

Speaking Styles, Specialization and Seniority: An Analysis of Parliamentary Speeches in the Austrian Nationalrat

Marcelo Jenny, University of Innsbruck 

Christoph Ivanusch, WZB Berlin Social Science Center 

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Introduction

Parliamentary debates fulfill a number of important functions for Members of Parliament (Proksch and Slapin 2012):

- Potential effect on policy outcomes, e.g. through persuasion of other MPs
- Forum to communicate and explain votes and policy positions to their own parties, other parties and voters

→ Effective communication is an important goal for all MPs but the approach to effective speechmaking (i.e. speaking style) may differ

Existing studies on speaking styles in parliament:

- Linguistic complexity and comprehensive speech-making (Lin and Osnabrügge 2018; Spirling 2016)
- Gender and speaking styles (Hargrave and Blumenau 2022; Wäckerle and Castanho Silva 2023)

Research question: How do personal characteristics of MPs and contextual factors influence speaking styles in parliamentary speeches?

Theoretical framework

Two important dimensions in parliamentary speechmaking:

- Factual language → references to facts such as:
 - economic indicators
 - census statistics
 - scientific facts
 - budget spending
- Emotional language → use of emotions (e.g. Widmann and Wich 2022) such as:
 - anger
 - fear
 - joy
 - pride

Factors that potentially influence speaking styles:

- Personal characteristics: Age, gender, seniority, education
- Role: Parliamentary party group leader, committee chair, policy speaker
- Party-level factors: government vs. opposition, size
- Context/type of debate: legislative debate, topical hour, question hour etc.

Potential hypotheses

H1: Seniority increases the factual nature of speeches.

H2: A higher level of education increases the factual nature of speeches.

H3: Policy specialization - as acknowledged in a designation as party spokesperson on a policy area - increases the factual nature of speeches.

H4: Opposition party MPs criticize, government MPs laud government policy resulting in predominantly negative emotion scores for the former and predominantly positive emotion scores for the latter.

Data

- Parliamentary speeches from the Austrian *Nationalrat*
- Source: ParIEE plenary speeches data set (Sylvester et al. 2023)
- Individual-level data on Austrian MPs
- Time period: 2009-2019

Table 1: Number of parliamentary speeches analyzed by parliamentary party group (24th legislative period).

Parliamentary party group	Speeches
SPÖ	5,681
ÖVP	5,367
FPÖ	3,144
BZÖ	3,002
Grüne	2,809
independent	314
STRONACH	235
Total	20,552

Methods

Detecting facts and emotions in text

Supervised learning (for a similar approach, see Widmann and Wich 2022):

- 2,000 annotated sentences:
 - (1) presence or absence of facts
 - (2) presence or absence of emotions
 - (3) presence of positive or negative emotions
- Application of transformer-based BERT model (Devlin et al. 2019):
 - Training data: 1,500 sentences
 - Test data: 500 sentences
- Accuracy:
 - (1) presence or absence of facts: 0.93
 - (2) presence or absence of emotions: 0.72
 - (3) presence of positive or negative emotions: 0.69

Table 2: Precision, recall and F1 score for computer-based detection of the presence or absence of facts in sentences.

	Precision	Recall	F1
0 (no fact)	0.93	0.96	0.95
1 (fact)	0.92	0.85	0.88

Table 3: Precision, recall and F1 score for computer-based detection of the presence or absence of emotions in sentences.

	Precision	Recall	F1
0 (no emotion)	0.79	0.68	0.73
1 (emotion)	0.65	0.77	0.70

Table 4: Precision, recall and F1 score for computer-based detection of positive and negative emotions in sentences.

	Precision	Recall	F1
-1 (neg. emotion)	0.69	0.55	0.61
0 (no emotion)	0.73	0.81	0.77
1 (pos. emotion)	0.52	0.50	0.51

Dependent variables:

- Factual language: speech-wise share of sentences containing facts
- Emotional language: speech-wise share of sentences containing emotions
- Emotion scale: speech-wise emotionality on a scale ranging from -100 (strongly negative) to 100 (strongly positive)

Independent variables:

- Personal characteristics: Age, gender, seniority, education
- Role: Parliamentary party group leader, committee chair, policy speaker
- Party-level factors: government participation, size
- Context (type of debate): legislative debate, topical hour, question hour etc.

Control variable:

- Speech length

Preliminary Results

Descriptive results

Table 5: Descriptives of measures for speaking styles in parliamentary speeches (24th legislative period).

	Factual language	Emotional language	Emotion scale
Min.	0	0	-100
1st Qu.	0	36.36	-17.39
Median	3.57	47.06	-2.44
Mean	6.53	46.01	-2.14
3rd Qu.	10	56.52	11.63
Max.	100	100	100
Obs.	20,552	20,552	20,552

Descriptive results

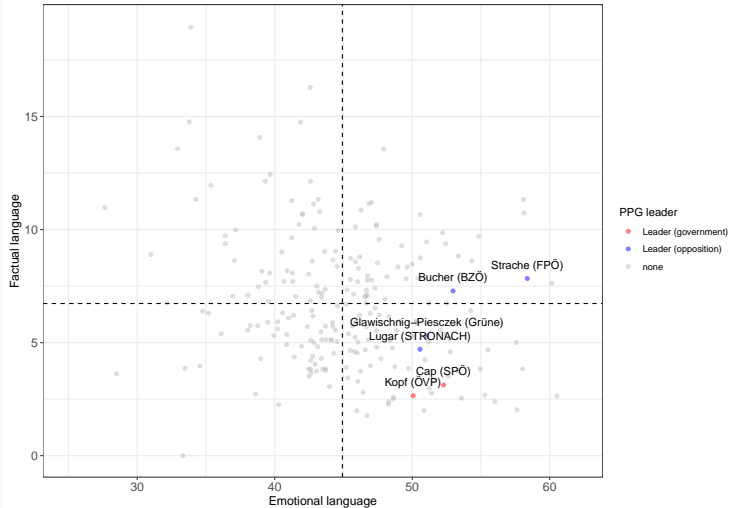


Figure 1: Distribution of factual and emotional language per speaker.

Descriptive results

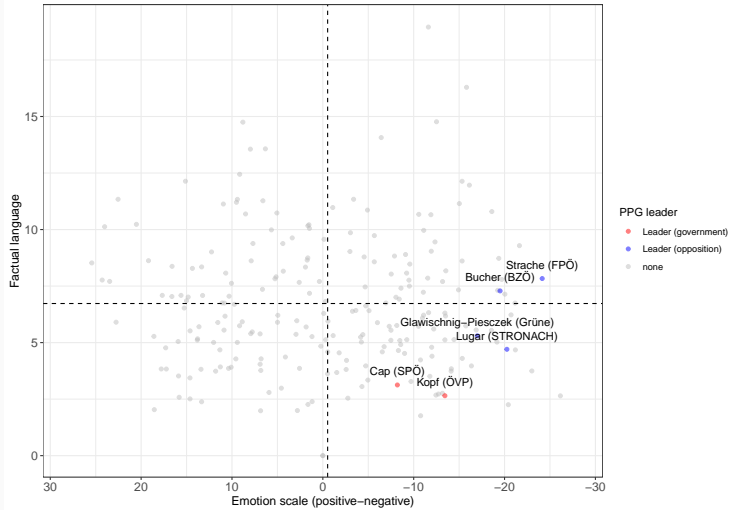


Figure 2: Distribution of factual and emotional language per speaker.

Table 6: Explaining speaking styles of MPs in parliament.

	Factual language	Emotional language	Emotion scale
Seniority	-0.401*** (0.142)	0.390 (0.276)	-0.817*** (0.288)
Age	0.052* (0.027)	-0.119** (0.046)	0.041 (0.064)
Female	0.067 (0.456)	-0.509 (0.973)	3.911*** (1.091)
Academic title	-1.043** (0.443)	0.821 (0.866)	-1.999** (1.009)
PPG leader	-0.801 (0.683)	4.859*** (1.386)	-7.679*** (1.812)
Committee chair	-0.310 (0.585)	-0.075 (1.063)	2.336* (1.246)
Policy speaker	0.194 (0.490)	-0.117 (1.023)	-1.674 (1.104)
Intercept	3.491** (1.744)	48.362*** (2.903)	-1.664 (3.694)
Num.Obs.	18 593	18 593	18 593
R2	0.022	0.034	0.259
R2 Adj.	0.021	0.033	0.259

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Standard errors clustered by MP.

Table 7: Explaining speaking styles of MPs in parliament.

	Factual language	Emotional language	Emotion scale
Government	0.600 (1.096)	0.943 (1.977)	23.489*** (2.382)
Party seats	0.000 (0.034)	0.007 (0.067)	-0.210** (0.083)
Intercept	3.491** (1.744)	48.362*** (2.903)	-1.664 (3.694)
Num.Obs.	18 593	18 593	18 593
R2	0.022	0.034	0.259
R2 Adj.	0.021	0.033	0.259

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Standard errors clustered by MP.

Table 8: Explaining speaking styles of MPs in parliament.

	Factual language	Emotional language	Emotion scale
Topical hour	0.986*** (0.325)	4.128*** (0.566)	-6.057*** (0.768)
Statement § 19	-1.321*** (0.331)	5.056*** (0.789)	0.842 (1.166)
Statement § 74b	0.073 (0.754)	4.832*** (1.118)	-11.985*** (1.947)
Question hour	2.150*** (0.536)	-3.310** (1.498)	-1.562 (1.000)
Short debate	-1.060* (0.605)	-2.447*** (0.913)	-5.212*** (1.034)
Urgent question	-0.780*** (0.257)	-0.701 (0.562)	-7.152*** (0.851)
Urgent motion	0.058 (0.381)	0.154 (0.674)	-5.452*** (0.912)
Intercept	3.491** (1.744)	48.362*** (2.903)	-1.664 (3.694)
Num.Obs.	18 593	18 593	18 593
R2	0.022	0.034	0.259
R2 Adj.	0.021	0.033	0.259

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Standard errors clustered by MP.

Preliminary conclusion

- Considerable variation in speaking styles (i.e. use of factual and emotional language) exists
- Some expected but also unexpected patterns regarding the influence of personal characteristics (e.g. age, seniority, gender, education) on speaking styles
- Type of debate (e.g. topical hour, question hour) as most important and consistent factor influencing speaking styles

Next steps and open questions

Next steps and open questions

- Revision of theoretical contribution/argument
- Revision of text analysis:
 - Crowdcoding and/or ChatGPT for annotation?
- Extension of observation period to include multiple legislative periods

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