2008)

Basilect represents the more advanced stage of the dialect
Acrolect represents the more conservative stage

(16) NZE Basilect flapping

a. flapping intervocalically and in unstressed syllables

[hǽrə]	'hatter'	[bá:rə]	'barter'
[báɪrəŋ]	'biting'	[hɔ́spərʊw]	'hospital'
[rəpérərəv]	'repetitive'	[grəmæ̀rəkǽləri]	'grammaticality'

b. no flapping before or after a consonant

[wíntə]	'winter'	[sístə]	'sister'
[ʔæktə]	'actor'	[tʃʌ́tni]	'chutney'
[ʔætləs]	'atlas'	[tʰéntərəv]	'tentative'

c. no flapping intervocalically in a stressed syllable Onset

[ʔətʰæk]	'attack'	[ʔətʰènjuwéɪʃn̩]	'attenuation'

(18) NZE Acrolect flapping

a. Flapping after a short stressed vowel and before a vowel

[hǽrə]	'hatter'	[kǽri]	'catty'
[ɹəgǽrə]	'regatta'	[tʰæ̀rəməgútʃi]	'Tatamagouchee'

b. No flapping after a stressed long vowel or stressed diphthong

[bá:tə]	'barter'	[mí:tə]	'metre'
[kəmpjú:tə]	'computer'	[ɹáɪtə]	'writer'
[páʊtə]	'pouter'		

c. No flapping after unstressed vowels

[hɔ́spətəl]	'hospital'	[tʰéɹətən]	'Terreton'