Style matters
Insights for conversational user interfaces from sociolinguistic theory

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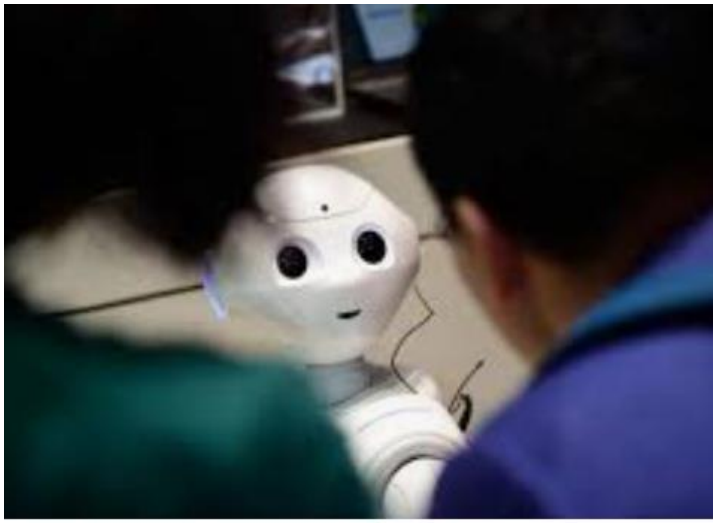
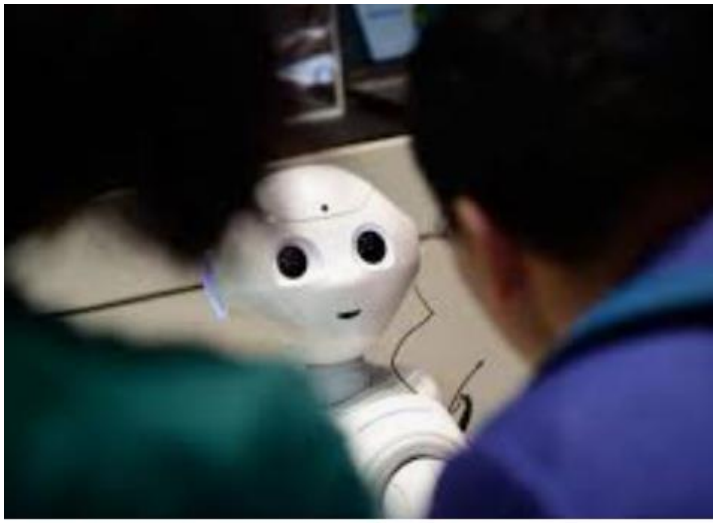
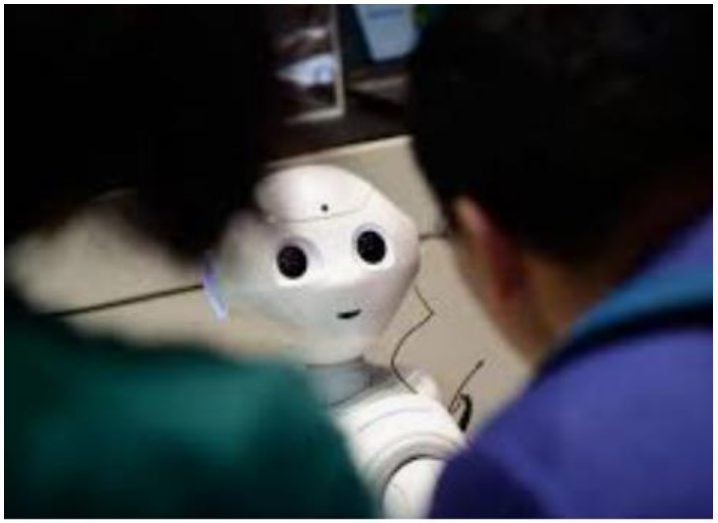




Computers Are Social Actors (CASA)
e.g. Nass et al (1994)



Who's talking?

Voice1 and voice2

Not included for permissions reasons

Voice1 – MC older females
Voice2 – WC adolescent girls

How do we know?

- speech and language varies systematically at all linguistic levels, including speech

Key premises

- speech and language are **variable**
- variation **indexes** information about speakers beyond linguistic contrasts
- **social-indexical** information is an integral part of speech

Speaker variability

- speaker-generated variation is
  - not just ‘noise’
  - systematic
  - gradient
  - informative to speaker and hearer
  - the basis for language change

cf Docherty (2003); Ohala (1989); Labov (1994), (2001)

Social-indexicality

- linguistic variation **indexes** (= is linked to) information about speakers
  - group membership, regional and social
  - individual characteristics, including age, gender
  - changing states of speaker, e.g. physical and emotional

e.g. Abercrombie (1967); Docherty (2003); Foulkes and Docherty (2006)

Indexical variation is integral to speech

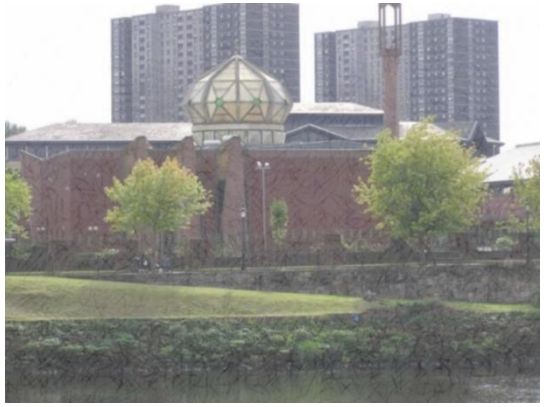
- social-indexical information is intertwined with linguistic information, and is expressed using the same media
- speakers acquire and control social-indexical variation in production and perception
- as part of their communicative competence

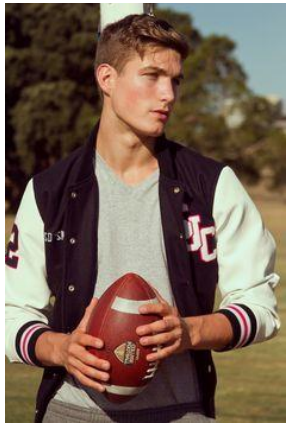
(Foulkes and Docherty 2006; Foulkes 2010; Gumperz 1997)


GREENE KING
BURY ST EDMUNDS
IPA
HANDCRAFTED INDIA PALE ALE

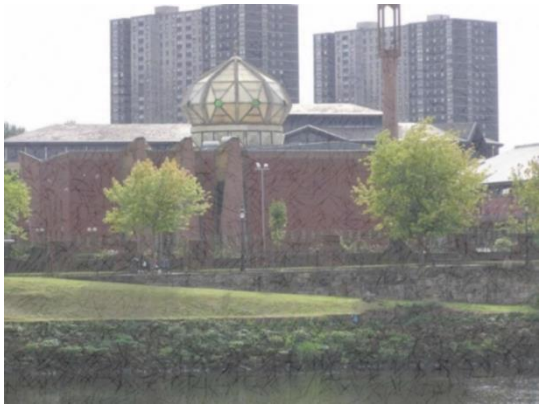
Social-indexical variation

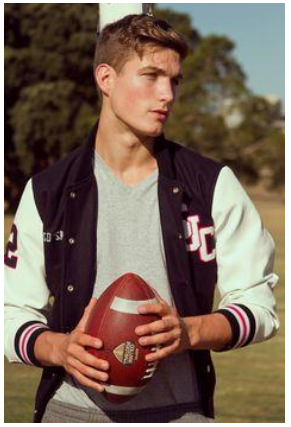
- e.g. Scottish English [bɪʔʌr]
  - /bɪtʌr/, i.e. *bitter* [= ‘sour’] vs /bɪdʌr/, *bidder* [= ‘someone putting in a bid to buy something’] **linguistic**
  - working class speaker, who typically uses [ʔ] for /t/, as opposed to middle-class [bɪtʌr] **social**





Sociolinguistics



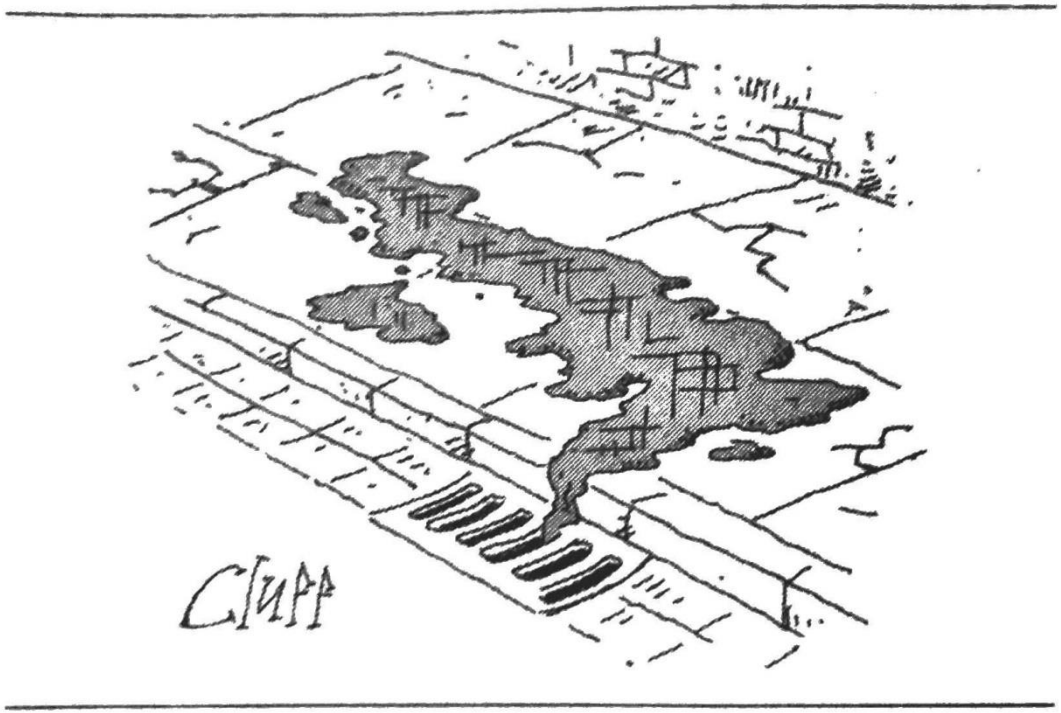


inter- & intra-speaker variability and ‘social’ factors

Sociolinguistic context

Where is Glasgow?

- Glasgow is in Scotland, which is still (for now) in the UK, which is (very sadly) no longer in Europe



Glaswegian: sociolinguistic continuum

Scots

working-class

Standard Scottish English (SSE)

middle-class

Aitken (1979); Stuart-Smith (2003); Corbett and Stuart-Smith (2013)

Both Scots and Scottish Standard English are **enregistered** (Agha 2003)

https://www.youtube.com/watch?v=xk0sS4IFGXA

Variationist sociolinguistics

= ‘quantitative’ linguistics

= ‘Labovian’ paradigm

= urban dialectology

- relating linguistic variation with social factors

- William Labov – initial research:
  - Martha’s Vineyard (MA) Labov (1963)
  - New York City (PhD) Labov (1966)

The (socio)linguistic variable

different ways of saying the same thing

‘linguistic item that has identifiable variants’
Wardhaugh (2002:141)

e.g. (t): [t] [ʔ] [tˀ] [t^h], in e.g. *bi<u>tt</u>er, wa<u>t</u>er, ca<u>t</u>*

‘one which is correlated with some non-linguistic variable of the social context of the speaker, the addressee, the audience, the setting, etc.’ Labov (1972:237)

(socio)linguistic = ‘dependent’ variable
[varying aspect of language]

~ correlates with

extralinguistic = ‘independent’ variables
[varying aspects of society]

Picture Post, ‘The Forgotten Gorbals,’ 1948

Capturing the ‘social’

(three ‘waves’ of sociolinguistic theory)

Eckert, *Annual Review Anthropology* (2012)

First wave

Social categories

analyst-imposed, often broad, **social categories**, e.g.

- Women
- Working Class
- Middle-aged
- Glaswegian …

e.g. Labov, *Sociolinguistic Patterns* (1972); *Principles of Linguistic Change* (2001)…

Second wave

Social networks

ethnographic

observed/reported links

- neighbours
- shared friends
- same church
- same street
- kids at same school…

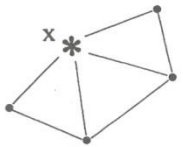


Figure 1.1 *High-density personal network structure: X is the focal point of the network*

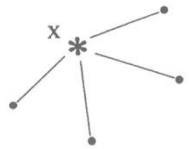


Figure 1.2 *Low-density personal network structure: X is the focal point of the network*

e.g. Milroy (1987)

Third wave

Speaker agency

ethnographic

- linguistic practices

emerge as part of shared social practices

e.g. *Community of Practice*

- construction of **styles** and social **personae**
- arising from **stance-related shifts** during interaction

Eckert (2000); (2018)

Social-indexicality

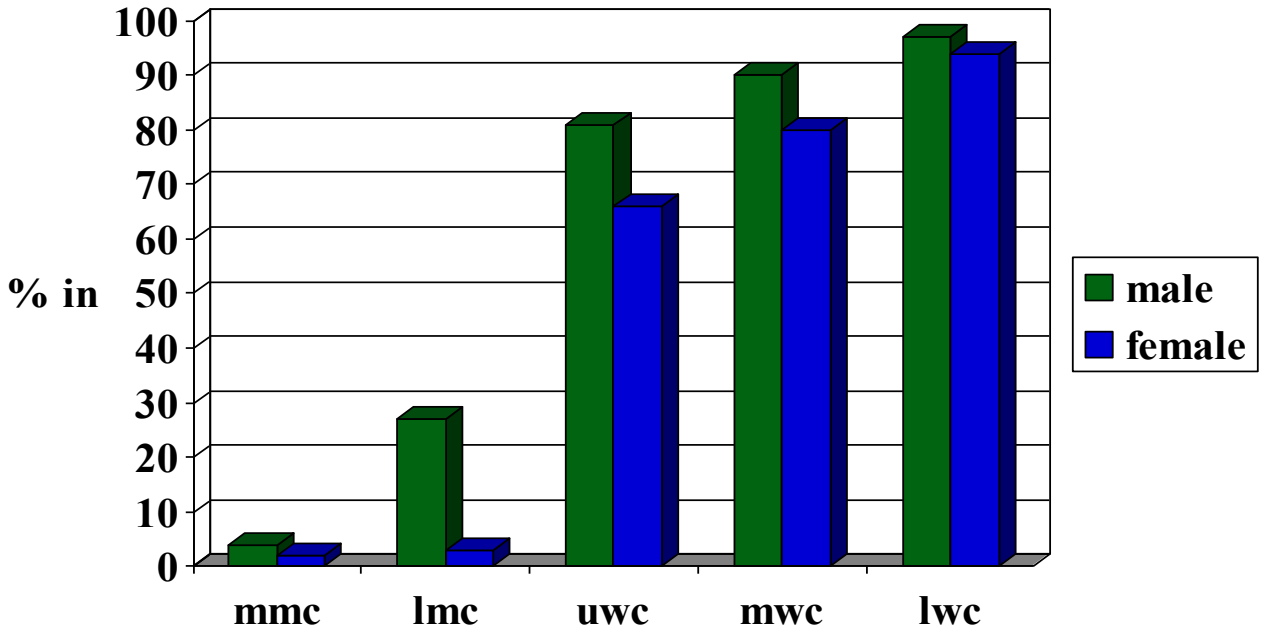
- linguistic variation **indexes** (= is linked to) social meanings:
  - **macro-social** categories, e.g. gender, social class, region, age
  - **micro-social** inter-personal connections and identities
  - **style** = intra-speaker variation

Gender

‘Women … produce on average linguistic forms which more closely approach those of the standard language or have higher prestige than those produced by men’

(Trudgill, 1983:161)

e.g. [-in] in e.g.
singing, walking

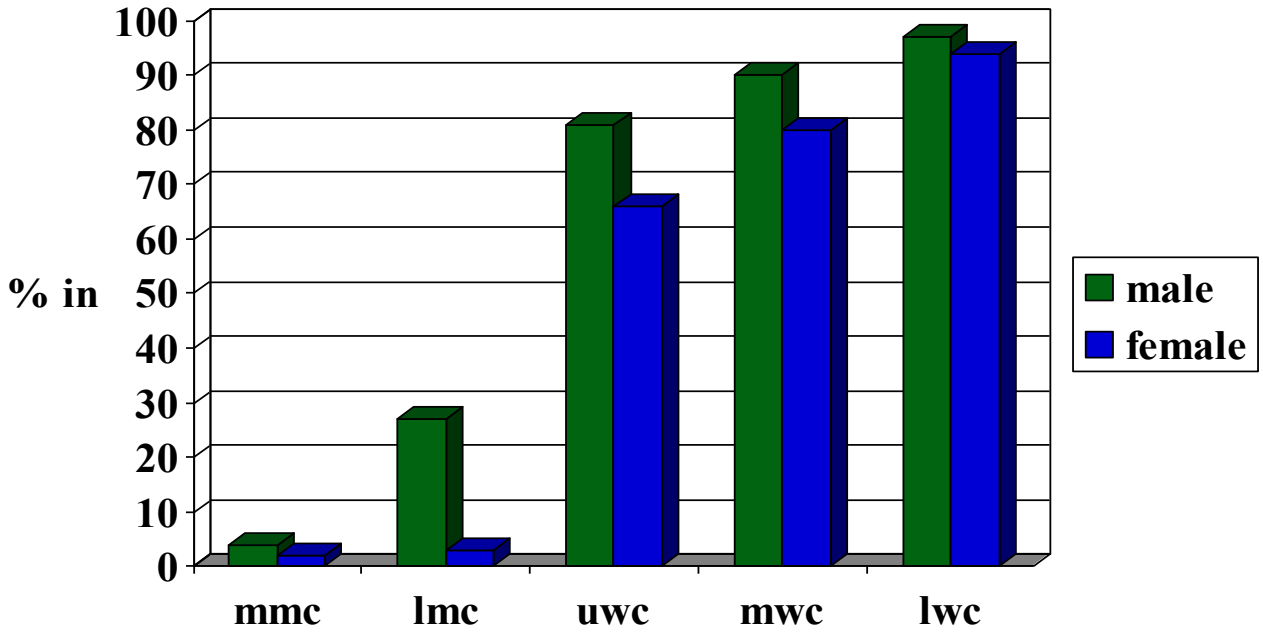


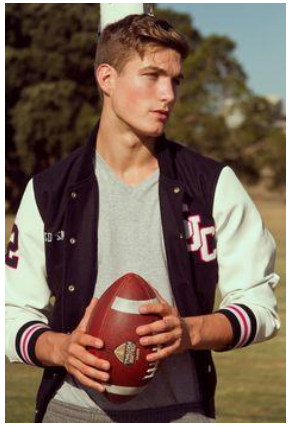
Why?

‘given the social position of women in our society… it is more necessary for women to secure and signal their social status linguistically’

(Trudgill, 1972:182)

e.g. [-in] in e.g.
singing, walking





School-orientated

JOCKS

Respect authority

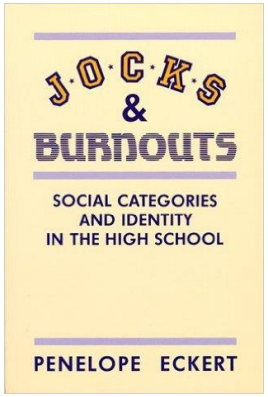
Sports, school activities etc.

Anti-school

BURNOUTS

Anti-authority

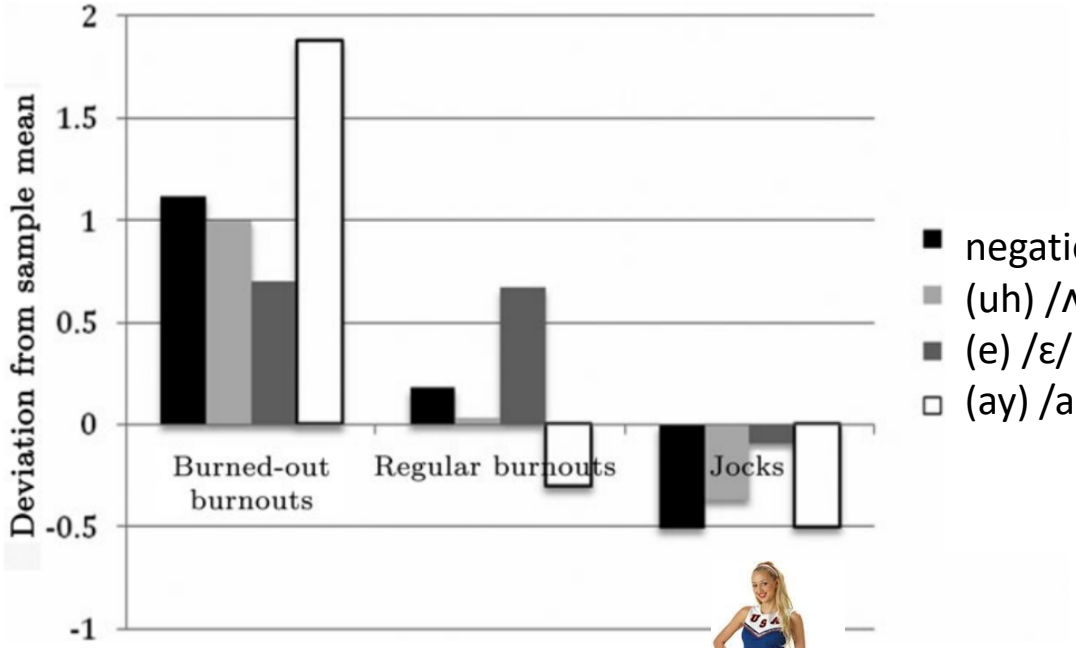
Drinking, smoking, sex, bad behaviour



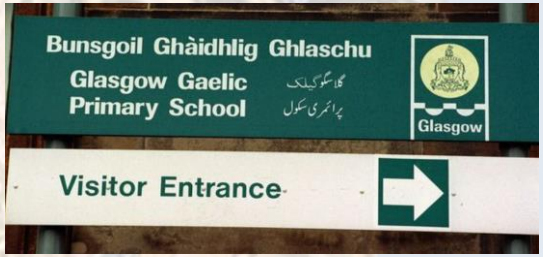
Eckert, e.g. (2000)

‘The burnout girls are the most advanced speakers in the community overall, and the jock girls are the most conservative’.

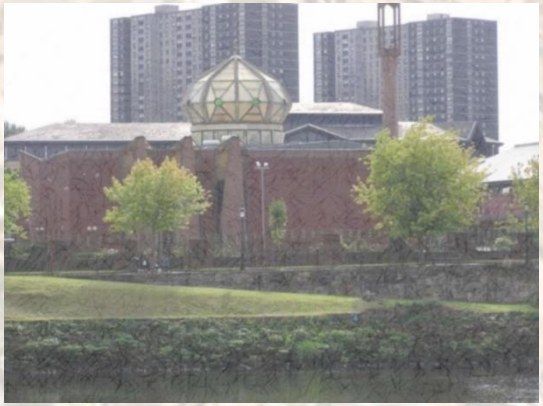
Eckert (1998: 73)



- negation, e.g. I didn’t do nothing
- (uh) /ʌ/ backed to [ɔ], e.g. *luck*
- (e) /ɛ/ - backing to [ʌ] e.g. *dress*
- (ay) /ai/ - to [a:], e.g. *price*

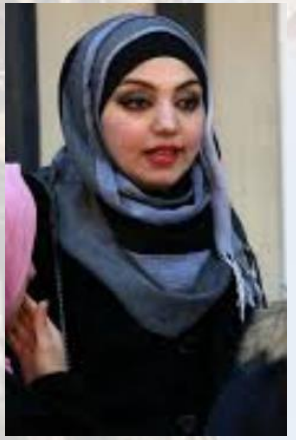

Bunsgoil Ghàidhlig Ghlaschu
Glasgow Gaelic
Primary School
Glasgow
Visitor Entrance


POLSKI
SUPERMARKET
Polish Taste
DELICATESSEN



Ethnicity

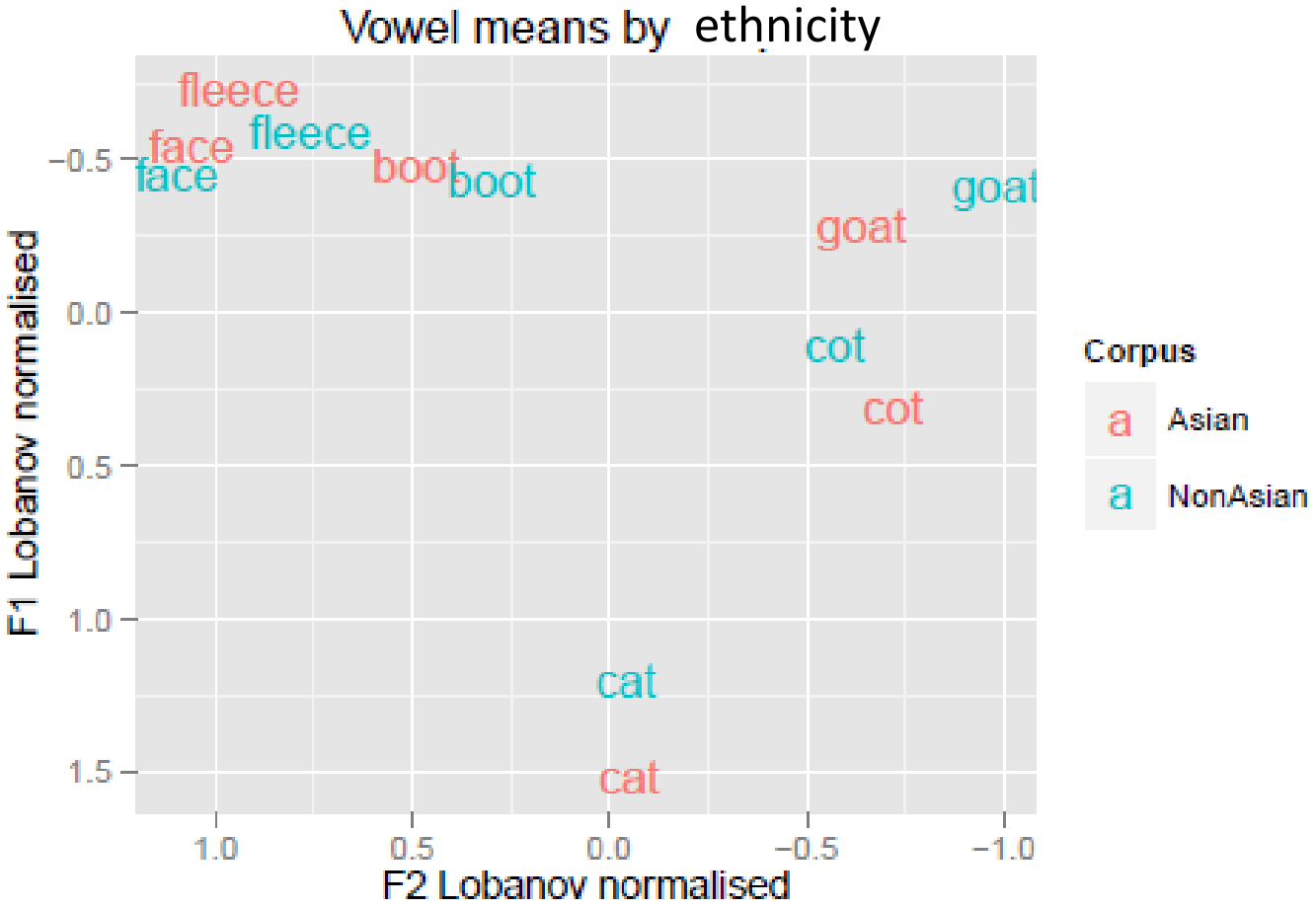

SNICKERS



https://www.youtube.com/watch?v=hOYEWhjopSs

Ethnicity and vowels in Glasgow teen girls

All vowels except FACE differ according to ethnicity, **Glasgow Asian** vs **Glasgow**



N = 17,075

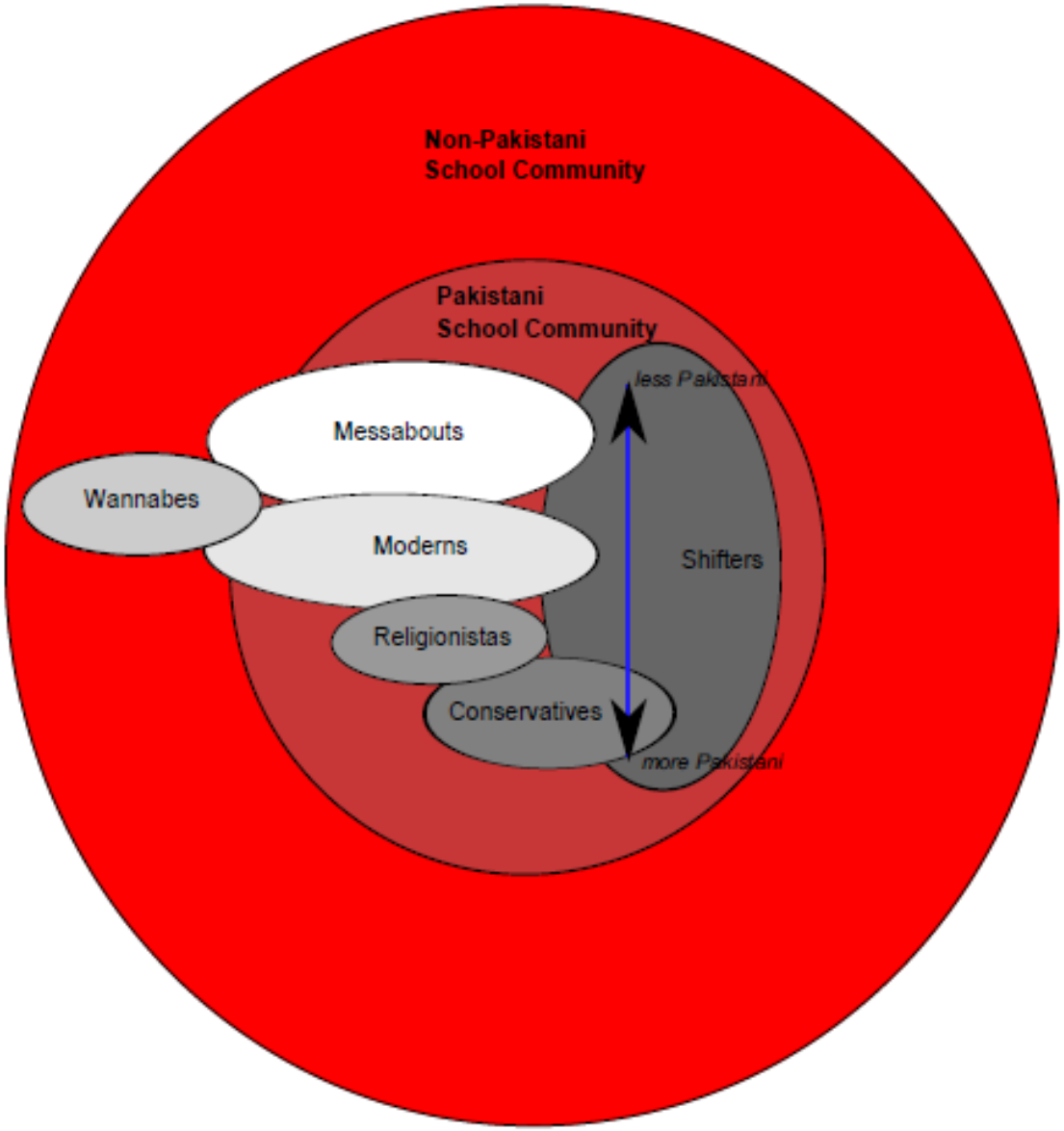
Alam (2015)

There are many different ways of ‘being Asian’…

within ethnicity

Glasgow-Asian teens

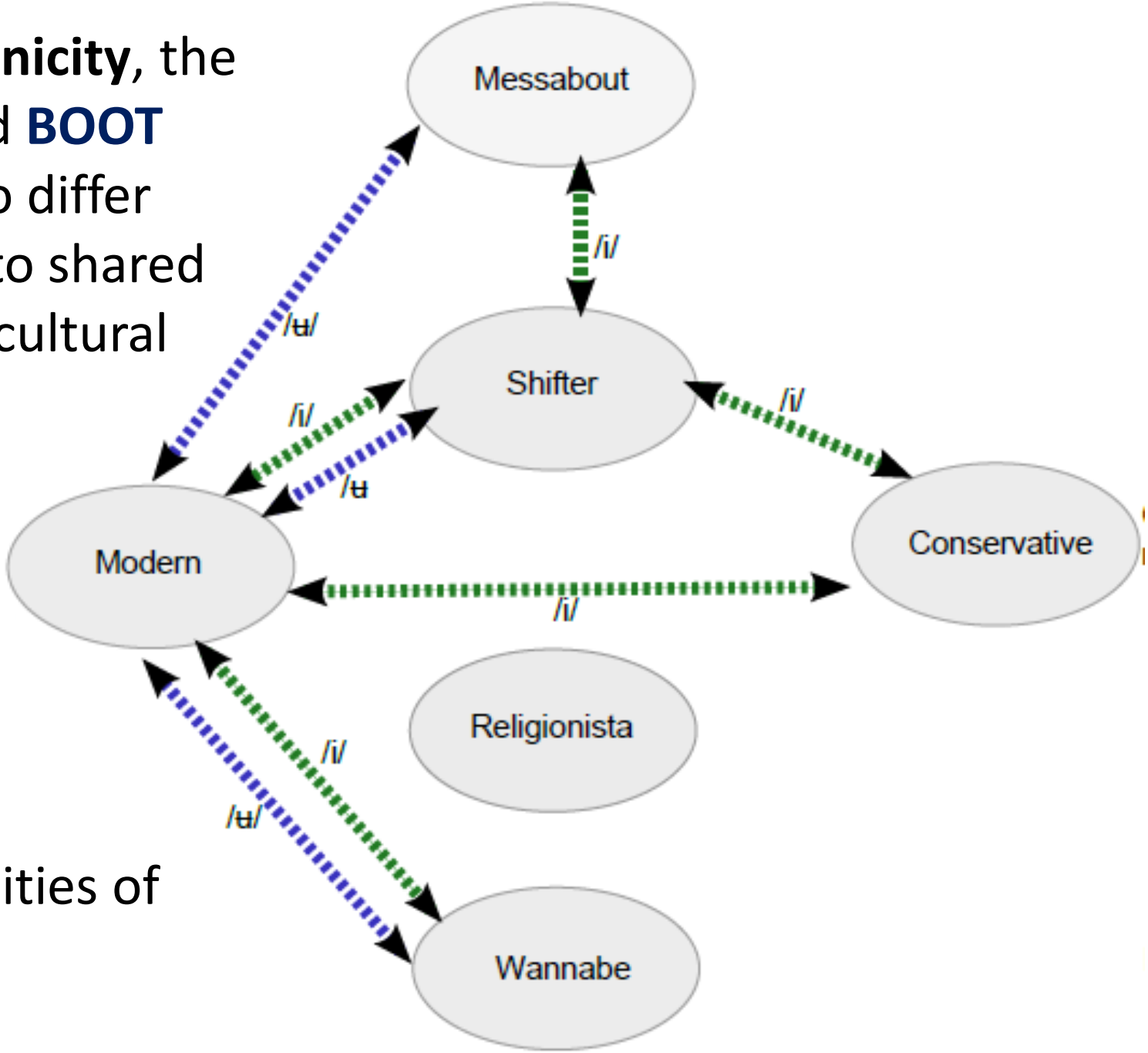
- 70 high school girls
- 3 year ethnography
- participant observation
  - dress, headwear
  - cultural
  - religious
  - Western practices



6 Communities of Practice

Alam (2015)

Within ethnicity, the **FLEECE** and **BOOT** vowels also differ according to shared social and cultural practices



captured by the 6 Communities of Practice

Alam (2015)

There are many different ways of ‘being Glaswasian’

Alam (2015); Alam and Stuart-Smith (2014)

Central Mosque, Govan, Glasgow

Social class

https://www.youtube.com/watch?v=UDIHrX-Jp2E

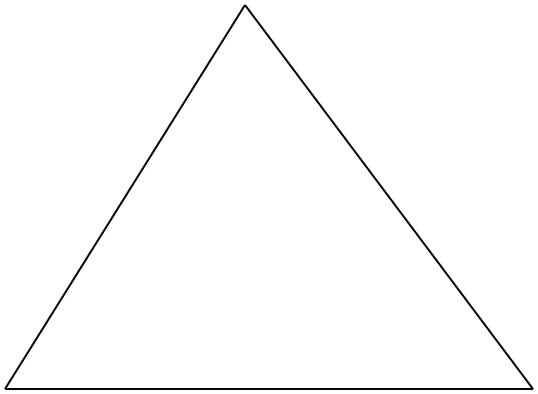
Class variation

prestige

non-regional accent (RP)

standard dialect

less regional variation



upper class

working class

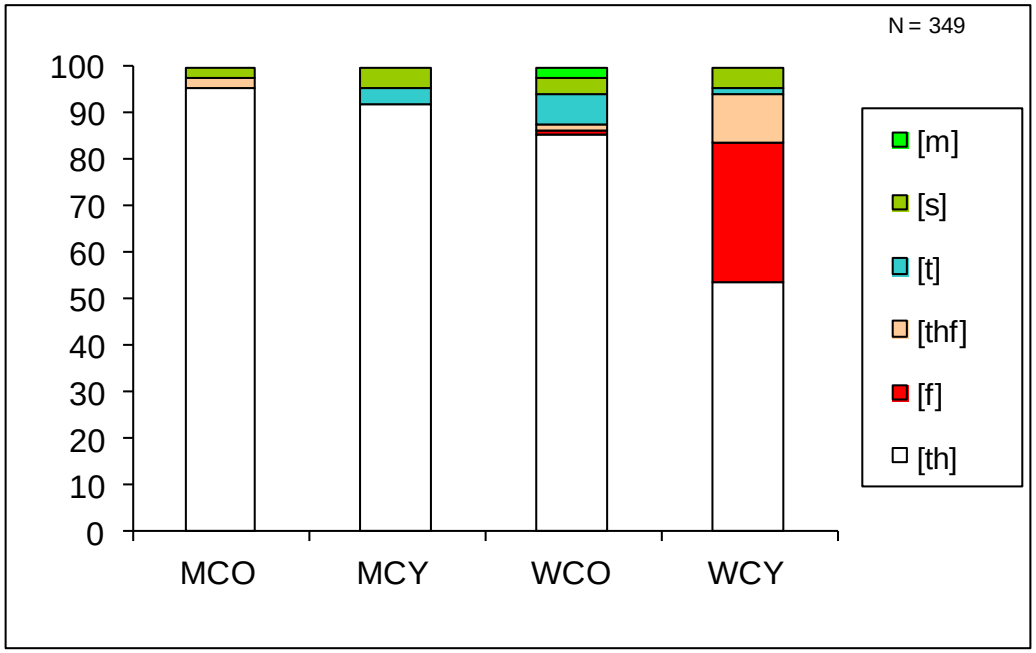
regional accent

non-standard dialect

more regional variation

stigma

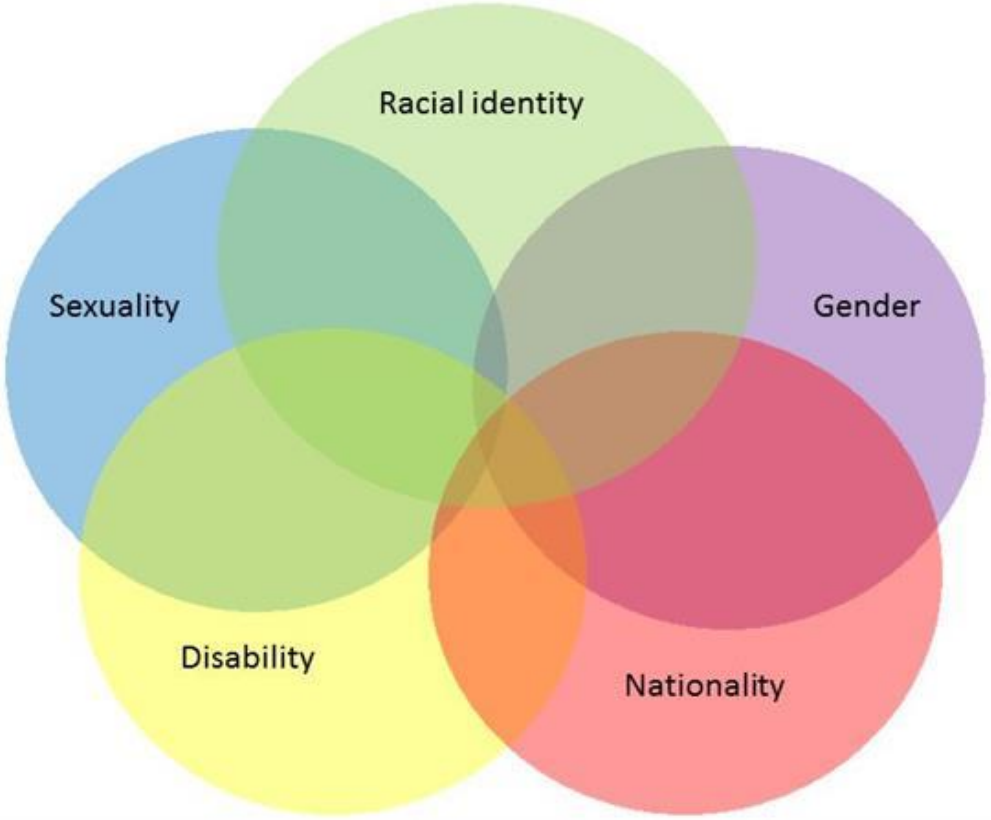
[f] for /th/, in e.g. *think, tooth* in Glasgow



- using [f] is correlated with **social class** and **age** – younger working-class speakers use it more

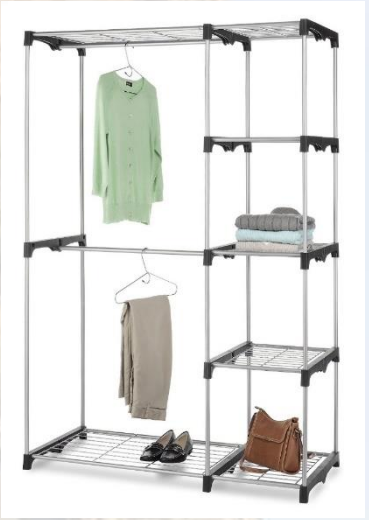
Stuart-Smith et al (2007);
Stuart-Smith et al (2013)

Intersectionality and sociolinguistic categories



Levon (2015) after Crenshaw, e.g. (1989)

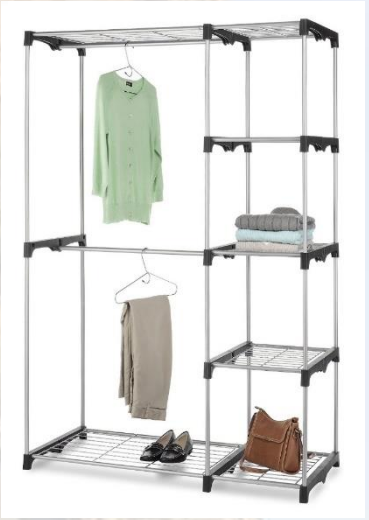
Intraspeaker variation (‘style’)



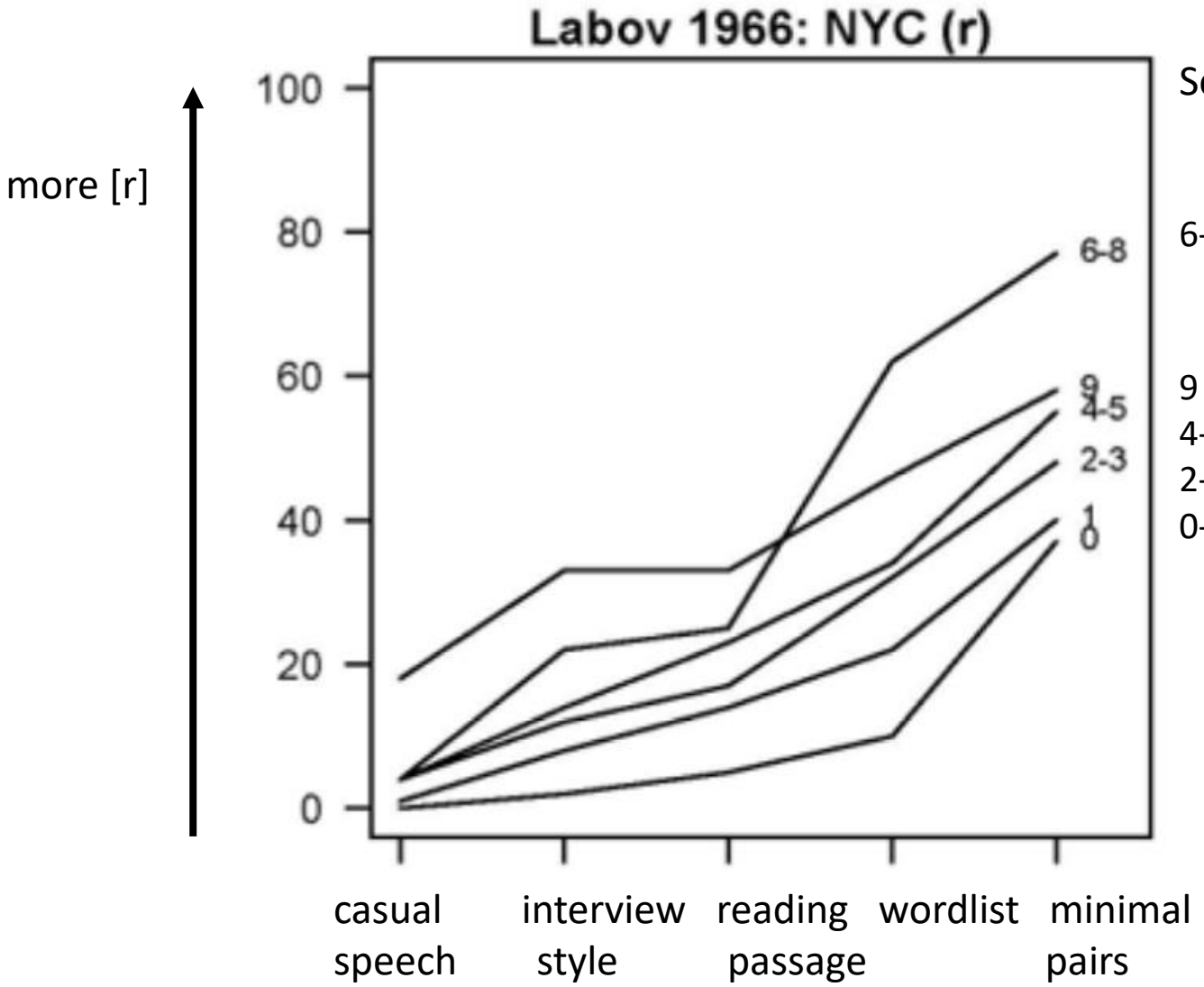
Intraspeaker variation ('style')

'A speech repertoire seems like a closet containing a specified number of clothing items'

(Coupland, 2007:82)



[r] in e.g. *car* in NYC



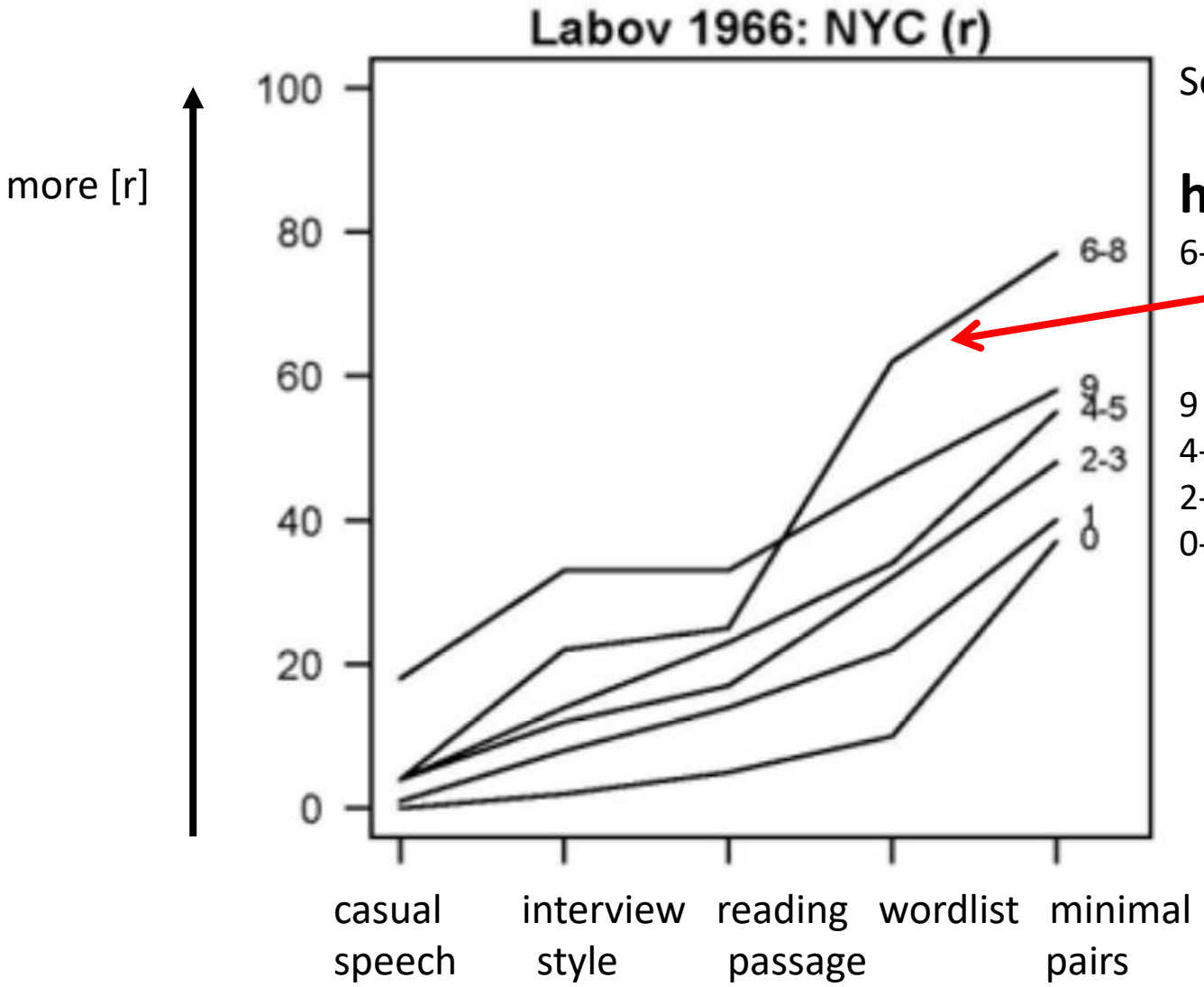
Socio Economic Class

6-8 lower middle class

9 upper middle class
4-5 lower middle class
2-3 working class
0-1 lower class

Labov (1966; 1972)

[r] in e.g. *car* in NYC



Socio Economic Class

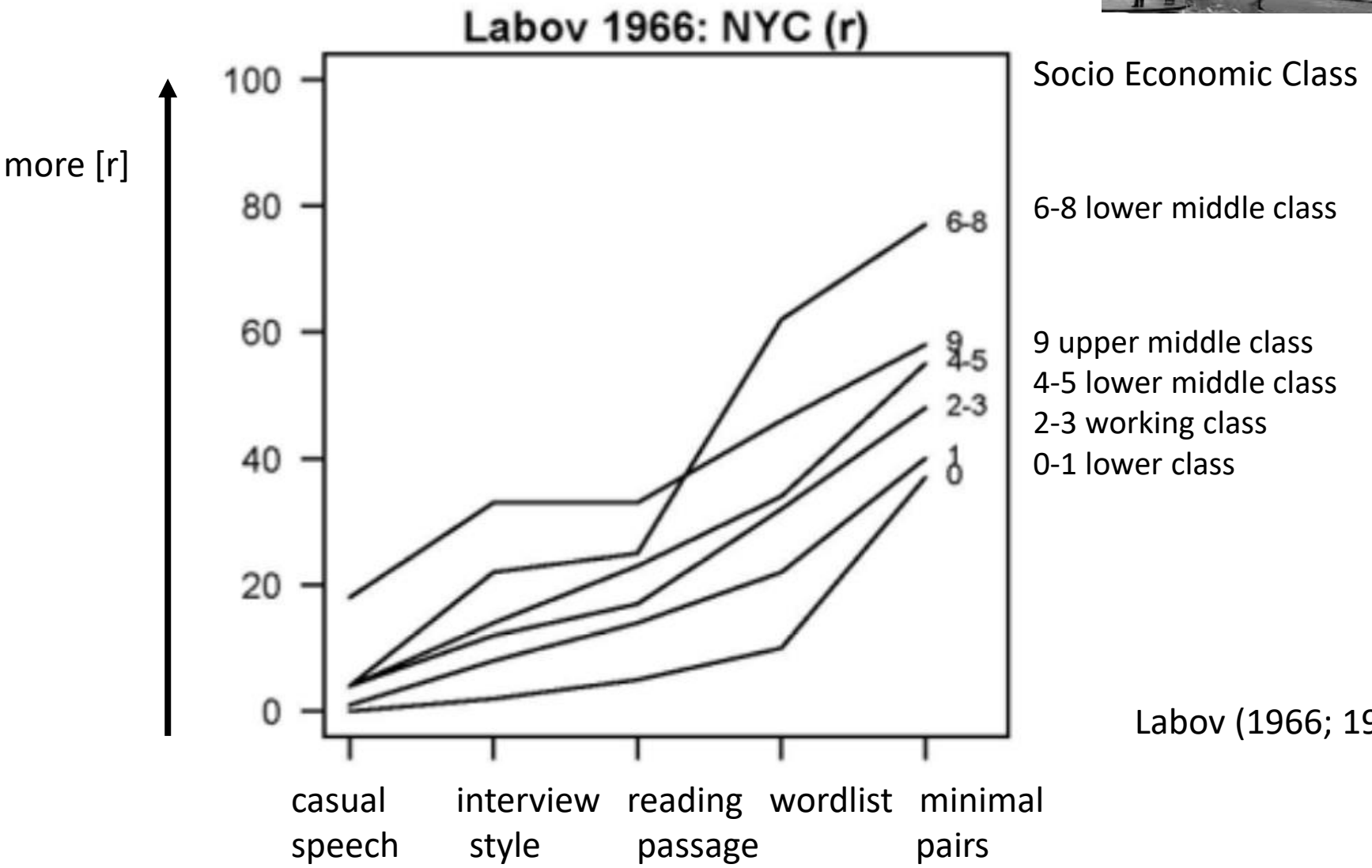
hypercorrection

6-8 lower middle class

9 upper middle class
4-5 lower middle class
2-3 working class
0-1 lower class

Labov (1966; 1972)

‘attention to speech’



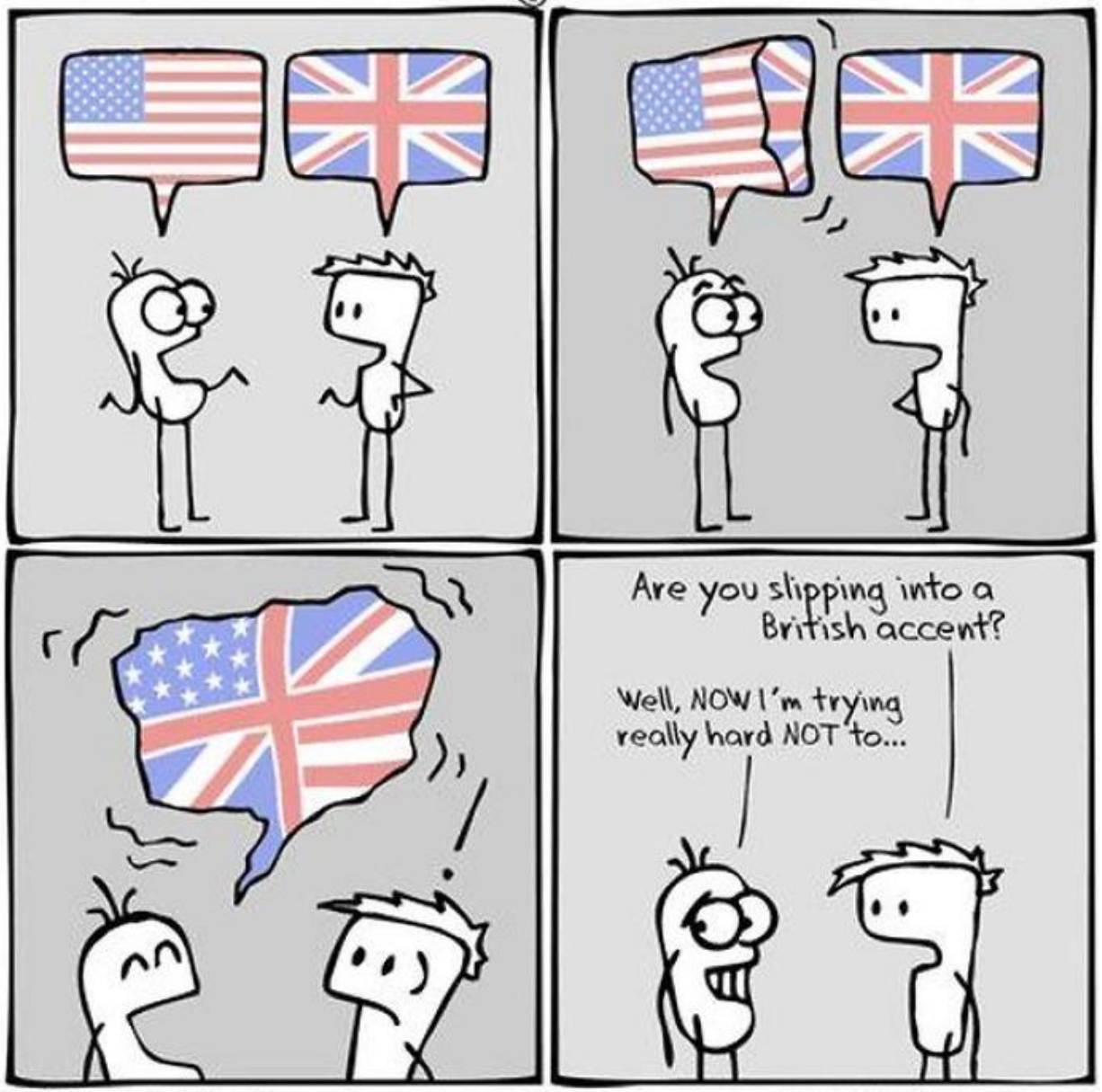
Socio Economic Class

6-8 lower middle class

9 upper middle class
4-5 lower middle class
2-3 working class
0-1 lower class

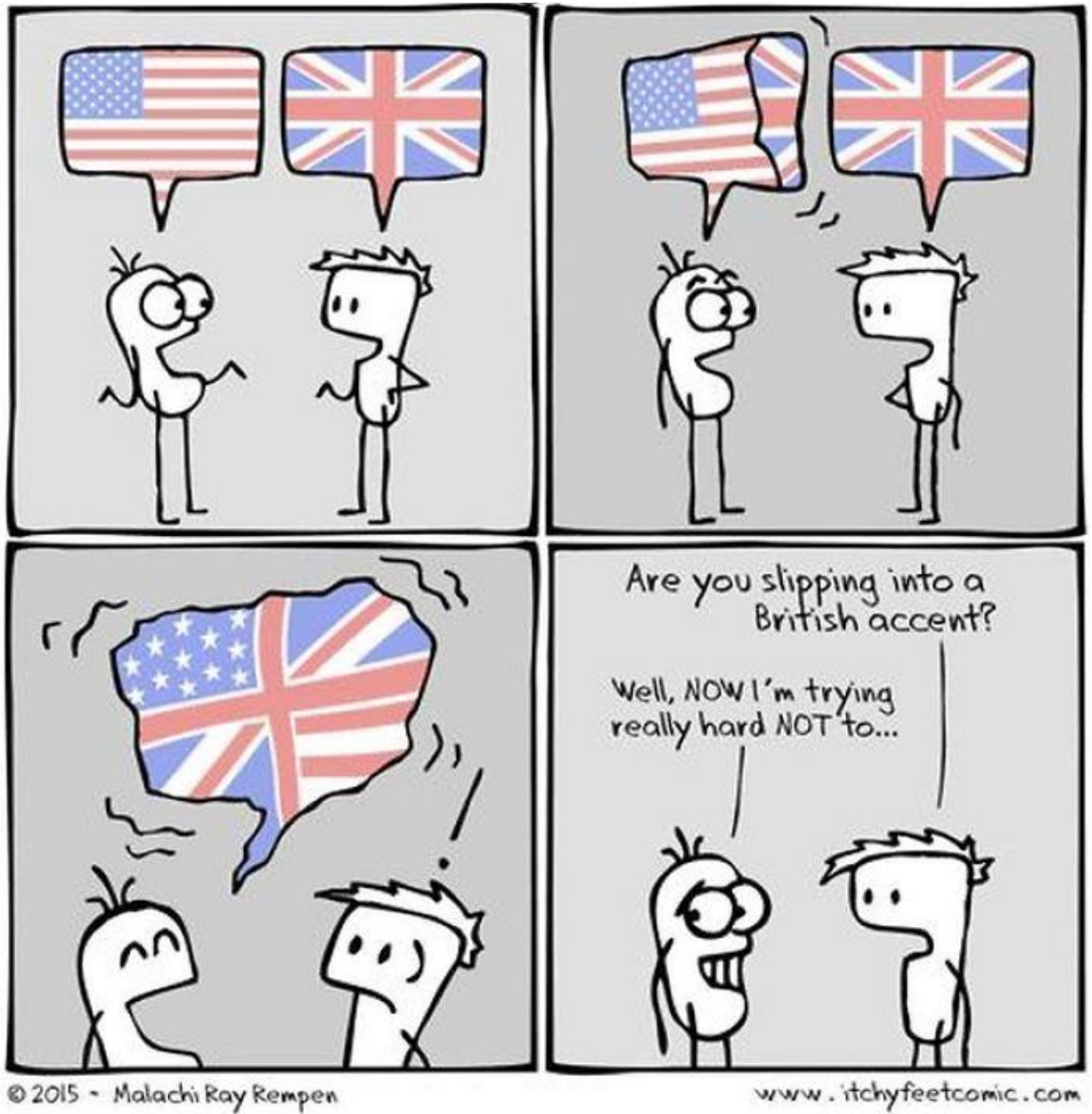
Labov (1966; 1972)

ITCHY FEET in England



www.itchyfeetcomic.com

Accommodation Theory



e.g. Giles 1973

Accommodation Theory

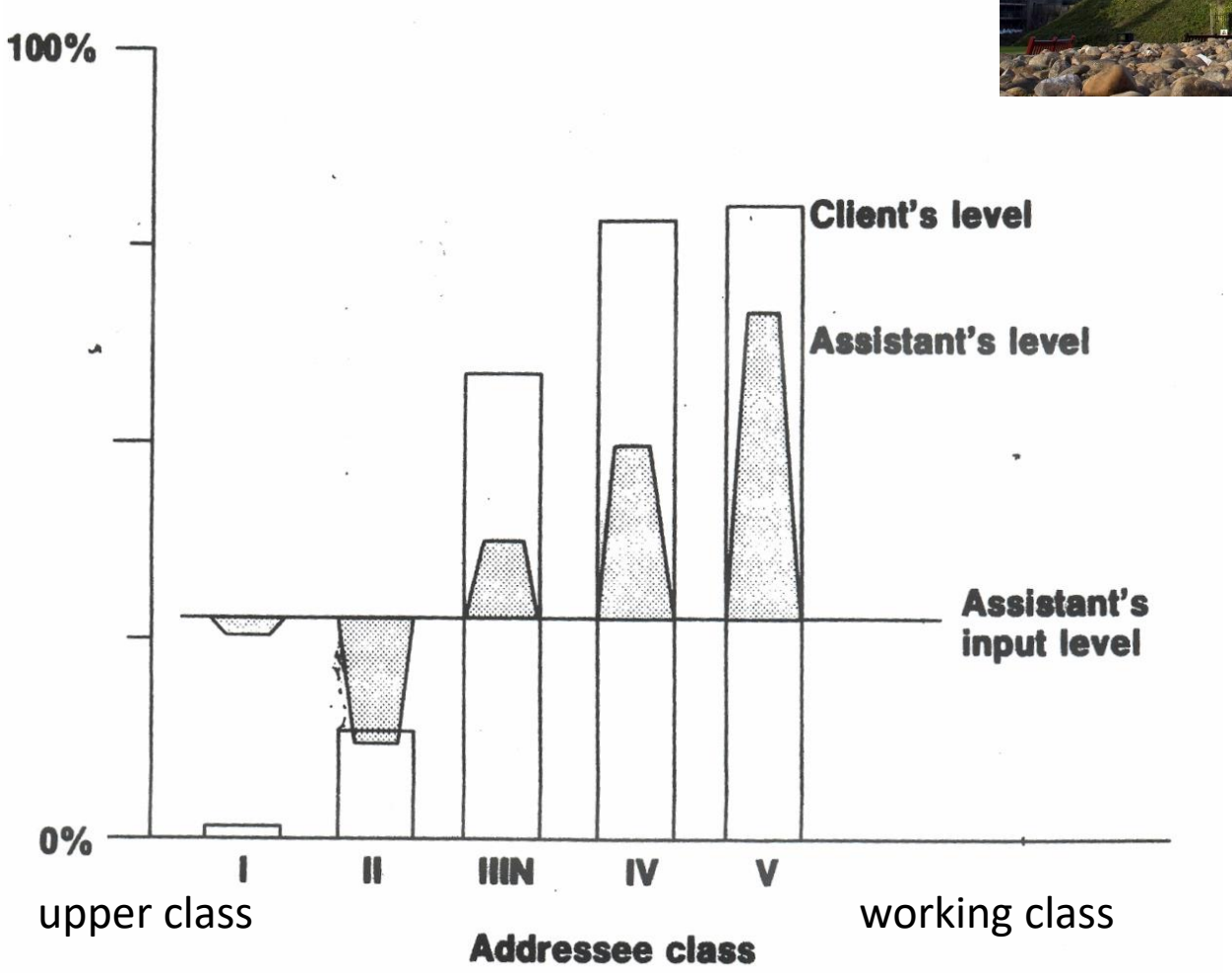
- social-psychological
- interpersonal/interactive dynamics between individuals
- importance of attitudes and motivations of speakers on linguistic choices
- **convergence**
- **divergence**

Speech Accommodation Theory (SAT) (e.g. Giles et al. 1991)

Communication Accommodation Theory (CAT) (e.g. Giles 1973; Giles et al 2007)

[d] for /t/ in e.g. *city*

more [d]

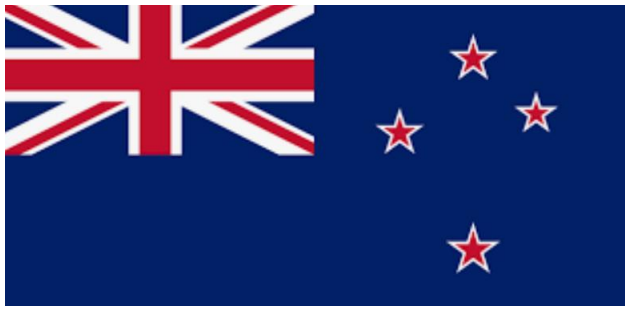


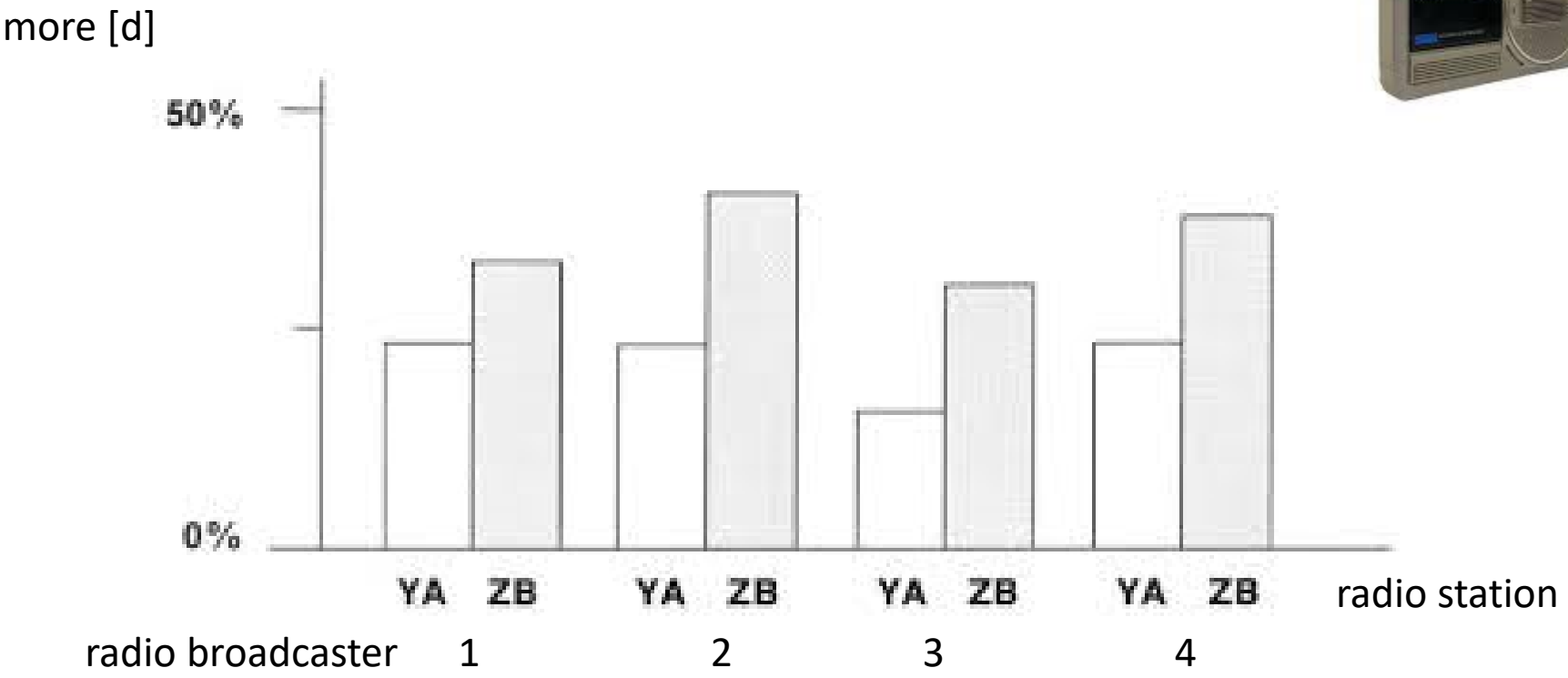
Coupland (1984), Fig.2 in Bell, in Coupland & Jaworski (1997: 248)

Audience design

Bell e.g. (1984)

[d] for /t/ in e.g. *later*





Bell (1982: 182) in Bell, in Coupland and Jaworski (1997: 242)

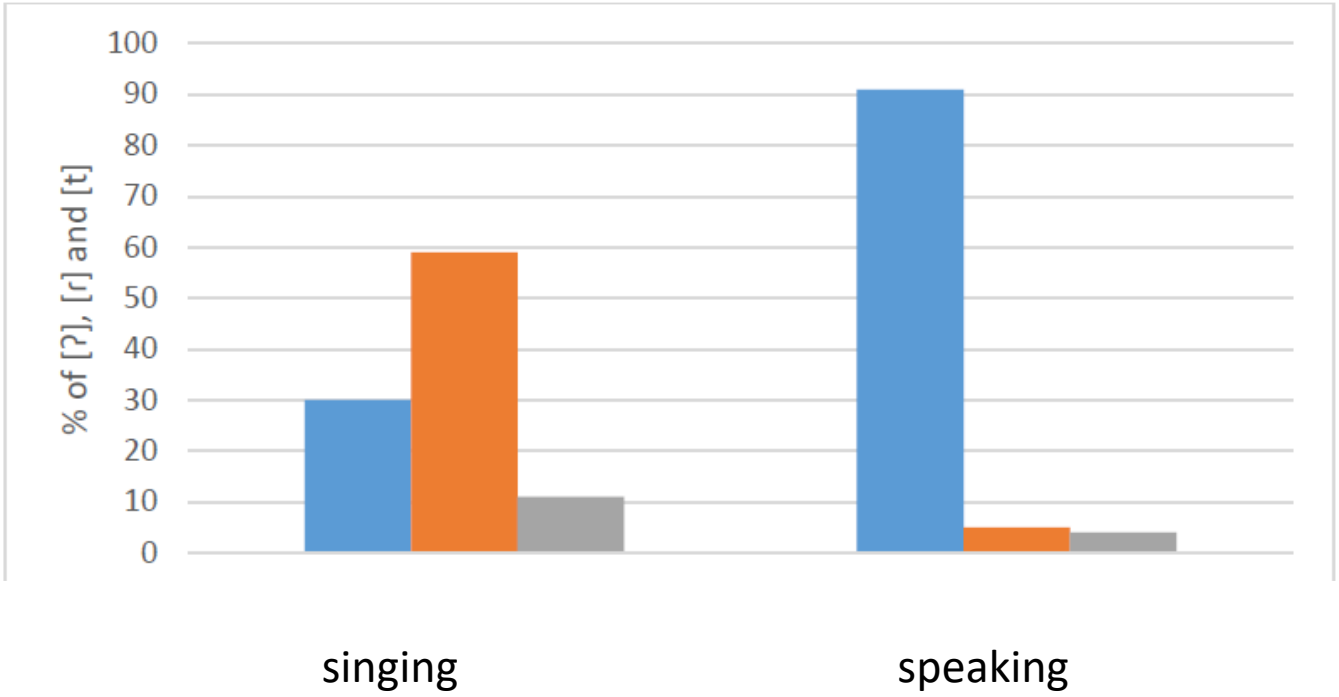
Bell (1984: 162, Fig.6)

Speaker agency

Persona construction

Style-shifting in Adele

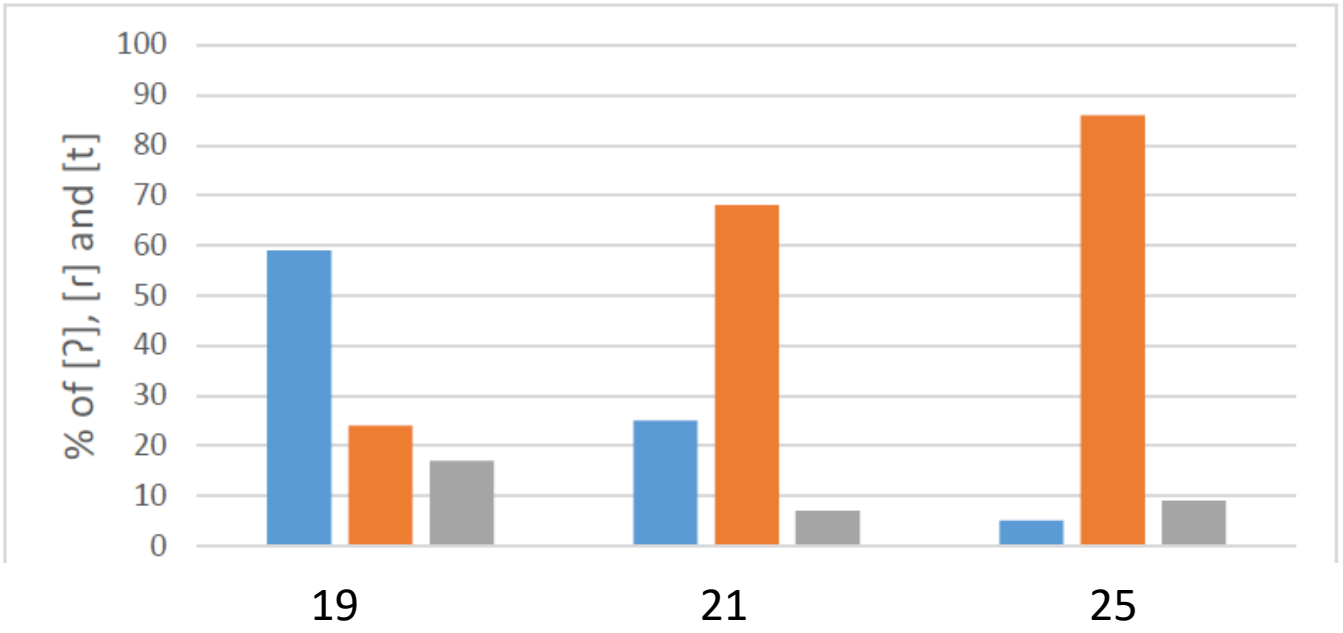
[ʔ], [ɾ] or [t] for /t/ in e.g. *better*



Thanks to Jo Pearce, MSV 2017

Style-shifting in Adele's singing over time

[ʔ], [ɾ] or [t] for /t/ in e.g. *better*



Thanks to Jo Pearce, MSV 2017

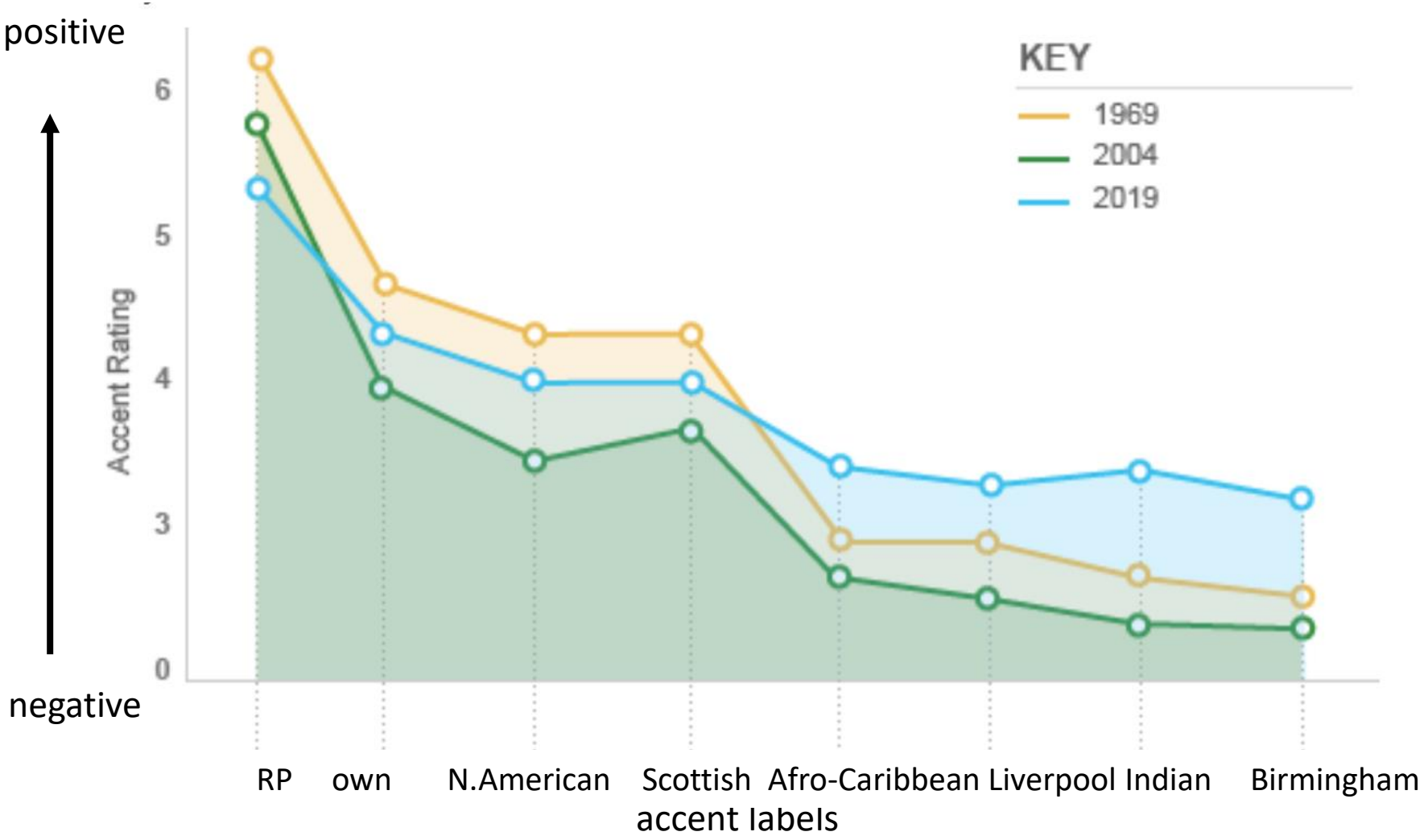
accent evaluation/accent bias

"It is impossible for an Englishman to open his mouth without making some other Englishman hate or despise him".

George Bernard Shaw, Preface to Pygmalion (1912)

e.g. Dragojevic et al (2021)

In the UK, social evaluation of accents has remained constant for the last 50 years – standard accent (RP) most positive …. ethnic and urban accents least positive



https://accentbiasbritain.org/results-labels/

The 'brutal' Glasgow Uni accent and why it drives everyone in the city crazy

https://www.facebook.com/watch/?v=1819020744798983

phonological variables

	Working-Class	Middle-Class
relating to coda /r/		
number	shorter syllable	longer syllable
nerve	[ɛ]	[ʌ]
onset /r/		
ran	[ɾ]	[ɻ]
coda /l/		
well	[V]	[l]

MacFarlane & Stuart-Smith (2012)

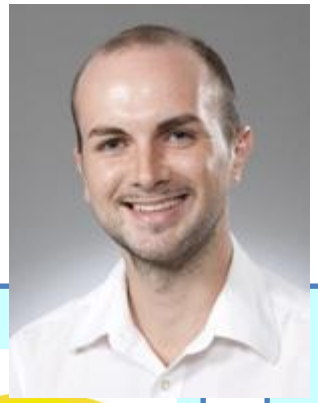
‘Lee’ (WC)

adidas

‘Phil’ (MC)

GANT

‘Lee’ (WC)



‘Phil’ (MC)

THE SCOTTISH FOOTBALL ASSOCIATION

GANT

kushion

adidas

SCOTLAND RUGBY LEAGUE

e.g. *number*

‘Lee’ (WC)

‘Phil’ (MC)

MacFarlane & Stuart-Smith (2012)

e.g. *number*

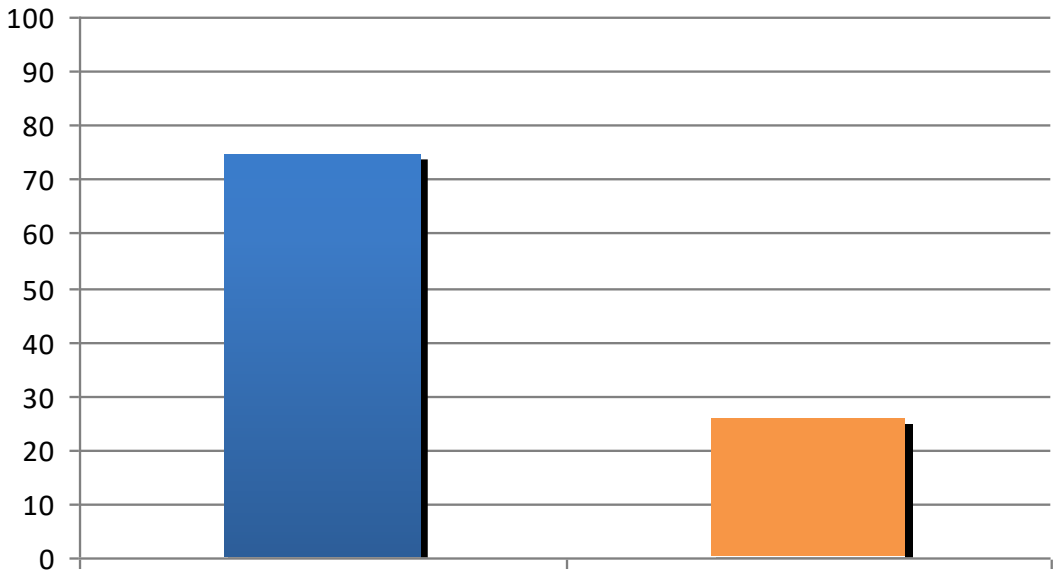
‘Lee’ (WC)

‘Phil’ (MC)

MacFarlane & Stuart-Smith (2012)

social categorization

% tokens overall judged as expected



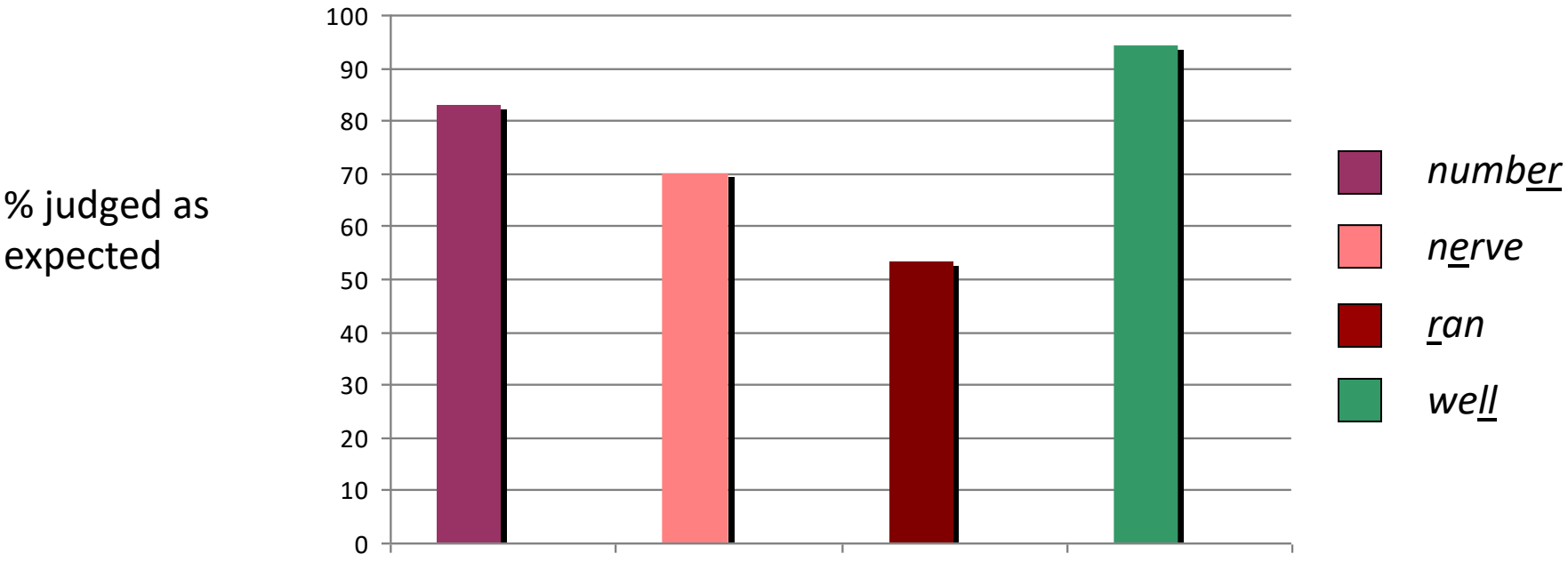
judged as expected

not judged as expected

- judges were able to correctly assign phonetic variation from the same talker to the two social personae constructed only by brand logos

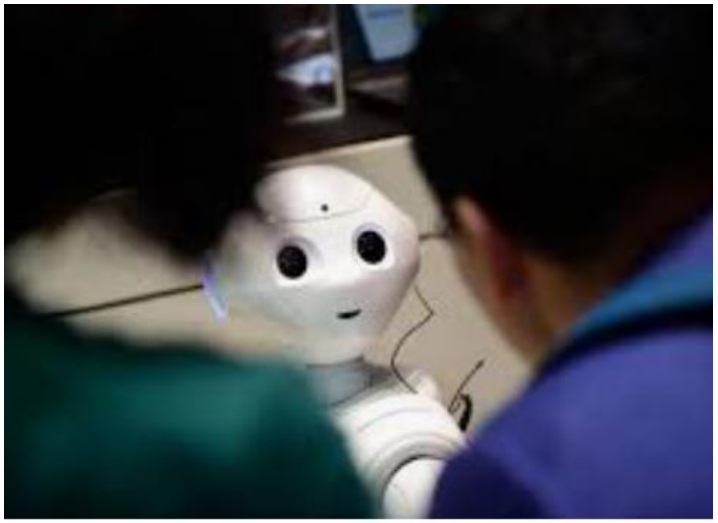
MacFarlane & Stuart-Smith (2012)

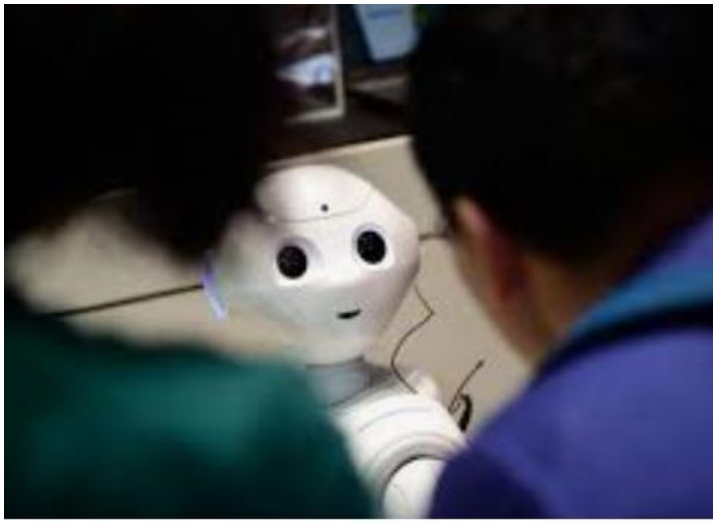
social categorization by variable



- Some variables are better than others for judging social personae

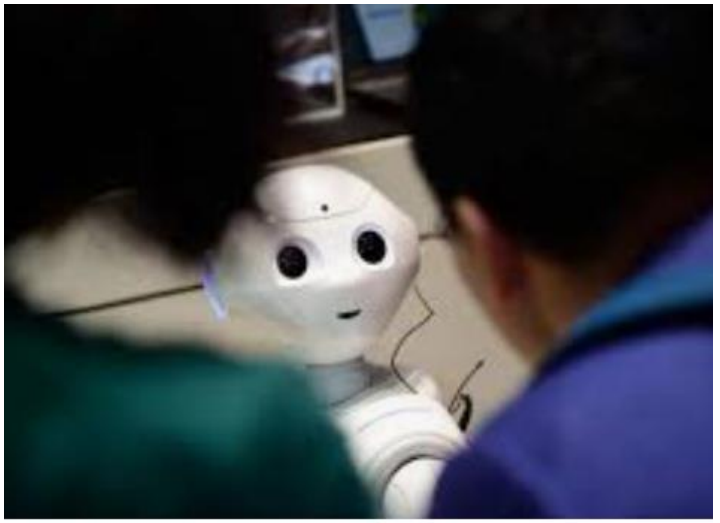
MacFarlane & Stuart-Smith (2012)





Digital agents show sociolinguistic bias:

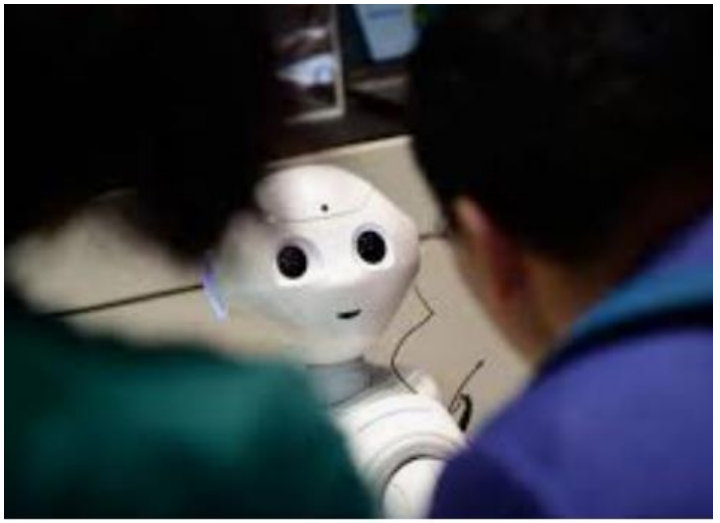
- Production: generally speak standard varieties in standard accent
- Reception: work better with standard varieties in standard accent (‘racial bias’; Koenecke et al 2020; Mengesha et al 2021)



Humans show sociolinguistic bias in responses to digital agents:

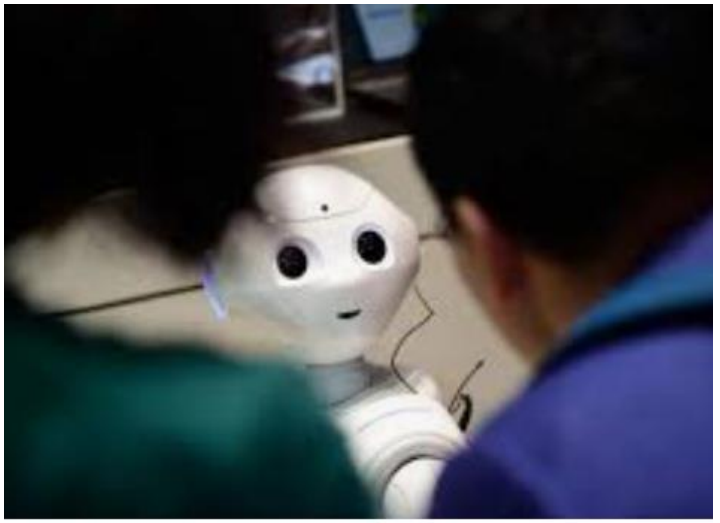
- Standard vs non-standard urban British English accents provoke different behaviours (Torres et al 2018)

‘It didn't understand my accent and after a few attempts it ignored me and said 'Closing Down' in a snotty English accent, and I ended up swearing at it.’ (Female, 55-59, class undisclosed)



Humans can show fine-grained phonetic adjustments to digital agents (e.g. Burnham et al 2010)

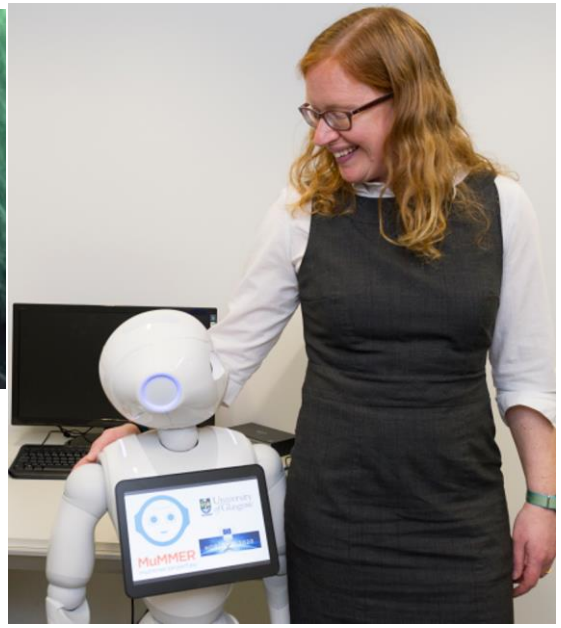
- and more so when identifying with the agent (Staum-Casasanto et al 2010)
- can be mediated by social factors (Zellou et al 2021), and individual traits (Snyder et al 2019)
- may be similar to that for a human voice (Cohn & Zellou 2021) but can also differ (Cohn et al 2021)



Humans can show sociolinguistic style shifting to digital agents:

- Scottish speakers show high rates of glottal stops for /t/ in e.g. *better*, to Alexa and when reading (Johnston D20 2020)
- Scottish speakers show weaker rhoticity in e.g. *car,* to Google than when reading (Turpin D20 2020)

Human expectations of interacting with a robot showed sociolinguistic asymmetry

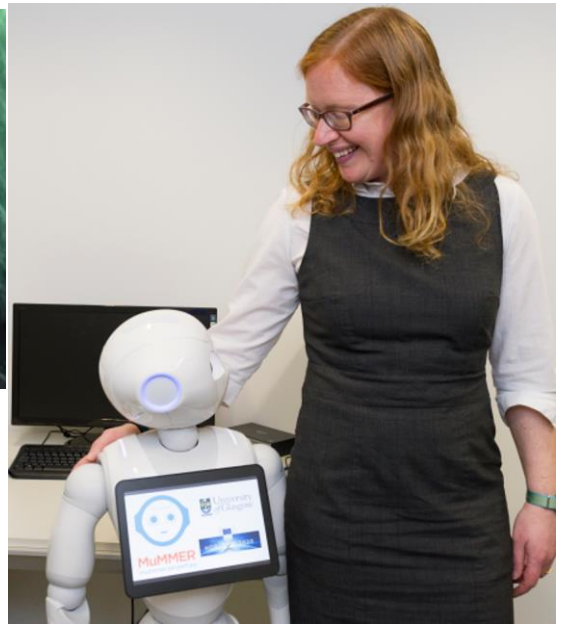


Rhiannon Fyfe,
Mary Ellen Foster

Overall:

- most respondents expected to be able to understand the robot
- but they thought that they would need to change their speech so that the robot would understand them
- and they expressed doubt about whether having a conversation with the robot would be easy

Human expectations of interacting with a robot showed sociolinguistic asymmetry



Rhiannon Fyfe,
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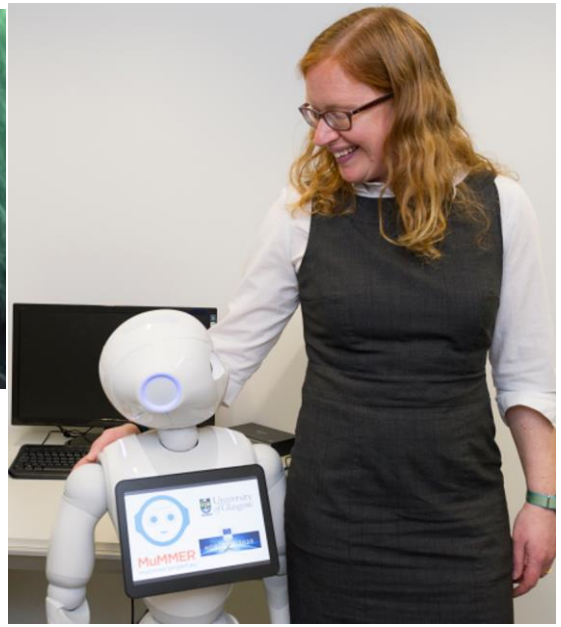
Overall:

- most respondents expected to be able to understand the robot
- but they thought that they would need to change their speech so that the robot would understand them
- and they expressed doubt about whether having a conversation with the robot would be easy

Sample skewed towards older (62%), female (66%), working class (74%), Scottish residents (83%)

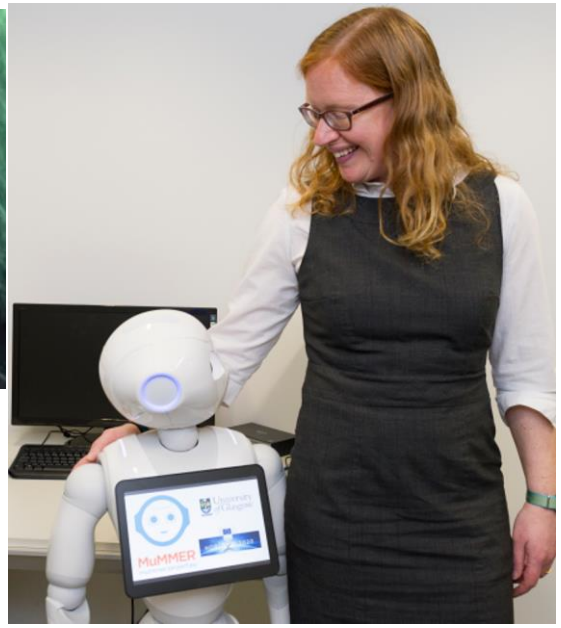
Human expectations of interacting with a robot were socially mediated



Rhiannon Fyfe,
Mary Ellen Foster

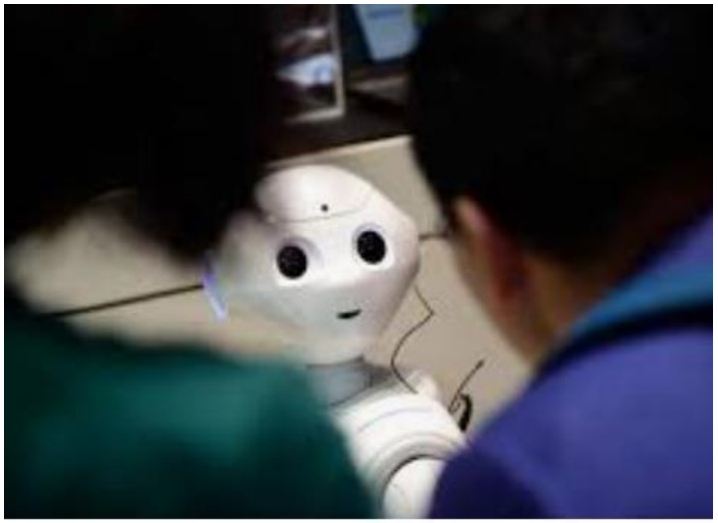
- younger participants were more confident about understanding the robot than older ones
- young men were less likely to expect to have to change their accent than middle-aged or older men

Human expectations of interacting with a robot were less positive for non-standard dialect speakers



Rhiannon Fyfe,
Mary Ellen Foster

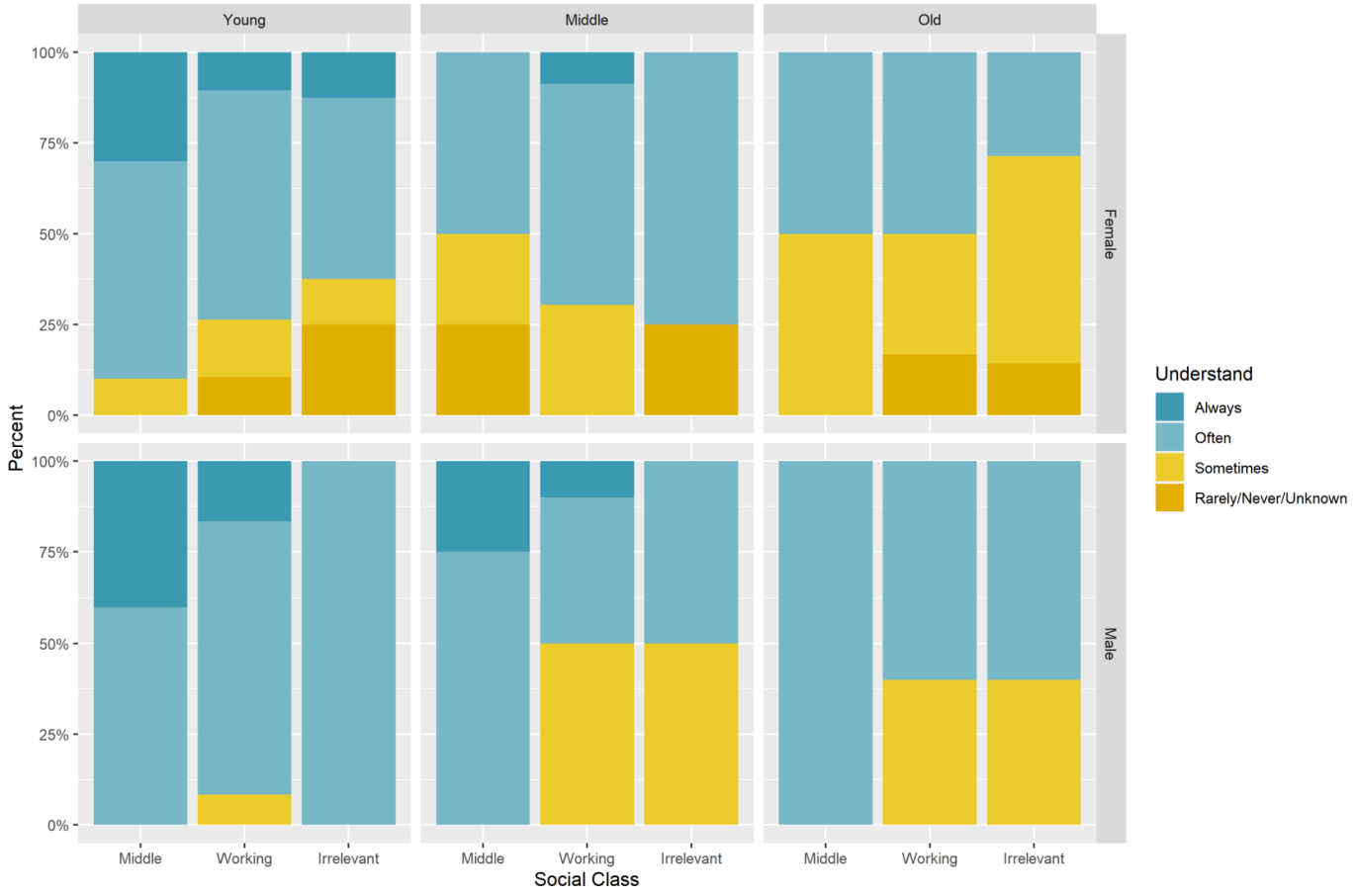
- ‘Would the robot understand my accent? If not, it would mean repeating myself over and over’ (Male, 50-54, working-class)
- ‘Difficulty understanding accent may lead to having to repeat myself for the robot to understand me, or it may never end up understand[ing] me’ (Female, 35-39, working-class)
- ‘depending on the software I’d worry about it’s abilities with Glaswegian/Scottish accents’ (Male, 18-24, working-class)



Thank you!

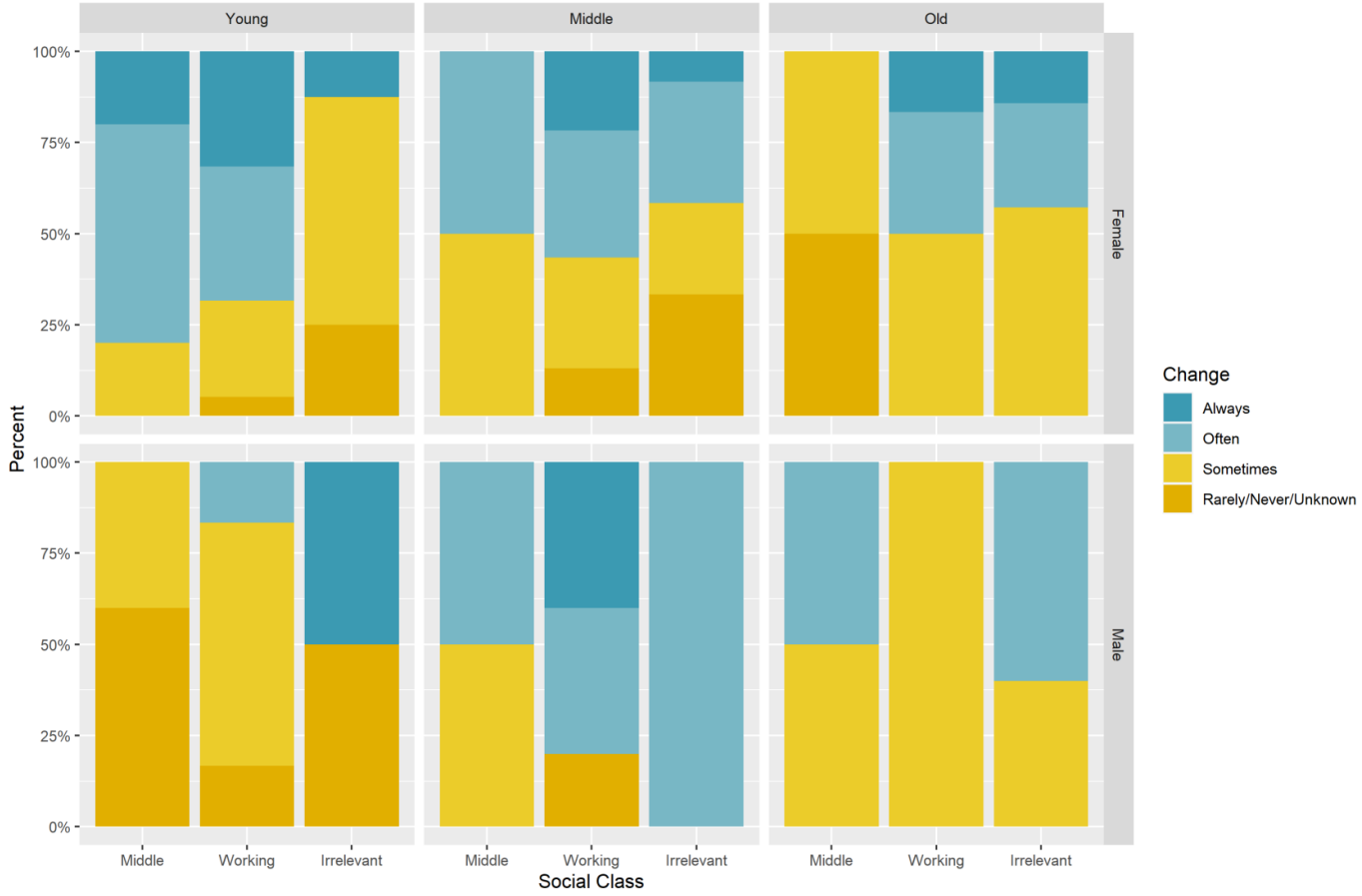
and to Leona Johnston and Eloise Turpin for sharing their D20 Dissertation results for this talk;
to Rhiannon Fyfe for sharing their unpublished project results;
and to Mary Ellen Foster for drawing me into such an interesting research area!

Human expectations of interacting with a robot are socially-mediated:



- Younger respondents are more confident about understanding the robot

Human expectations of interacting with a robot are socially-mediated:



- Young men are less likely to change their accent than middle-aged or older men