

Politics and phonetics: Assessing the influence of party membership on rhotic sounds among Scottish politicians



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01 INTRO

Pronunciation and Political Identity

- Recent studies report a significant correlation between phonetic variation and political party membership

Hall-Lew, Coppock & Starr 2010

Hall-Lew, Coppock & Starr 2012

Podesva et al. 2012

Boyd 2012

Hall-Lew, Friskney & Scobbie 2017

Pronunciation and Political Identity

Approach of this study

- consonantal variable (onset /r/)
- investigate the three major parties in the Scottish parliament
- apply new statistical method (PrInDT) (Weihs & Buschfeld 2021)

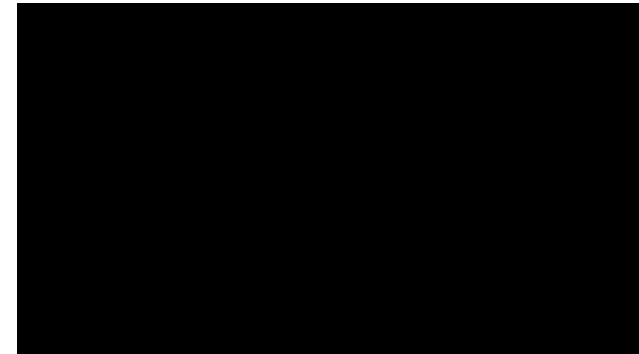
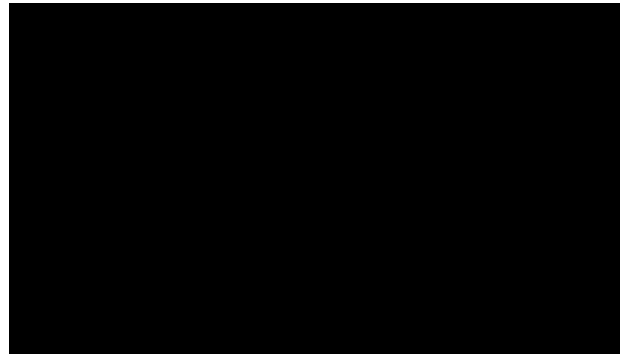
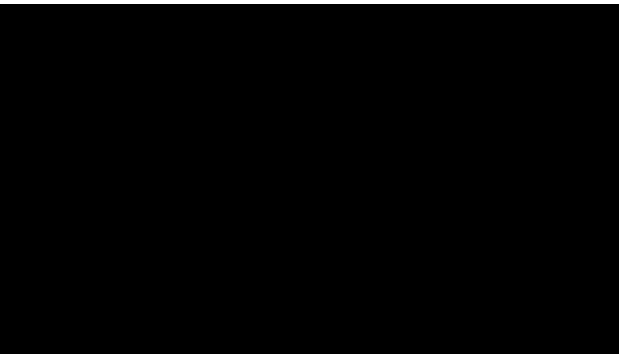
The interesting case of Scottish English

Realisation of rhotic sounds in British/ Scottish English

[ɹ] approximant

[r] tap

[r] trill



there's been very few extra HGV drivers

and it probably shouldn't have been sufficed that the First Minister blamed Brexit

but the problems have been brewing for years

The interesting case of Scottish English

- most recent study on rhotic sounds in SSE reports that 60.1% of all onset /r/ tokens are realized as approximants and 37.1% as taps/trills (Meer et al. 2021)
- strong influence of intralinguistic factors (Meer et al. 2021)
 - taps/trills articulated more frequently in intervocalic and word medial contexts and in content words
 - tap/trill realizations are also more frequent in consonant clusters than in single /r/ contexts

The interesting case of Scottish English



RQ: In how far does party membership influence the realization of rhotic sounds among Scottish politicians while controlling for intralinguistic and extralinguistic factors?

02 METHOD

Dataset

- 24 opening speeches (~8 minutes | 8 speakers for each party) of Member's Business Debates retrieved from [Scottish Parliament TV](#)
- superficially homogenous speakers sample selected (Hall-Lew et al. 2017)
 - all male
 - all white
 - all middle-aged (above 45 years at time of recording)
 - all born and raised in Scotland
 - all speeches held after 2010

Name	Party	Age	Region
Alexander Stewart	Con	54	North
Brian Whittle	Con	52	West
Finlay Carson	Con	50	South
Gordon Lindhurst	Con	55	East
Jackson Carlaw	Con	57	West
John Scott	Con	63	South
Murdo Fraser	Con	54	North
Peter Chapman	Con	67	North
Alex Rowley	Lab	53	East
Colin Smyth	Lab	45	South
David Stewart	Lab	58	North
Hugh Henry	Lab	62	West
Iain Gray	Lab	59	East
James Kelly	Lab	50	West
Lewis MacDonald	Lab	58	North
Neil Findlay	Lab	51	East
Alasdair Allan	SNP	45	South
Angus MacDonald	SNP	51	North
Graeme Dey	SNP	57	North
Ivan McKee	SNP	56	West
Joe Fitzpatrick	SNP	52	North
Keith Brown	SNP	52	East
Kenneth Gibson	SNP	56	West
Richard Lochhead	SNP	50	West

Data preparation



- Orthographic transcription was supported by [IBM Watson STT](#)
- Broad utterance transcriptions than corrected via [ELAN](#) and force-aligned using [HTK](#) and [WebMAUS](#) (Kisler et al. 2014)
- All /r/-tokens in onset position were then automatically identified by [LaBB-CAT](#) search routines (Fromont and Hay 2012)
- Only monosyllabic and bisyllabic words were selected to minimize the effect of polysyllabic shortening

Method

- Auditory analysis on each eligible token (N=2290) and sorted them into two groups applying the categorization scheme by Meer et al. 2021

approximant/pharyngealized fricative

tap/trill realization

- Spectrographic analysis with Praat in cases of doubt
- Cases of deleted onset /r/ (N=43) were excluded from statistical analysis
- intraspeaker reliability analysis (95.16%)

Method

- Data further annotated for intralinguistic and extralinguistic predictors

Predictors (abbreviations)	Levels
syllable_number (syl)	monosyllabic, bisyllabic
word_duration (wor)	numerical
segment_duration(seg)	numerical
preceding_sound (prec)	bilabial plosive, velar plosive, fricative, alveolar plosive, /r/, vowel
phrase_position (phrase)	final, medial
cluster_context (clus)	yes, no
word_type (wor)	function word, content word
political_party (pol)	Conservative, Labour, SNP
regional_background (reg)	North, East, South, West

Method

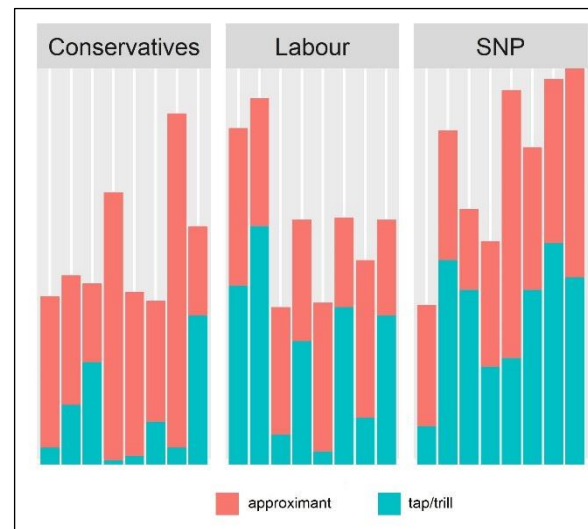
- Generalized linear mixed-effects modelling with *word* and *speaker* as random intercepts
- Statistical analyses conducted in R (R core team) applying the newly developed PrInDT function (Weihs & Buschfeld 2021)
- PrInDT uses means of undersampling to find the finds the best balanced accuracy that is still linguistically interpretable

03 FINDINGS

Overall distributions

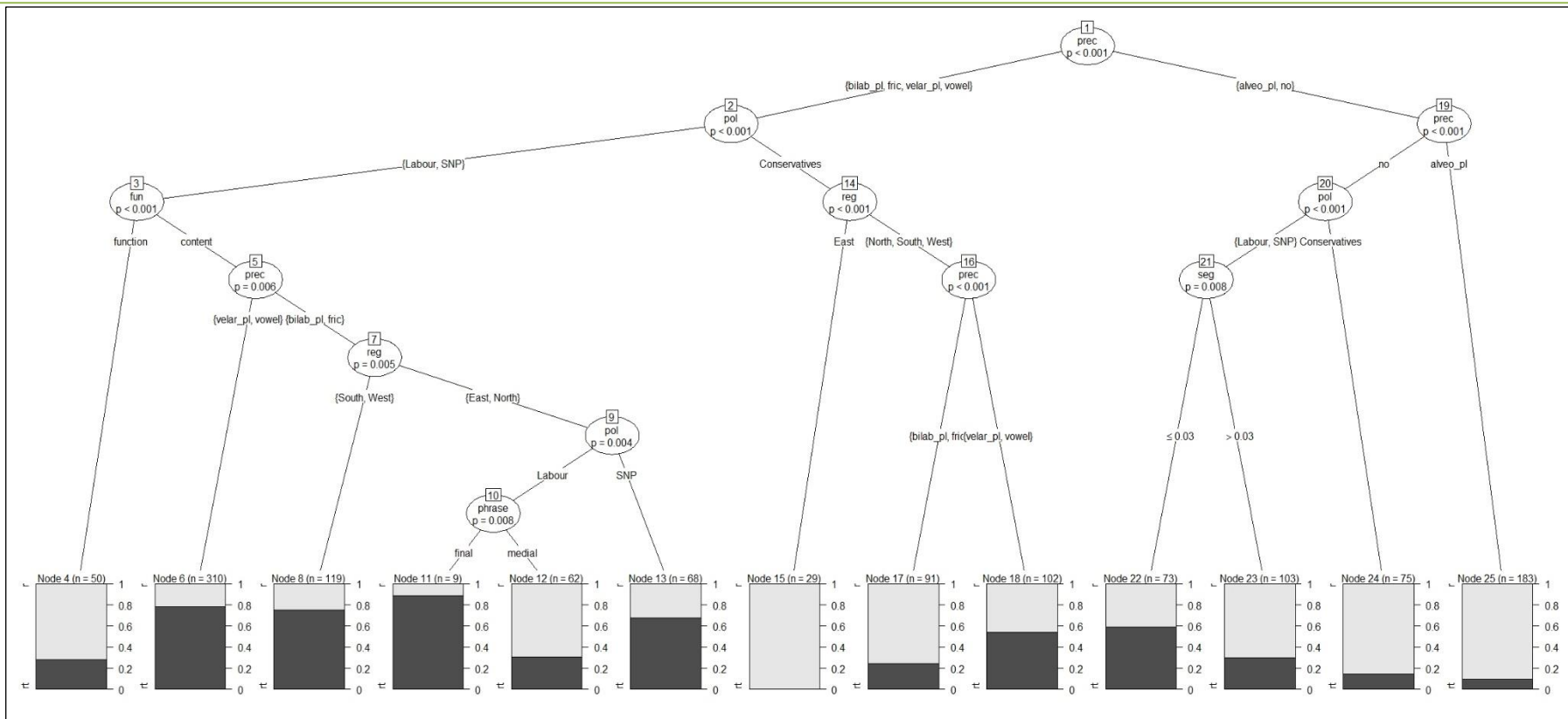
Overview of onset /r/ realizations sorted for the political parties SNP, Labour and Conservatives.

Party	Token number	Approximants	Taps/Trills
Con	722	628 (86.9 %)	94 (13.1%)
Lab	702	482 (68.7%)	220 (31.3%)
SNP	866	583 (67.3%)	283 (32.7%)
Σ	2290	1693 (73.9%)	597 (26.1%)



Generalized Linear mixed effects modelling

Random effects:				
Groups	Name	Variance	Std.Dev.	
word	(Intercept)	0.3818	0.6179	
Speaker	(Intercept)	1.3211	1.1494	
Number of obs: 2290, groups: word, 582; Speaker, 24				
Fixed effects:				
	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-5.56184	0.83107	-6.692	2.20e-11 ***
polLabour	1.52497	0.62592	2.436	0.014836 *
polSNP	1.85722	0.61556	3.017	0.002552 **
regNorth	-0.03016	0.55990	-0.054	0.957035
regSouth	0.50628	0.70853	0.715	0.474883
precbilab_pl	2.60351	0.31580	8.244	< 2e-16 ***
precfric	2.89432	0.36301	7.973	1.55e-15 ***
precno	1.97100	0.55974	3.521	0.000429 ***
precvelar_pl	3.88965	0.33247	11.699	< 2e-16 ***
precvowel	3.91014	0.49509	7.898	2.84e-15 ***
funfunction	-2.00847	0.72208	-2.781	0.005411 **
clusyes	0.14491	0.46176	0.314	0.753663
sy1	0.16658	0.16811	0.991	0.321743
seg	0.30498	1.26796	0.241	0.809922



04 DISCUSSION & CONCLUSION

Discussion

- Findings in line with previous observations
- Overall distributions of approximants (73.9%) and taps/trills (32.7%) are comparable with Meer et al. 2021
- Trills are very rare in general (Stuart Smith 2008; Johnston 1997, Jauberry et al. 2015, Meer et al. 2021)
- Realization of onset /r/ particularly conditioned by preceding sound (Meer et al. 2021)

Discussion

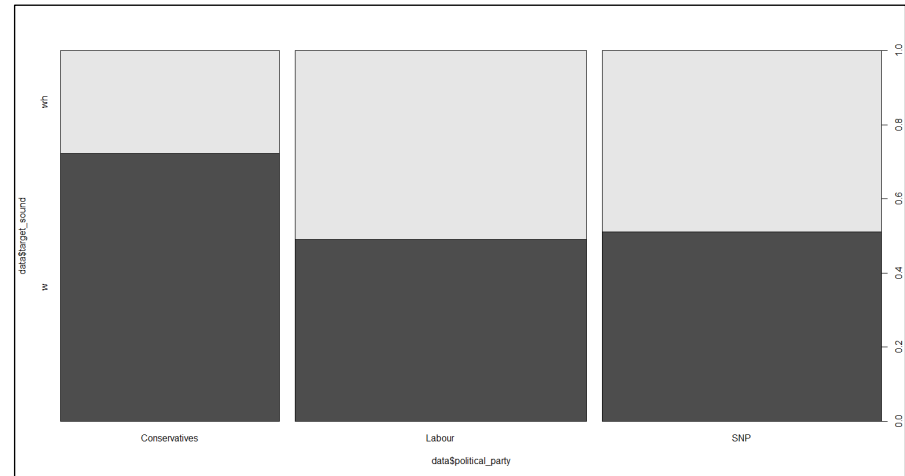
- realization of rhotic sounds influenced by party membership
- Conservative MSPs pronounce significantly less taps/trills than their Labour or SNP colleagues
- Superficially homogenous speaker sample can display great interspeaker variation (Hall-Lew et al. 2017: 358)
- good interpretation of tree modelling

Conclusion

- Party membership has a significant influence on onset /r/ realization among Scottish politicians
- Conservative MSPs produce significantly less taps/trills than their SNP or Labour colleagues
- **study supports previous observations that pronunciation can index party affiliation**

Outlook

- more features need to be analysed
- extend speaker sample and include other genders, age groups & ethnicities
- include several transcribers



05 REFERENCES

Bibliography

Boersma P. and D. Weenink. PRAAT (Version 6.1.08). [Online]. “<http://www.praat.org/>” [Accessed February 20, 2021].

Boyd, Z. “Phonetic variation of Scottish politicians in Holyrood,” Master thesis, School of Philosophy, Psychology and Language Sciences, The University of Edinburgh, Edinburgh, 2012.

Fromont R. and J. Hay, “LaBB-CAT: An annotation store,” in *Proceedings of the Australasian Language Technology Association Workshop*, pp. 113–117, 2012

Hall-Lew, L.; Coppock, E. and R. L. Starr, “Indexing political persuasion: variation in the Iraq vowels,” *American Speech*, vol. 85, no. 1, pp. 91–102, 2010.

Hall-Lew, L.; Coppock E. and R. L. Starr, “Style-shifting in the U.S. Congress: the foreign (a) vowel in “Iraq(i),” in *Style-Shifting in Public: New Perspectives on Stylistic Variation*, J. M. Hernández-Campoy and J. A. Cutillas-Espinosa, Eds. Amsterdam: John Benjamins, 2012, pp. 45-63.

Bibliography

Hall-Lew, L.; Friskney R. and J. M. Scobbie, “Accommodation or political identity: Scottish members of the UK Parliament,” *Language Variation and Change*, vol. 29, no. 2, pp. 341–363, Oct. 2017.

HTK (Version 3.4.1). [Online]. “<http://htk.eng.cam.ac.uk>” [Accessed February 20, 2021].

IBM. Watson Text to Speech. [Online]. “<https://www.ibm.com/cloud/watson-speech-to-text>” [Accessed October 06, 2021].

Jauriberry, T.; Sock R. and A. Hamm. Phonetic variation in Standard Scottish English: Rhotics in Dundee. *Proceedings of the 18th International Congress of Phonetic Sciences*, August 10-14, 2015, Glasgow, UK.

Johnston, P. “Regional variation,” in *The Edinburgh History of the Scots language*, C. Jones Ed. Edinburgh: Edinburgh University Press, 1997, pp. 433-513.

Kisler, T.; Reichel U. D. and F. Schiel, “Multilingual processing of speech via web services,” *Computer Speech & Language*, vol. 45, pp. 326–347, 2017.

Bibliography

Meer, P.; Fuchs, R.; Gerfer, A.; Gut, U. and Z. Li „Rhotics in Standard Scottish English,” *English World-Wide*, vol. 42, no. 2., 2021.

Podesva, R. J.; Hall-Lew, L.; Brenier, J.; Starr, R. and S. Lewis, “Condoleezza Rice and the sociophonetic construction of identity,” in *Style-Shifting in Public: New Perspectives on Stylistic Variation*, J. M. Hernández-Campoy and J. A. Cutillas-Espinosa, Eds. Amsterdam: John Benjamins, 2012, pp. 65-80.

R Core Team, R: A language and environment for statistical computing. [Online]. “<http://www.R-project.org/>” [Accessed February 20, 2021].

Stuart-Smith, J. “Scottish English: Phonology,” in *Varieties of English: The British Isles*, B. Kortmann and C. Upton Eds. Berlin: De Gruyter, 2008, pp. 48-70.

The Scottish Parliament. Scottish Parliament TV. [Online]. “<https://www.scottishparliament.tv/>” [Accessed October 06, 2021].

Weihls C. and S. Buschfeld, *Combining Prediction and Interpretation in Decision Tress (PrInDT): a linguistic example*. [Online]. “<http://arxiv.org/abs/2103.02336>” [Accessed February 20, 2021].

Audio and video references

BBC News. *Speaker Bercow: Trump should not speak in Parliament*. Retrieved from: https://www.youtube.com/watch?v=QP0c6smM_NM [Date of Access: 07 October 2021]

Conservatives. *Ruth Davidson: Speech to Conservative Party Conference 2014*. Retrieved from: <https://www.youtube.com/watch?v=NyOqHniEeuw> [Date of Access: 07 October 2021]

C-SPAN. *Barack Obama Speech at 2004 DNC Convention*. Retrieved from: <https://www.youtube.com/watch?v=eWynt87PaJ0> [Date of Access: 07 October 2021]

The House of Commons. *Prime Minister's Question Time*. Retrieved from: <https://www.youtube.com/watch?v=0UVIWDcgHrM> [Date of Access: 07 October 2021]

The House of Commons. *Margaret Thatcher: "No, No, No!" Speech*. Retrieved from: https://www.youtube.com/watch?v=VUkXbS7s_J4 [Date of Access: 07 October 2021]

The Scottish Government. *First Minister Nicola Sturgeon acceptance speech*. Retrieved from: <https://www.youtube.com/watch?v=Vo3xFigwLs> [Date of Access: 07 October 2021]

The Scottish Parliament. *Government Debate: Impact of Brexit on Scotland's Supply Chain and Labour Market - 30 September 2021*. Retrieved from: <https://www.youtube.com/watch?v=v1g7WT08SS8> [Date of Access: 07 October 2021]

The Telegraph. *Second referendum is 'the will of the country' says Nicola Sturgeon in victory speech*. Retrieved from: <https://www.youtube.com/watch?v=qzv6B0iV--8> [Date of Access: 07 October 2021]

Wall Street Journal. *Donald Trump's Inauguration Speech*. Retrieved from: https://www.youtube.com/watch?v=qTH_i99n3R0 [Date of Access: 07 October 2021]

Thank you very much for your attention!

Enjoy NWA49!