Vocal Chameleons: Gender Dynamics in Nonverbal Expressions in Campaigning

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Introduction

- Effective communication in politics shapes perceptions and influences decisions, also plays a crucial role in image building and establishing rapport with voters (Lenz, 2013; Zaller, 1992).
- The impact of politicians' use of rhetoric in legislative debates and campaigning (Osnabrügge et al., 2021; Gennaro and Ash, 2021; Crabtree et al., 2020; Bauer, 2020)
- Developing interest regarding the manner in which politicians use nonverbal expressions in comparable contexts (Boussalis and Coan, 2021; Boussalis et al., 2021; Dietrich et al., 2019; Rittmann, 2023; Masch and Gabriel, 2020).

Introduction

Nonverbal communication:

- Complements verbal communication
- Some of them are unconscious (Ekman et al., 1991; Zuckerman et al., 1985) such as vocal changes
- Helps us understand the fundamental human nature of political interactions in strategic campaign contexts.

Background

- Elites' nonverbal expressions (measured by changes in voice pitch)
  - judicial voting patterns (Dietrich et al., 2018)
  - legislators' committment to gender-congruent issues (Dietrich et al., 2019; Rittmann, 2023)
  - women candidates' overall display of emotions during political debates (Boussalis et al., 2021)

→ Candidates' use of nonverbal expressions during in-person campaign events, especially when directly engaging voters, remains underexplored.

Background

- Political campaigns provide a setting to observe direct interactions of candidates with voters.
- Candidates can modify what and how they say in these interactions considering their target audience's gender (Meeks, 2016; Scheneider, 2014; Holman et al., 2015).

→ *Do candidates adapt their voice pitch based on their and their audience's gender during face-to-face interactions?*

Gender and Voice Pitch

- Voice pitch is higher in women than men (Puts et al., 2007; Titze, 2000). Lower pitch signals masculinity; higher pitch signals femininity (Anderson and Klofstad, 2012).
- Having lower pitch have electoral benefits (Klofstad, 2016; Cinar and Kıbrıs, 2023).
- Higher pitch indicates emotional arousal (Dietrich et al, 2019; Rittmann 2023). Voters see women candidates with higher emotional arousal more favourably than men (Boussalis et al., 2021).
- **Hypothesis 1:** Women candidates modulate pitch more than men candidates when answering questions.

Gender and Voice Pitch

- Voice pitch influences attractiveness; men prefer higher pitch in women, and women prefer lower pitch in men (Feinberg et al., 2008).
- Candidates may unconsciously adjust their pitch to sound more appealing to the opposite gender (Milazzo and Hammond, 2018).
- **Hypothesis 2:** Women candidates use higher pitch when answering a question posed by a man; men use lower pitch with women.

Research Design / Data Collection

- Video recordings from Democratic Party's primary town hall meetings, 2020 US presidential election
- Townhalls held between March 30th, 2019 and July 5th, 2019, during which no candidates suspended their campaigns.
- Six women candidates out of twenty eight.
- 86,358 seconds of footage from eight town halls.

Methodology

Computational Analysis

- **Procedure** following Boussalis et al. (2021):
  - Extracted audio from videos
  - Transformed audio into Praatsound objects with 100 frames/second
  - Estimated fundamental frequency (F_0) per second, perceived as voice pitch (Aung and Puts, 2019)
- **Speaker Identification:**
  - Women/Men candidates
  - Women/Men audience members
- **Additional Variables:**
  - Candidate's name, perceived gender, perceived ethnicity, perceived age
  - Perceived gender, ethnicity, age mismatch with the questioner indicators
  - Clustering variable for each answer

Dataset

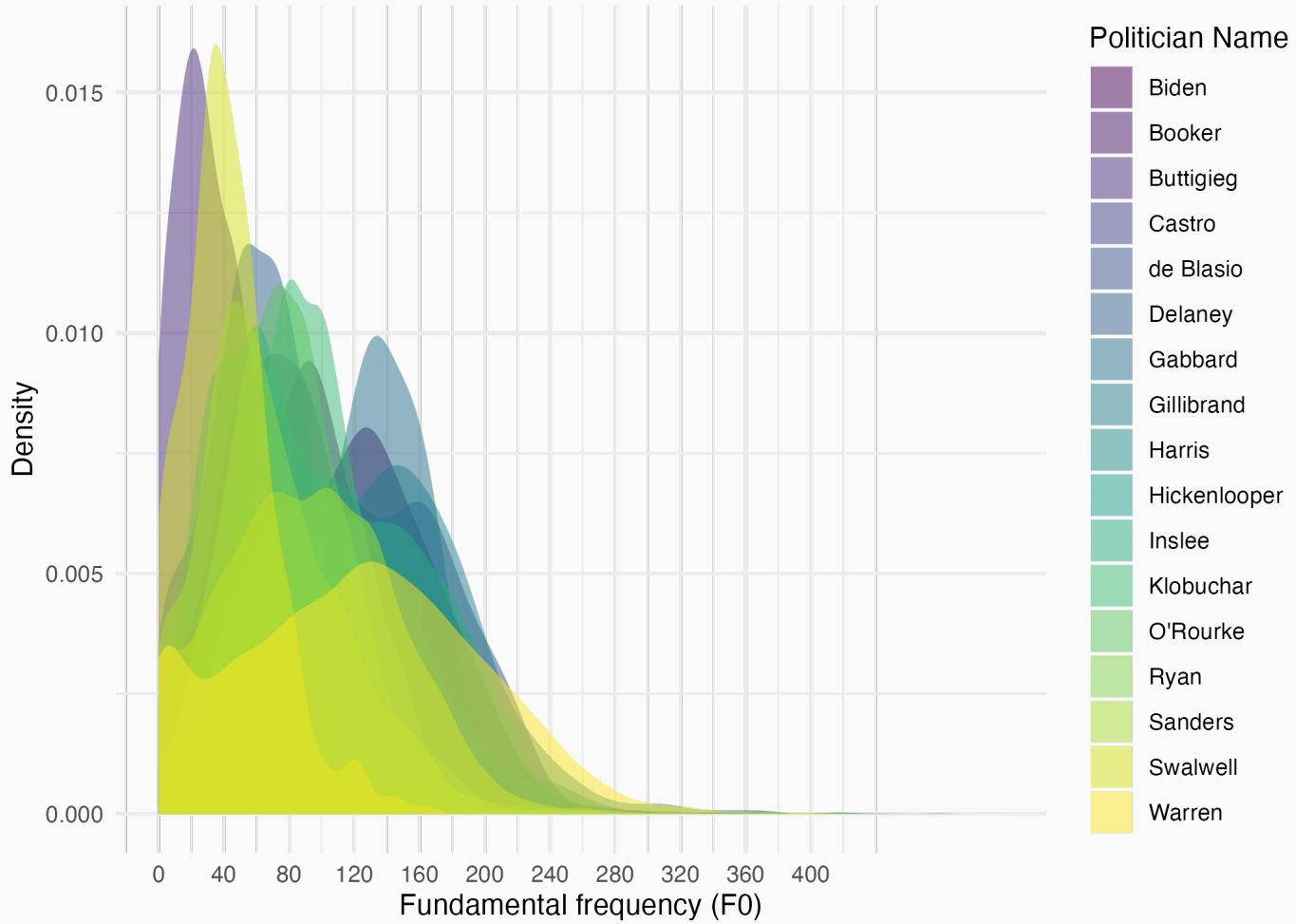
Data Filtering

- **Focus:** Seconds where candidates responded to audience questions
- **Observations:** 42,144 data points

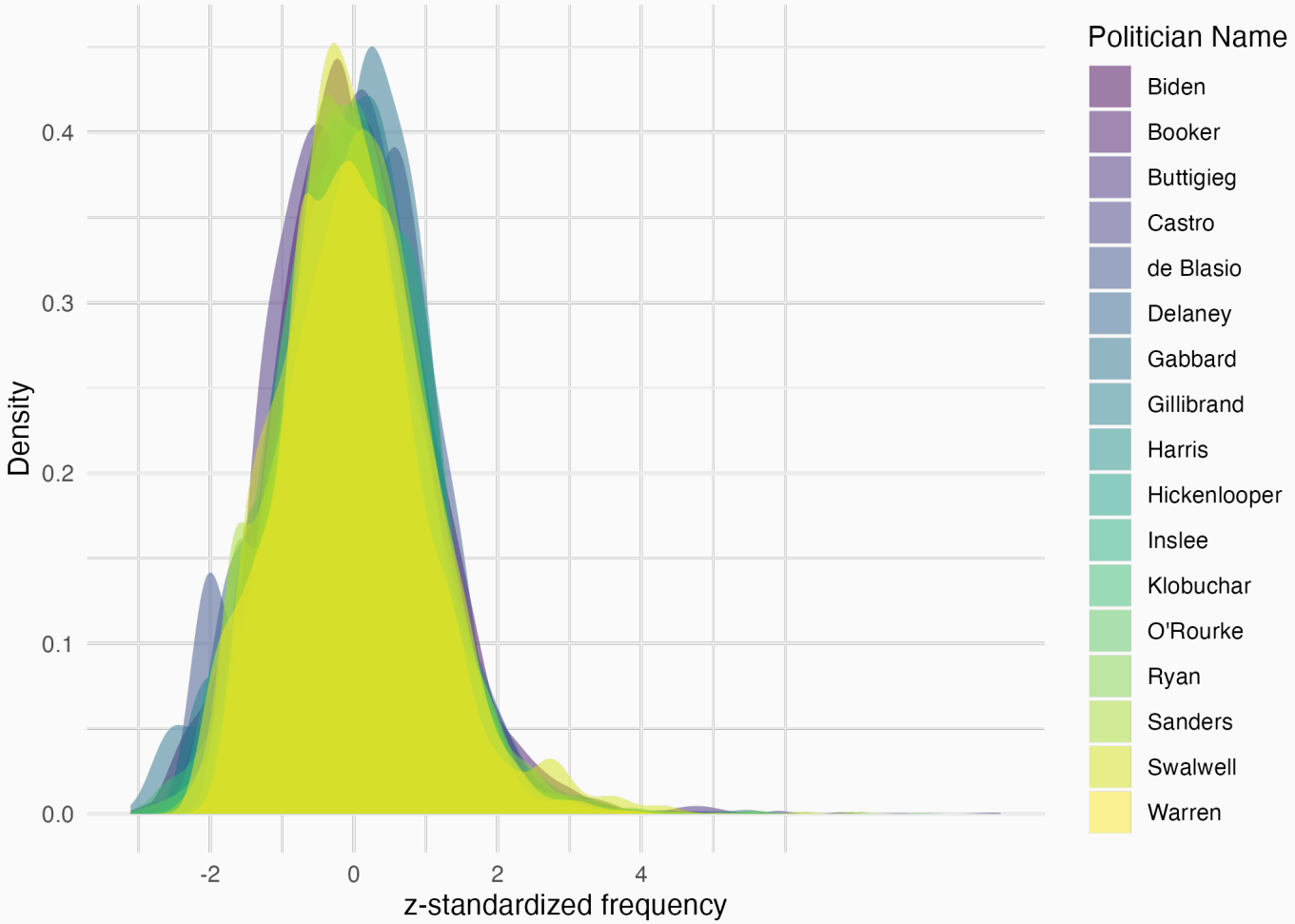
Standardization

- **Method:** Standardized F_0 for each candidate within each townhall (Boussalis et al.,2021)

Methodology



Methodology



Results

	Model (1)	Model (2)
(Intercept)	0.03	0.01
	(0.02)	(0.05)
Gender mismatch	−0.07***	−0.08***
	(0.02)	(0.02)
Female	−0.07***	−0.06
	(0.02)	(0.05)
Gender mismatch x Female	0.14***	0.15***
	(0.03)	(0.03)
Fixed effect:	Town hall	Town hall + Candidate
Num. obs.	42144	42144

Table 1. Effect of candidate and audience gender on vocal pitch changes. Perceived age mismatch and ethnicity mismatch are added as control variables. *p<0.1; **p<0.05; ***p<0.01.

Results (conversation level)

	Model (1)	Model (2)	Model (3)
(Intercept)	0.19	0.11	0.07
	(0.18)	(0.62)	(0.62)
Gender mismatch	−0.45**	−0.48**	−0.46**
	(0.18)	(0.19)	(0.19)
Female	−0.40**	−0.30	−0.28
	(0.19)	(0.60)	(0.60)
Gender mismatch x Female	0.74**	0.77**	0.74**
	(0.32)	(0.33)	(0.33)
Question sentiment			0.09*
			(0.06)
Fixed effect:	Town hall	Town hall + Candidate	Town hall + Candidate
Num. obs.	276	276	276

Table 2. Effect of candidate and audience gender on vocal pitch changes. Perceived age mismatch and ethnicity mismatch are added as control variables. *p<0.1; **p<0.05; ***p<0.01.

Results (conversation level)

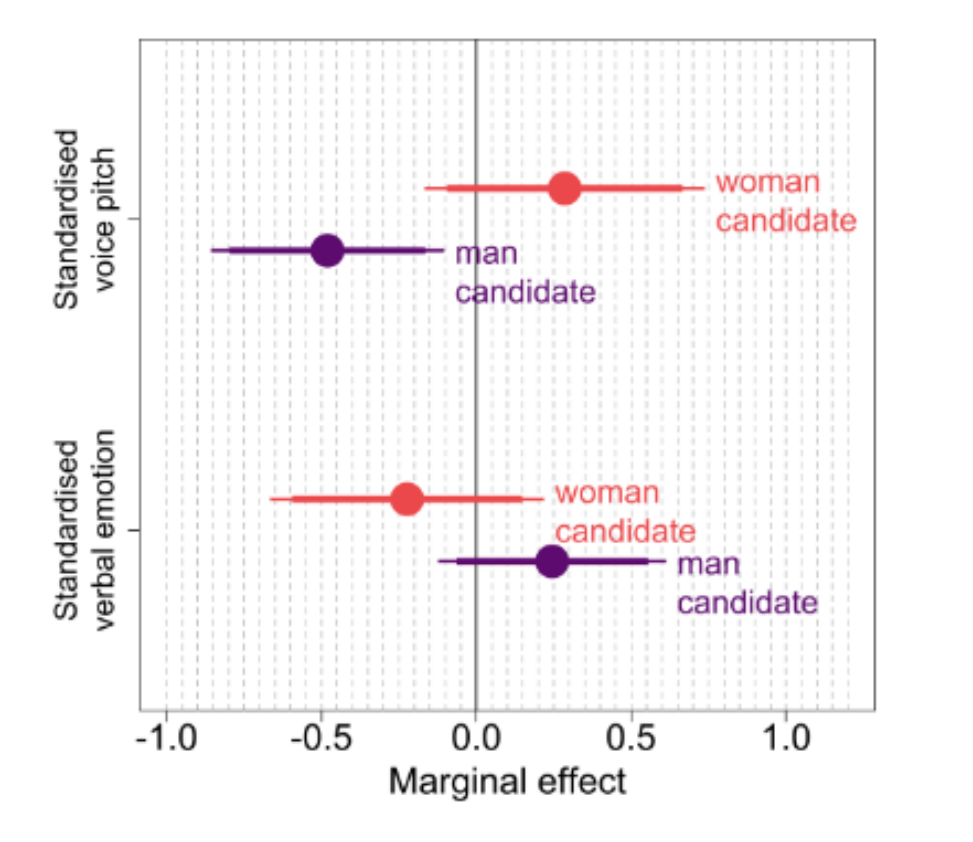


Figure 1. The marginal effect of interacting with an audience with whom the candidate has a gender mismatch. Horizontal bars show 90% and 95% confidence intervals.

Conclusion

- Gendered dynamics in political interactions in politics by examining voice pitch variations as a way to operationalise attractiveness and emotional intensity in nonverbal displays.
- Women candidates increase their voice pitch and men candidates lower theirs based on the questioner's gender.
- Verbal communication did not show the same gender differences, likely due to the controlled nature of speech and ingrained gender expectations.

THANK YOU FOR LISTENING.

Results (subgroup analysis)

	Full sample	Answering voter	Answering moderator
(Intercept)	0.03	0.21**	−0.02
	(0.05)	(0.09)	(0.07)
Female	−0.10*	−0.43***	−0.02
	(0.05)	(0.10)	(0.08)
Gender mismatch	−0.08***	−0.00	−0.07**
	(0.02)	(0.03)	(0.03)
Race mismatch	−0.02	−0.00	−0.05**
	(0.01)	(0.02)	(0.02)
Age mismatch	−0.01	−0.09***	0.01
	(0.02)	(0.03)	(0.03)
Gender mismatch x Female	0.15***	0.10**	0.11*
	(0.03)	(0.05)	(0.06)
Race mismatch x Female	−0.00	−0.03	0.06*
	(0.02)	(0.05)	(0.03)
Age mismatch x Female	0.04*	0.20***	0.02
	(0.02)	(0.05)	(0.04)
Fixed effect:	Candidate + Town hall	Candidate + Town hall	Candidate + Town hall
R^2	0.00	0.01	0.00
Adj. R^2	0.00	0.01	0.00
Num. obs.	42144	16973	25170

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table A.3: Subgroup analysis of the effect of candidate and audience gender on vocal pitch changes. *p<0.1; **p<0.05; ***p<0.01.