



To what extent do social judgements of accents affect voice judgements?

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The IVIP project



- **Improving Voice Identification Procedures**
- Interdisciplinary ESRC funded project in linguistics, criminology, psychology and law
- Aims to **improve the understanding of earwitness behaviour** and to **improve the interaction of the criminal justice system with the use of earwitness evidence.**
- Strand 3 of the project is looking at how social stereotypes affect voice identification.

Outline



1. Background – sociolinguistics and forensic linguistics
2. Aims and research questions
3. Methodology – social traits and behavioural judgements
4. Results
5. Discussion and further issues

Background

Background: Sociolinguistics literature



- Speech rate, pitch and regional accent have all been found to affect perceptions of speakers. (Street et al. 1983, Jones et al. 2008, Philippon et al. 2008)
- People make judgements about traits in terms of status (prestige), solidarity (social attractiveness) and dynamism (Coupland & Bishop 2007; Dragojevic et al. 2021).

Accent(s)	Judgement	Reference
Birmingham	Lowest social attractiveness & prestige	Coupland & Bishop 2007
RP/SSBE (Standard English)	Highest social attractiveness, high prestige	
Newcastle and West Country	High social attractiveness, low prestige	
London	Low social attractiveness, high prestige	

Background: Forensic linguistic literature



- Some voices '**more threatening**' than others (e.g. Tompkinson 2016; Axer 2019)
- People with certain accents being predicted as **more likely to commit certain crimes** than others (e.g. Seggie 1983; Dixon et al. 1994; 2002)
 - Non-standard accents associated with blue-collar crime - association with violence
 - Standard accents more associated with white-collar crime - association with deception
- Also affected: **witness credibility** (e.g. Frumkin and Thompson 2020); **defendant culpability** (e.g. Cantone et al. 2019); **defendant guilt** (e.g. Kurinec & Weaver III 2019); the **harshness of sentences** (e.g. Romero-Rivas et al. 2021); the **evidence of earwitnesses** (e.g. Nolan & Grabe 1996; Griffiths 2012).

Aims & Research Questions

Aims & Research Questions

- Status and solidarity dimensions
 - Updated results - any change?
- Blue & white collar crimes
 - Broader range of accents?
 - Other crime types?
- Correlation between behaviours and traits?

Aims & Research Questions



1. To provide **contemporary results for accent judgements** across a range of British English accents and social traits.
2. To examine whether listeners perceive speakers as **more or less likely to behave in certain (criminal) ways.**



To identify any interventions that could be made regarding implicit accent bias to protect against unreliable evidence and miscarriages of justice.

Methodology

Methodology

- Randomly assigned to 'social traits' or 'behaviours' condition
- 30s samples, non-identifying and no continuous narrative. All white men under 50.
- Samples normalized for AR and f0
- Belfast¹, Birmingham¹, Bradford², Bristol¹, Cardiff¹, Glasgow³, Liverpool¹, London⁴, Newcastle⁵, SSBE⁶
- Rated statements on Likert scale 1-7 from 'Strongly disagree' to 'Strongly agree'

Voice 2

Listen to the voice and rate how strongly you agree with the following statements.

The person in this recording sounds like someone who is...

Trustworthy	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree
Aggressive	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree
Working class	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree
Kind	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree
Rich	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree
Educated	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree
Confident	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree
Friendly	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree
Honest	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree
Intelligent	Strongly disagree	<input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="4"/> <input type="text" value="5"/> <input type="text" value="6"/> <input type="text" value="7"/>	Strongly agree

Methodology

- Social traits questions based on 'Defendant Vocal Characteristics Scale' (Cantone et al. 2019) and 'Speech Evaluation Instrument' (Zahn & Hopper 1985)
- Grouped into **three categories** of traits – **status** (e.g. 'educated'), **solidarity** (e.g. 'friendly') and **dynamism** (e.g. 'confident')

Voice 2

Listen to the voice and rate how strongly you agree with the following statements.

The person in this recording sounds like someone who is...

Trustworthy	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Aggressive	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Working class	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Kind	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Rich	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Educated	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Confident	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Friendly	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Honest	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Intelligent	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree

Methodology

- Behavioural questions motivated by wanting to find ratings for morally good, bad, and ambiguous behaviours
- As well as a range of offence types, without blue/white collar associations

Voice 2

Listen to the voice and rate how strongly you agree with the following statements.

The person in this recording sounds like someone who would...

Report a relative to the police for a minor offence	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Shoplift	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Touch someone sexually without consent	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Cheat on a romantic partner	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Return a lost wallet to its owner	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Stand up for someone who is being harassed	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Lie on their CV	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Physically assault someone	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Drive dangerously	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree
Vandalise a shop front	Strongly disagree	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7	Strongly agree

Methodology

- Participants also rated familiarity
- Asked to identify where speaker came from

Please answer the following questions for each of the voices that you just heard. You may move on without listening to the whole voice recording.

Where do you think the person is from?
Be as specific as you can (i.e., if from a city, county or region in the UK)

Some accents are more familiar to us than others.
How familiar is this accent to you?

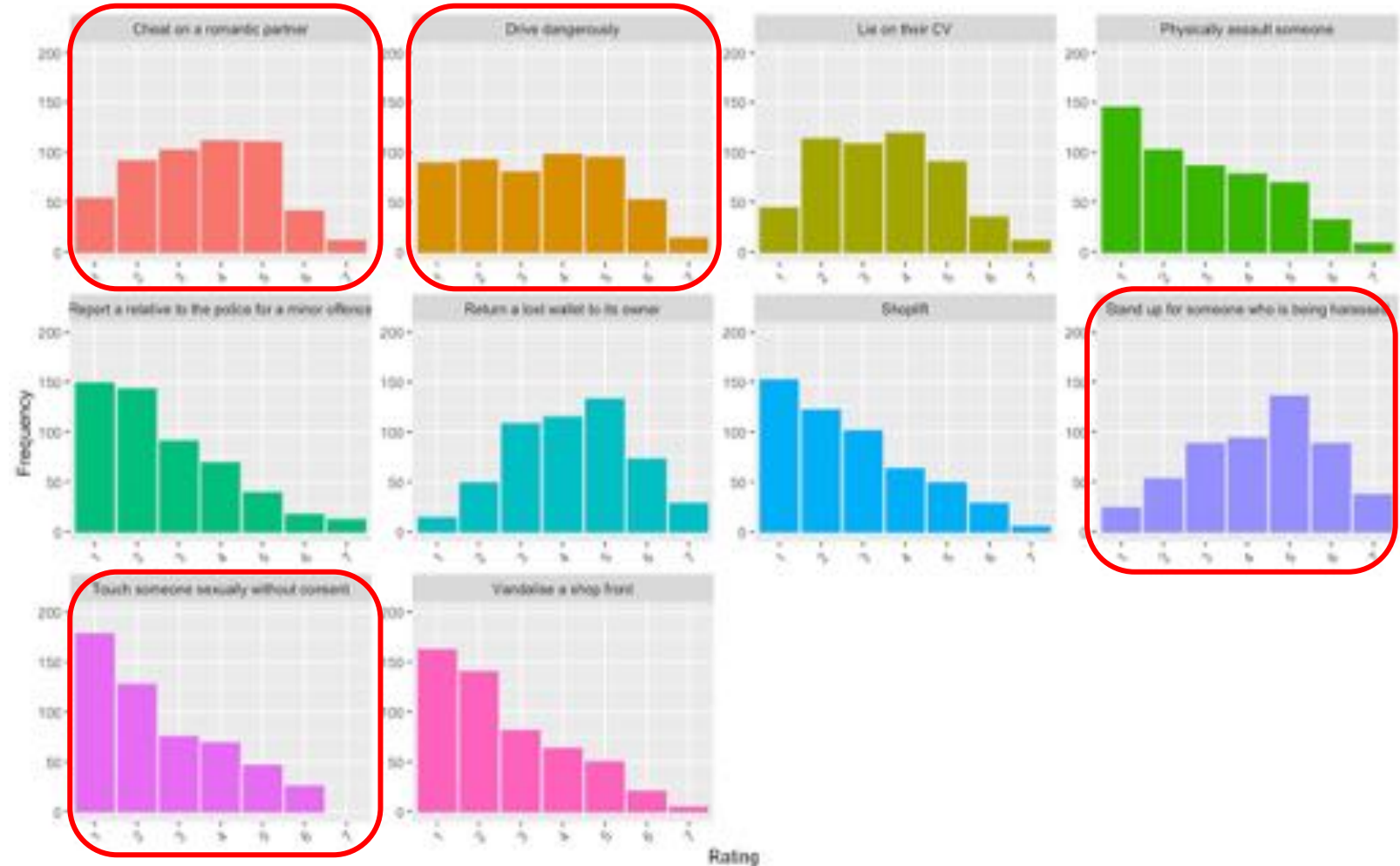
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar
	<input type="text"/>	Very unfamiliar	1 2 3 4 5 6 7	Very familiar



Results

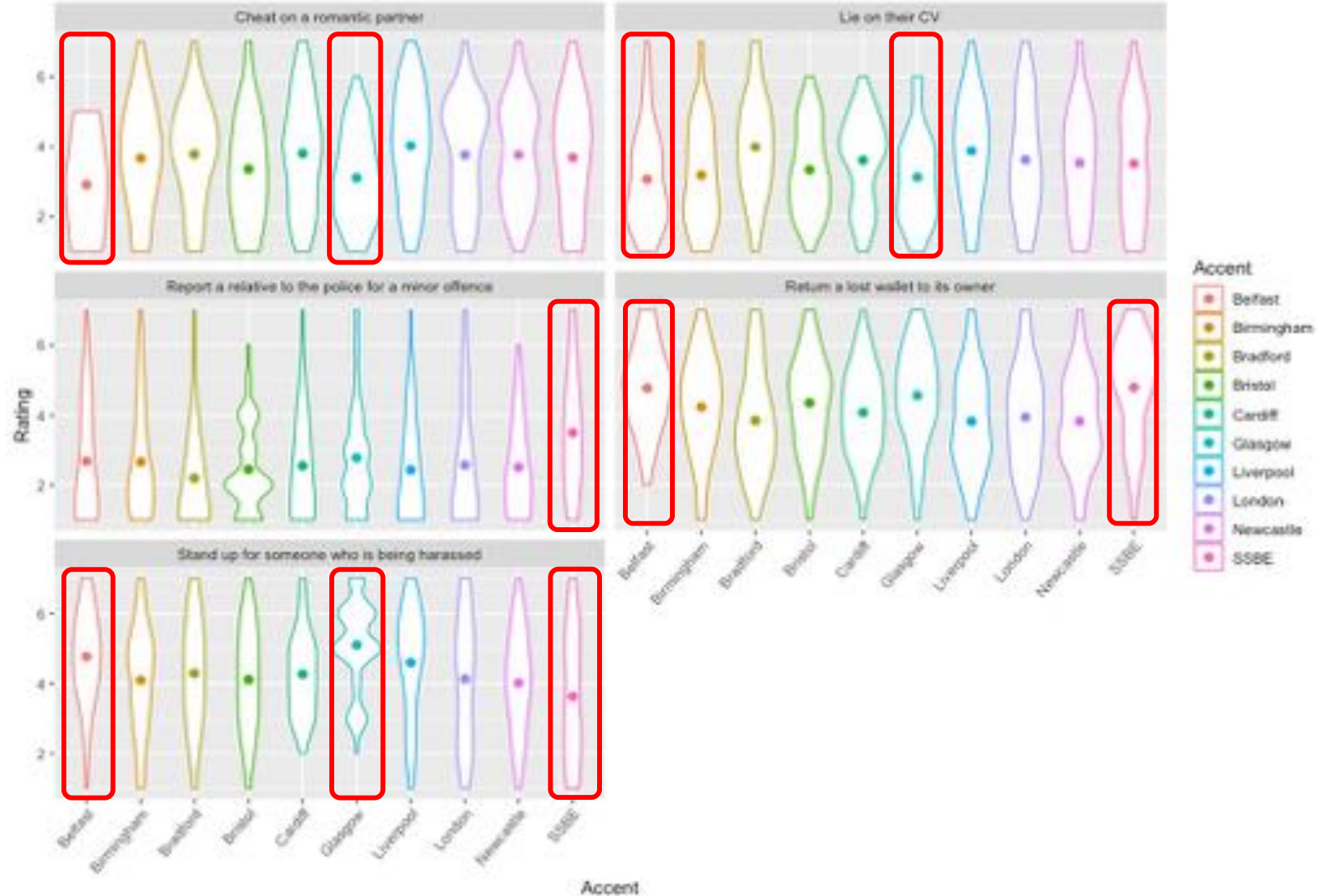
Results: Behaviours

- Overall tendency for participants to rate 'morally good' behaviours higher
- Ratings for some crimes e.g. 'drive dangerously' overall higher and with broader spread than others e.g. 'touch someone sexually without consent'



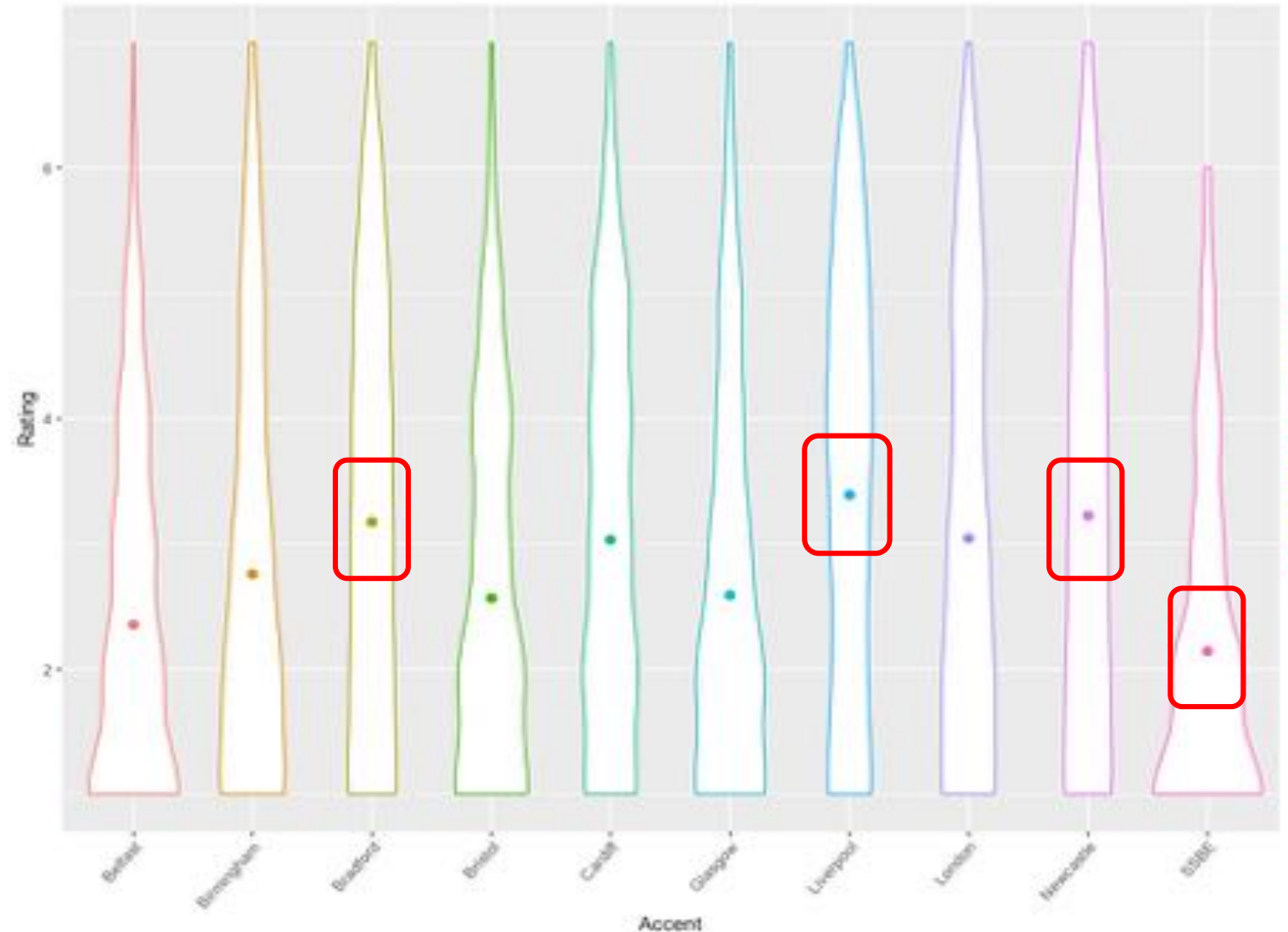
Results: Behaviours

- Belfast & Glasgow rated high for 'morally good' behaviours
- Belfast and Glasgow also lowest for 'morally bad' behaviours
- SSBE does well on one morally good behaviour - 'return a lost wallet' - but not the other - 'stand up for someone'
- Also most likely to 'Report a relative to the police for a minor offence'



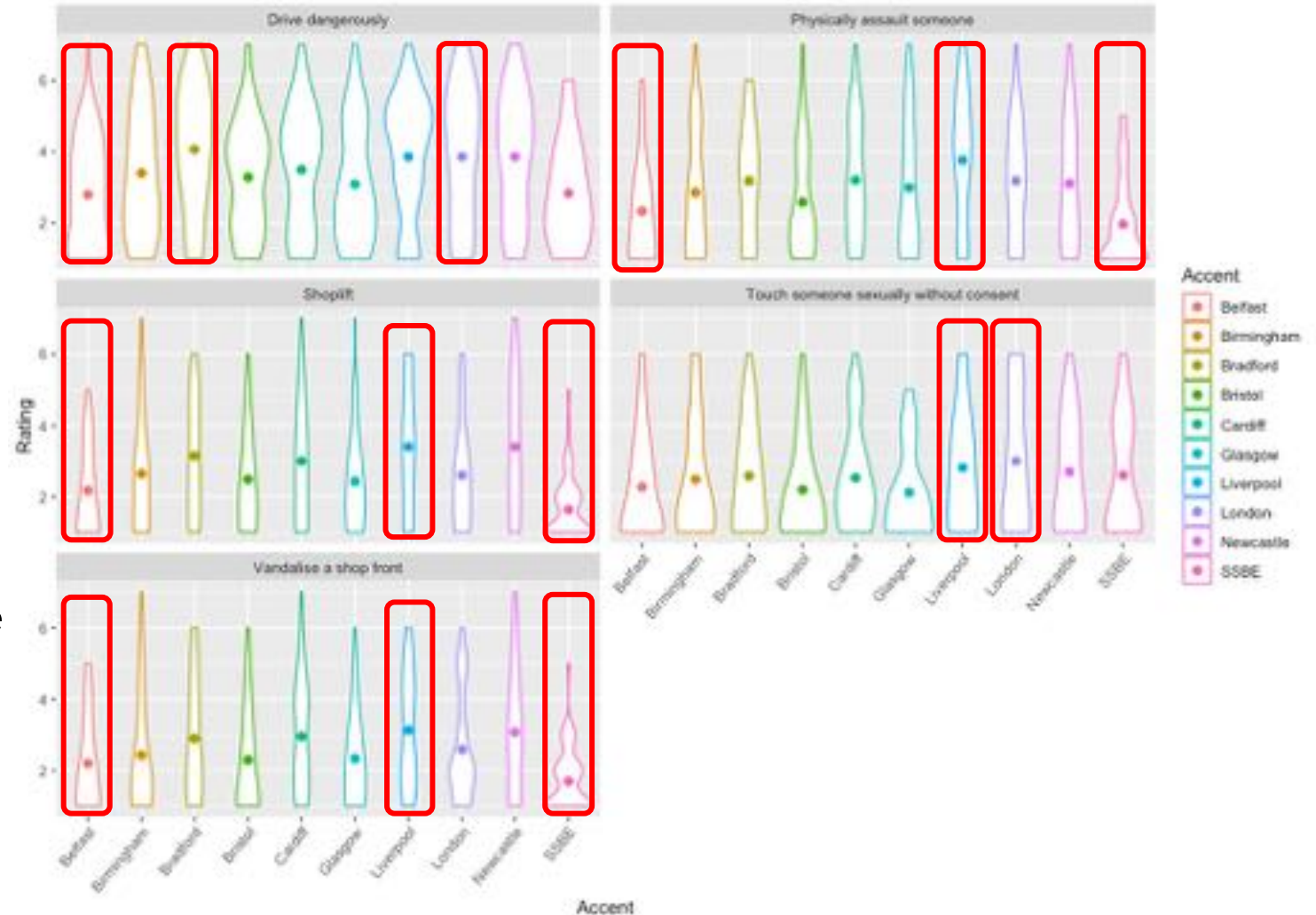
Results: Behaviours

- Crimes as a group: Liverpool most likely to commit crimes
- Bradford and Newcastle close behind
- SSBE least likely



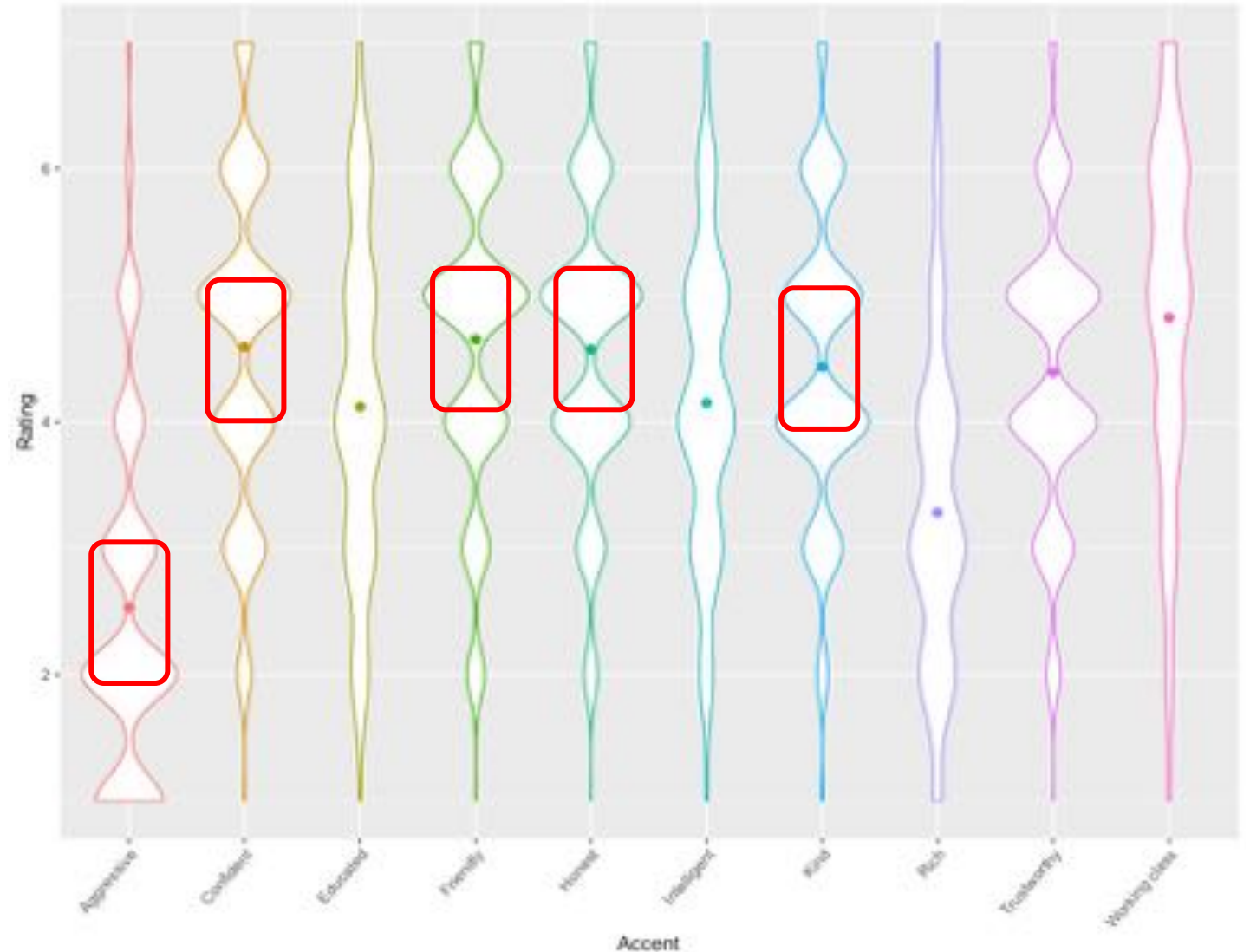
Results: Behaviours

- Specific crimes: SSBE least likely to commit some crimes - 'physical assault', 'shoplift' and 'vandalise a shop front'
- Belfast next least likely for all these, as well as 'drive dangerously'
- Liverpool most likely to 'shoplift', 'physically assault someone' and 'vandalise a shop front'
- Bradford and London most likely to 'drive dangerously'
- London and Liverpool most likely to commit sex offence



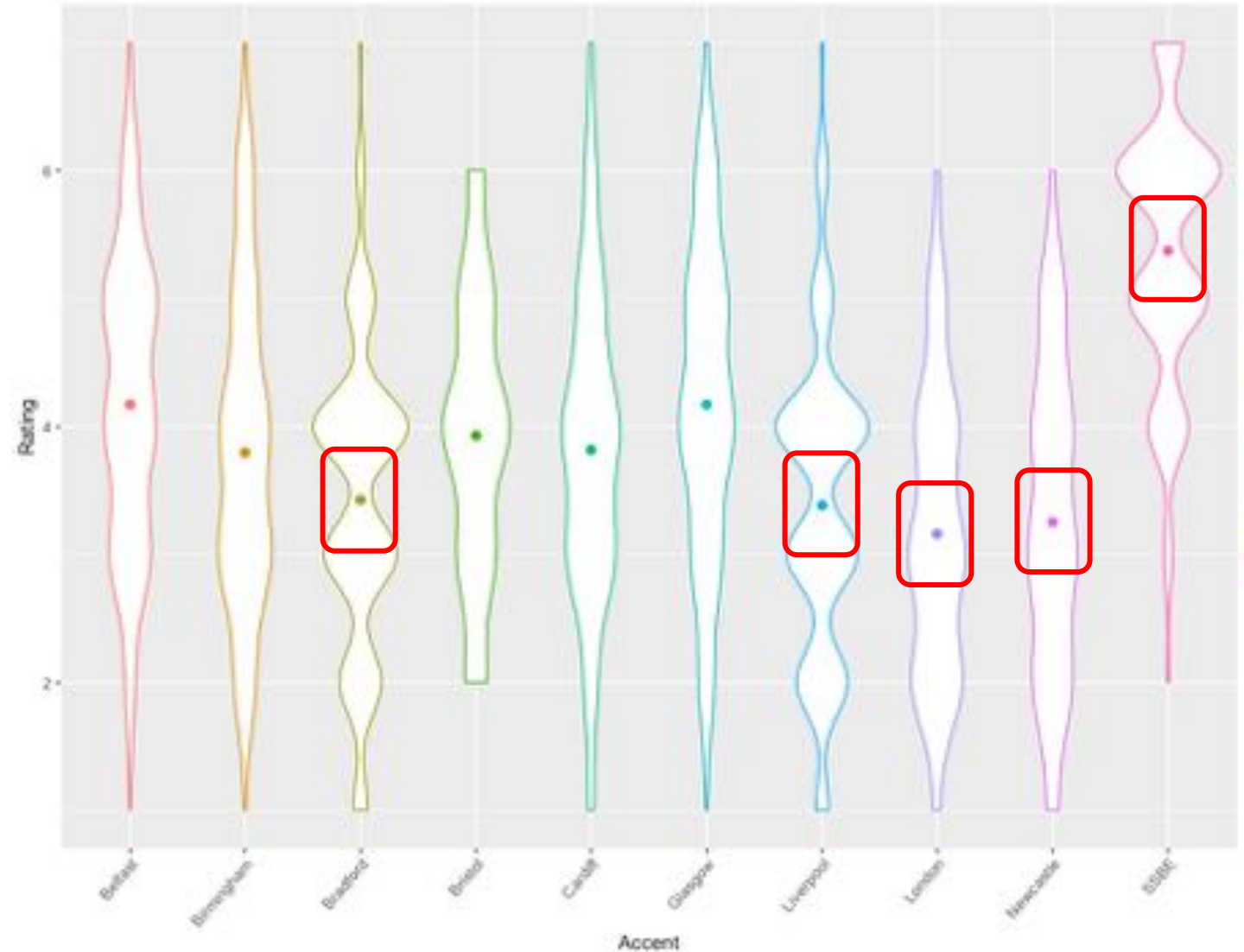
Results: Social Traits

- Overall, lowest scores for 'aggressive' compared to all other traits.
- 'Aggressive' and 'confident' don't group together as markers of 'dynamism'
- Solidarity dimensions rated high on average.



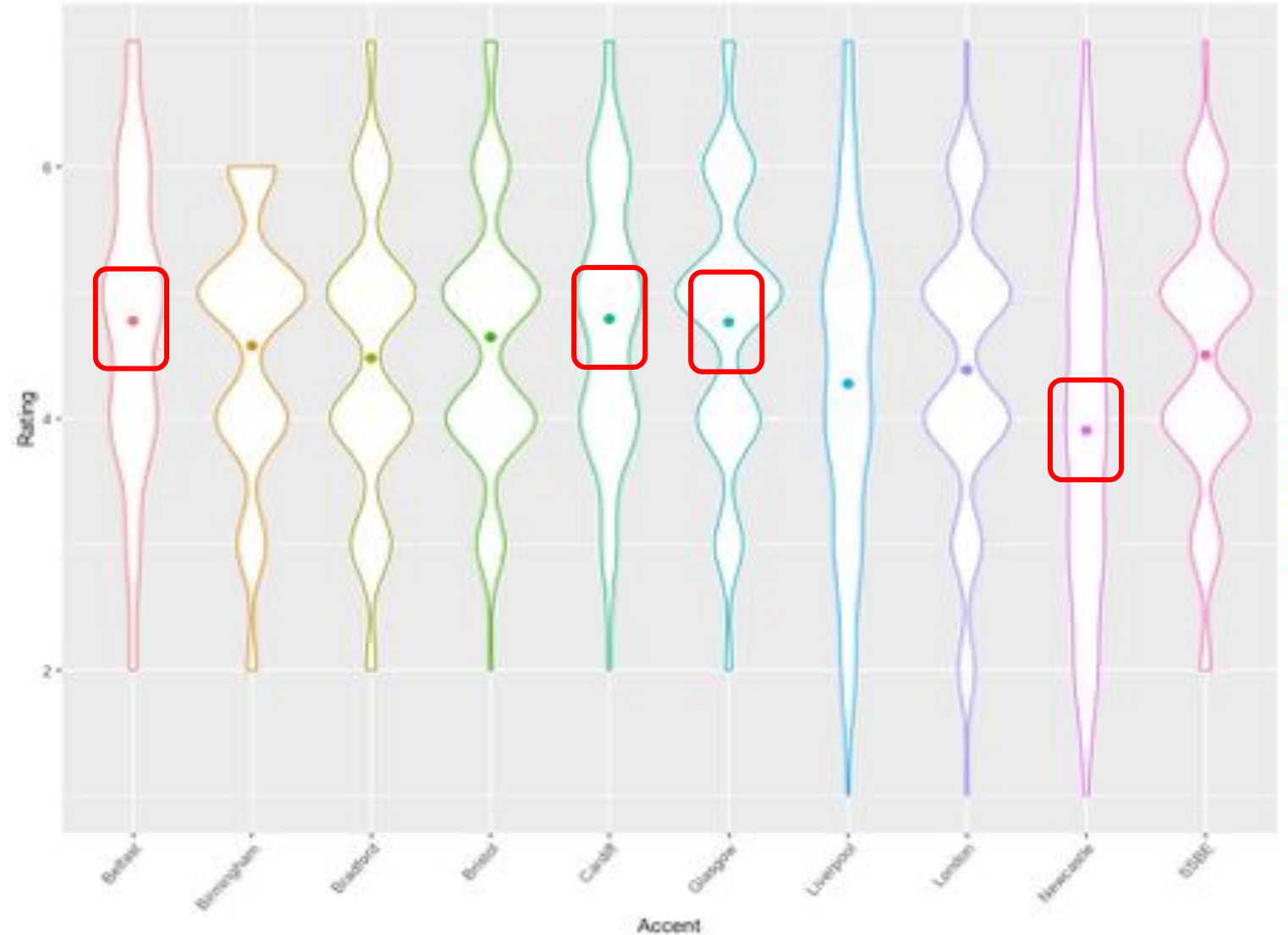
Results: Social Traits (Status)

- Status dimensions (excluding 'working class')
- SSBE overwhelmingly rated higher than all other voices
- Bradford, Liverpool, London and Newcastle lowest

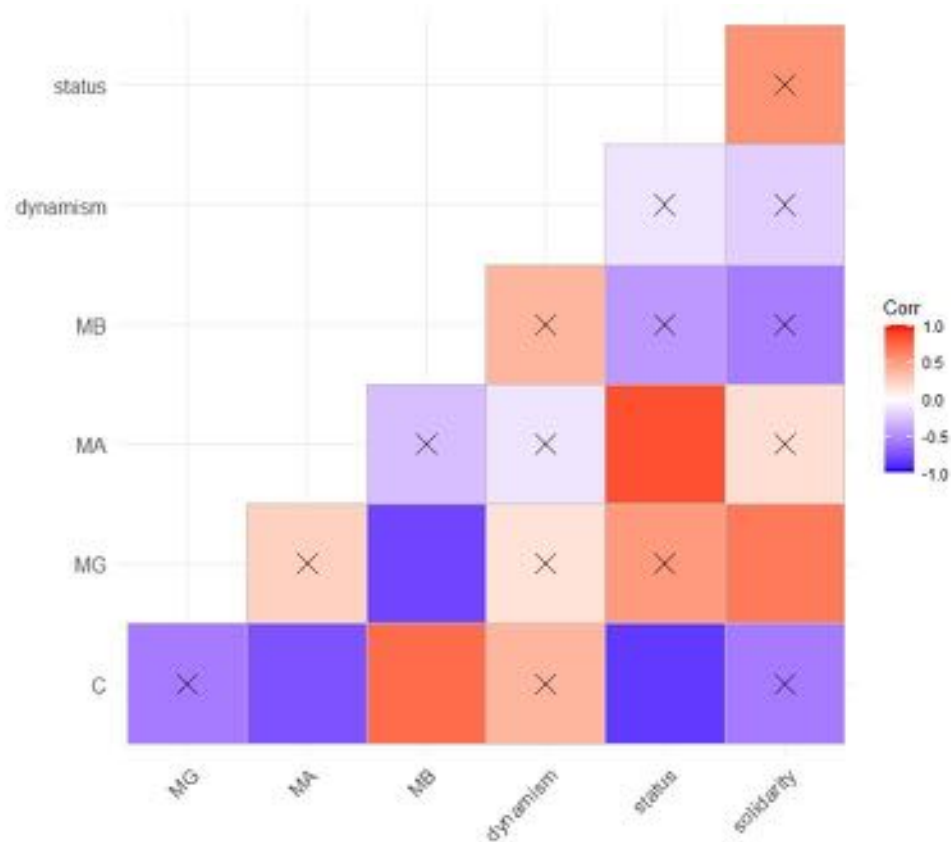


Results: Social Traits (Solidarity)

- Solidarity dimensions
- Belfast, Cardiff and Glasgow rated highest
- Newcastle rated lowest



Results: Correlations



- Straightforward correlations: morally bad behaviours & crime positively correlated
- Morally bad behaviours and morally good behaviours negatively correlated
- More interesting: status positively correlated with moral ambiguity, and negative relationship with crime
- Solidarity positively correlated with morally good behaviours

Discussion & further issues

Discussion & Implications

- Standard variety associated with high status, and low criminality
 - New insight on morally ambiguous behaviour
- Some more detail on variation in judgements of non-standard British accents
 - Birmingham not as strongly negative as previous studies
 - Newcastle much less positive – speaker issues?
- Scottish and Irish accents do well on solidarity dimensions
 - They also rate high for morally good behaviours and low for morally bad
 - Demographics?

Discussion & Implications



- Accents rated low on status & high on crime are Northern English accents
- Association between 'blue-collar'/violent crime and Northern English & London accents
 - Driving and sex offences less clear relationship with status
- What else is at play?
- Forensic implications: bringing bias to the courtroom
- However...

Further issues



Bradford

- Variation between voices in terms of identification responses.
- How do we quantify correctness?
- What does this mean for stereotypes about accents?



Glasgow

Thank you!



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