Vocal Attractiveness
Charisma, Likability and Style

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Sirens tempting Odysseus, detail of a storage jar by the Siren Painter, 480–470 BCE; in the collection of the British Museum, London. https://www.britannica.com/topic/Siren-Greek-mythology

Complexity in Understanding (Vocal) Attractiveness

Influence of Context and Message

Dependent Variables from both Speaker and Listener

Subjectivity in Listeners

Performance vs. Inherent Qualities

Dynamic Influence of Conversational Partners

Types of Attractiveness

Political Attractiveness (Charisma)

Business Attractiveness (Charisma)

Trust

Likeability (friendship)

Romantic Attraction

Why Study Political Attractiveness or Charismatic Speech?

Speech that leads listeners to perceive the speaker as charismatic can be useful for

- Understanding election results, radicalization efforts on social media

- Helping speakers to improve their own speech production by sounding more charismatic

- Creating more effective text-to-speech synthesis (ads, games)

- ...

Political Attractiveness

Charisma: The ability to persuade and command authority by virtue of personal qualities rather than formal institutional structures (Weber, 1947)

Contrasted with **traditional** and **legal-rational** authority

Even individuals who rise to power through formal structures (like elections) are generally understood to display *charismatic* behavior.
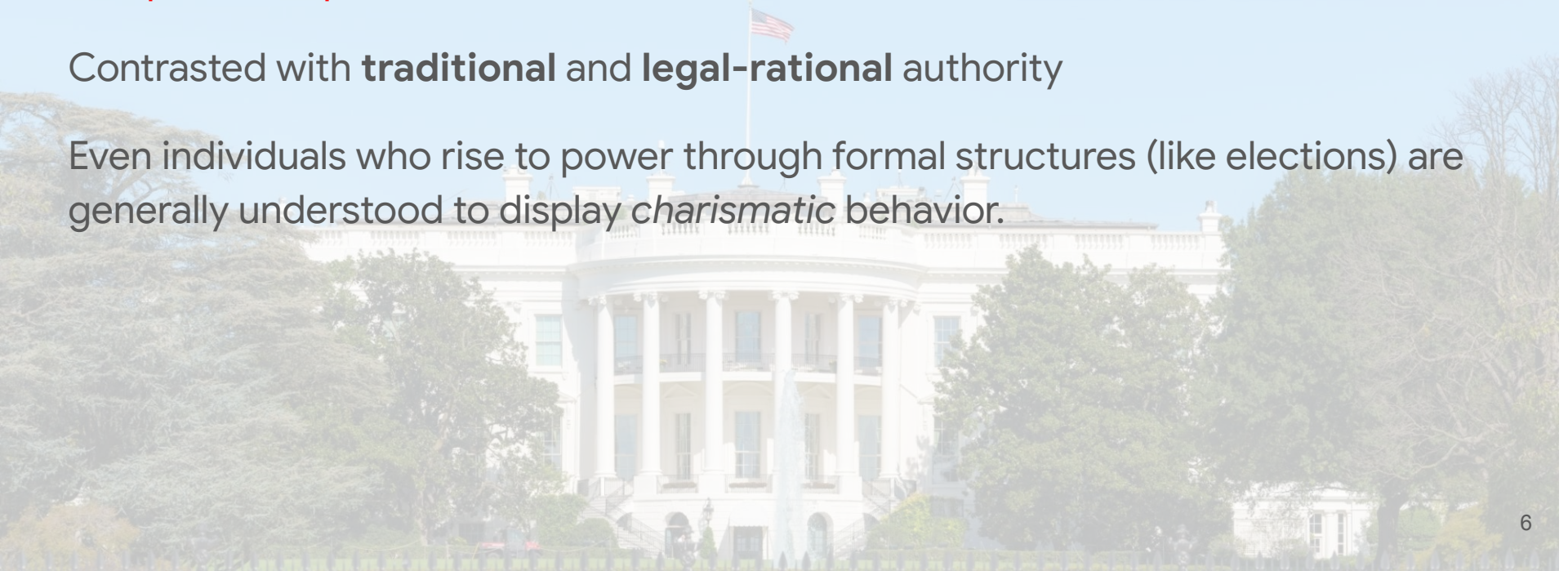
Defining Charisma

Rosenberg and Hirschberg (2005, 2008) asked participants for each stimuli: The speaker is {charismatic, angry, spontaneous, passionate, desperate, confident, accusatory, boring, threatening, informative, intense, enthusiastic, persuasive,charming, powerful, ordinary, tough, friendly, knowledgeable,trustworthy, intelligent, believable, convincing, reasonable} and "the speaker's message is clear" and " I agree with the speaker".

Measure correlations with "the speaker is charismatic"

Statement	Kappa
enthusiastic	0.606
charming	0.602
persuasive	0.561
boring	-0.513
passionate	0.512
convincing	0.503

Defining Charisma

Signorello et al. (2012) asked 58 French participants to provide adjectives that are consistent or inconsistent with *charisma*. Constructed broad categories.

Pathos	passionate, empathetic, enthusiastic, reassuring	cold, indifferent
Ethos Benevolence	extroverted, positive, spontaneous, trustworthy, honest, fair, friendly, easygoing, makes the others feel important	untrustworthy, dishonest, egocentric, individualistic, introverted
Ethos Competence	visionary, organized, smart, sagacious, creative, competent, wise, enterprising, determined, resolute, who propose, seductive, exuberant, sincere, clear, communicative	Inefficient, inadequate, uncertain, faithless, unclear, menacing
Ethos Dominance	dynamic, calm, active, courageous, confident, vigorous, strong, leader, authoritarian, captivating, who persuade, who convince	apathetic, timorous, weak, conformist, unimportant, who scare
Emotional Induction Effects	charming, attractive, pleasant, sexy, bewitching, eloquent, influential	boring

Defining Charisma

Charming, persuasive, enthusiastic and *not boring* are found by both Rosenberg and Hirschberg (2005) and Signorello et al. (2012) despite using US and French subjects.

🇺🇸US: no relationship with *threatening* and *anger*.
🇫🇷French: positive correlation with *Authoritarian-Threatening* factor

Cullen and Harte (2018) developed Overall Speaker Appeal (OSA) as an average rating of *charisma, not boring, enthusiastic, inspiring, likeable.*

What Makes an Individual Charismatic?

What you say or how you say it?

Who you are or How you act?

- Message?

- Personality?

- Speaking style?

- What aspects of speech might contribute to the perception of a speaker as **charismatic**?

  - Content of message?

  - Lexico-syntactic features?

  - Acoustic-prosodic features?

American English Experiments

- Data: 45 2-30s speech segments, 5 each from 9 candidates for Democratic nomination for U.S. president in 2004
  - Speakers:
    Liberman, Kucinich, Clark, Gephardt, Dean, Moseley Braun, Sharpton, Kerry, Edwards
  - Topics: neutral greeting, reasons for running, tax cuts, postwar Iraq, healthcare
  - 4 genres: stump speeches, debates, interviews, ads
- SAE raters for each segment on a Likert scale (1-5) 26 questions (randomized and including *"do you agree with the speaker?"*)
  - 8 subjects for Study 1 (2004) and 12 for Study 2 (2006)

Cross-cultural *Perception* of Charisma

A Cross-Cultural Comparison of American, Palestinian, and Swedish Perception of Charismatic Speech (Biadsy et al., 2008)

- **Cross-language ratings**

  - 12 SAE (non-Arabic, non-Swedish speaking) raters rate Palestinian Arabic and Swedish data

  - 12 Palestinian (English-literate, non-Swedish speaking) raters rate SAE and Swedish data

  - 9 (English-speaking speaking) Swedish raters rate SAE

- **Comparison with previous ratings** when raters rate their own language speakers

Do people agree?
Inter-rater Agreement

- **American rater agreement** was *higher* when rating Arabic than English

- **Arabic rater agreement** was *higher* when rating Arabic than English

- **Speaker** affects subject judgments across studies

- **Topic** affects subject judgments:

  - Americans rating SAE

  - Palestinians rating Arabic

  - Palestinians rating English

  - Swedish rating English

  - ***But not for raters who do not speak the language***

What sounds charismatic? Acoustic/Prosodic Analysis

- **Correlation with rated charisma** in all 5 studies:
  - Positive
    - Mean pitch
    - Mean and stdev intensity
    - Token duration
    - Pitch range
  - Negative
    - Disfluency

- **Rating SAE**
  - All groups – min f0
  - Swedish – max & stdev intensity
  - SAE & Swedish – speaking rate

- **Rating Arabic**
  - Palestinian – min f0, speaking rate
  - All groups – stdev f0, max & stdev intensity

Lexical Features

- Rating SAE

  - American and Swedish – third person plural pronouns

  - All groups – First person plural pronouns, third person singular pronouns, repeated words

- Rating Arabic

  - Both groups (SAE, Palestinian) – third person plural pronouns, nouns

  - *Why did SAE raters who did not speak Arabic agree?*

    - Perhaps these features were correlated with acoustic-prosodic features?

Charisma Perception across Cultures

- **SAE vs. Palestinian ratings of SAE tokens**
  - Mean ratings are ***not* different** across groups
  - Charisma ratings are **positively correlated**

- **Swedish vs. Palestinian ratings of SAE tokens**
  - Mean ratings are ***not* different** across groups
  - Charisma ratings are **positively correlated**

- **Swedish vs. SAE ratings of SAE tokens**
  - Mean ratings ***are* different** across groups (SAE higher)
  - Charisma ratings are **positively correlated**

- **Palestinian vs. SAE ratings of Arabic tokens**
  - Mean ratings ***are* different** across groups (Palestinian higher)
  - Charisma ratings are **positively correlated**

Differences Across Cultures

- ## Rating Arabic

  - Greater charisma perception by SAE group correlated with faster speaking rate, smaller stdev speaking rate, greater mean & stdev intensity

  - Greater charisma perception by Palestinian group correlated with lower pitch peaks, high stdev f0

- ## Rating SAE

  - Greater charisma perception by Swedish group correlated with more compressed pitch range, greater min f0, lower stdev f0

Summary

- Some cues are cross-cultural (dynamism, higher pitch range),
  Some are language-specific

- Cross-cultural charisma judgments are more conservative but

- Native and non-native judgments of a given target language are correlated

    - *Even when the raters do not speak the language*

Charisma in an Irish Politician

Cullen and Harte (2018) collected 945 utterances from a single speaker of 7 years (2007-2012) as Irish Political Speech Database

Includes a variety of genres including talk shows and parliamentary addresses

Methodology: Associated with polling data and subject ratings of charisma.

Result: suprasegmental qualities (based on pitch, intensity and duration) show greater correlation with charisma than spectral qualities.

Predicting Winners from Charisma

(Analysis of Speech Transcripts to Predict Winners of U.S. Presidential and Vice Presidential Debates, (Kaplan & Rosenberg, 2012))

- Corpus of political speech

- Determine lexical and acoustic correlates of political success

- Characterize similarities and differences between parties

- 25 debates spanning 9 election cycles (1976-80)

  - Each between one Republican and one Democrat

  - Democrats won 68%; Republicans 32%

- Binary labels based on post-debate polling

- Goal: predict the winner

Features Examined

- Total **# words**

- **Word usage** (stemmed):

  - Indicators of **friendliness and formality**: personal pronouns, # questions asked, pleasantries, contractions, numbers, refs to opponent, refs to both running mates

  - Words affiliated with **common political topics**: god, health, religion, tax, war and synonyms using WordNet

- **Affective content**: Dictionary of Affect in Language

- **Named entities**: using Stanford tagger, # and rate of usage

- **TF-IDF values** for top 10K words for each debater

- **Turn length**: absolute and mean # syls, words, sentences in each turn

- **Complexity**: Flesch-Kincaid grade level readability formula

Classification

- Train on all preceding debates to predict winner of current year

  - Debate-level: which party won using data from both speakers

  - Speaker-level: which speaker won, including features only for each speaker w/out ref to opponent

Predicting Poll Results is Tough

- **Test on 2008**; train on all previous years

  - ○ Baseline: by debate calculated from most common result /total # debates

  - ○ By-debate: use data for both speakers

  - ○ By-debater: use data for each speaker in turn

  - ○ Unsplit: one data-point per debate

  - ○ Split: one data-point every 20 speaker turns

	Unsplit	Split
Debate	0.64 (0.68) **0.75**	0.61 (0.65) **1.0**
Debater	0.57 (0.5) **0.23**	0.51 (0.5) **0.47**

Feature Analysis

- First person plural possessives ("our") **used by Democrats**
  - **Negatively correlates with Democratic wins**
- Grade level readability **of Democrats**
  - **Lower complexity in Democratic wins**
- Second person singular object pronouns ("you") **used by Republicans**
  - **Negatively correlates with Republican wins altho correlates with individualism**
- Important political topics
  - "atomic", "unilateral", "soviets"
- Politically active words important
  - "achieve", "disagreements," "advocate", "achieve"

Analyzing Debate Speech

(Erica Cooper)

Can we predict the Winners?
or
the Losers?

Similar Goals and Research Questions

- Investigate emotion and charisma in political discourse

  - Collect a corpus of political speech: debates

  - Predicting who won each debate from Gallup polls after

  - Compare both political parties: Democrats and Republicans

  - Determine lexical and acoustic correlates of political success: correlate with subsequent polls

  - Characterize similarities and differences between Democrats and Republicans

Corpus Collection

- **Democratic primaries** from 2008:

  - Joe Biden, **Hillary Clinton**, Chris Dodd, John Edwards, Mike Gravel, Dennis Kucinich, **Barack Obama**, Bill Richardson

  - New Hampshire MSNBC Debate, September 26, 2007

- Fall 2011 **Republican primaries**:

  - Michele Bachmann, **Herman Cain**, Newt Gingrich, Jon Huntsman, Gary Johnson, Rand Paul, **Rick Perry**, **Mitt Romney**, Rick Santorum

  - Fox News / Google Debate, September 22, 2011

- **Interviews** for all candidates

Gallup Poll Results

Democrats	Poll Results	Republicans	Poll Results
Clinton	47%	Romney	20%
Obama	26%	Cain	18%
Edwards	11%	Perry	15%
Richardson	4%	Paul	8%
Biden	2%	Gingrich	7%
Dodd	1%	Bachmann	5%
Kucinich	1%	Santorum	3%
Gravel	0.5%	Huntsman	2%
		Johnson	0%

Features

- **Lexical** For debate speech only

  - Word Count

  - Laughter, applause, and interruptions

  - Number of speaker turns

  - Average number of words per turn

  - Syllables per word

  - Disfluencies per word

  - Linguistic Inquiry and Word Count (LIWC) features

- **Acoustic**

  - Debates and Interviews: mean, min, max, and standard deviation of f0

  - Difference for these values between debates and interviews

Results: Correlates with Post-Debate Poll Standing

Features	Democracts	Republicans
Word Count	0.804	0.582
Laughs	0.084	0.780
Applause	0.194	0.350
Turns	0.846	0.381
Interruptions	0.052	0.247
Avg Words Per Turn	0.199	0.406
Avg Syllables Per Word	0.015	-0.768
Disfluencies Per Word	-0.805	-0.130
Mean-f0 Difference	0.059	0.479
Min-f0 Difference	0.002	0.105

LIWC Positive Correlates for Democrats

Feature	Examples	Correlates
Insight	Think, know consider	0.74
Inclusive	And, with, include	0.680
Cognitive	Cause, know, ought	0.679
Words per sentence		0.661
Common verbs	Walk, went, see	0.657
Positive emotion	Love, nice, sweet	0.632
Pronouns	I, them, itself	0.626
Nonfluencies	Er, hmm, umm	0.611

LIWC Features:
Negative Correlates for Democrats

Features	Examples	Correlation
Articles	A, an, the	-0.684
All Punctuation		-0.653
Periods	.	-0.639
Dashes	-	-0.595
Numerals	12, 38, 156	-0.581
Questions marks	?	-0.578
Ingestion	Dish, eat, pizza-0.575	-0.575
Money	Audit, cash, owe	-0.548
2nd Person Pronouns	You, your	-0.506

LIWC Features:
Positive and Negative Correlates for Republicans

Features	Examples	Correlation
Leisure	Cook, chat, movie	0.869
Past tense	Went, ran, had	0.732
"Other" punctuation	!":%$	0.665
Dictionary words		0.541
Personal pronouns	I, them, her	0.525
6+ letters	Abandon, abrupt, absolute	−0.741
Home	Apartment, kitchen, family	−0.513

General Party Differences

- Democrat audiences laughed more

- Republican audience applauded more

- Democrats got interrupted more

- Republicans had more words per turn

- Both had about the same number of syllables per word

- Democrats' debate speech was more different from their interviews, but Republicans responded slightly more positively to these differences than Democrats did

Conclusions
(recommendations?)

- **Democrats**: Talk more, use fewer disfluencies, and use more Insight words

- **Republicans**: Make the audience laugh, use Leisure-related words, and avoid longer words

More to Do in Politics

- Investigate additional acoustic features (intensity, speaking rate, voice quality)

- Higher level prosodic features (intonational contours, phrasing)

- More complicated / interesting lexical features
  - Cross-cultural similarities and differences
  - Entrainment

- Connection to broader context. E.g. "soviets" doesn't carry much political currency in 2023.

Business Attractiveness

Business Attractiveness is valuable internally and externally.

Internally: Management and Leadership

Externally: Investor, Partner, Client, Provider Relationships

Vocal communication here can be similar to political attractiveness. It is typically unidirectional, but can take place in many venues (product launches, presentations, investor calls, interviews).
Inspiration and trust are important facets.

Contrastive Analysis of Jobs and Zuckerberg

Niebuhr et al. (2016)

Contrast styles of **Steve Jobs** and **Mark Zuckerberg** as exemplars of **charismatic** and **non-charismatic** founder CEOs.

Both speak quickly, but Zuckerberg is even faster, leading to more **phonetic reduction**.

Jobs has a more varied pitch reset across phrases and greater strength of pitch excursions.

Upshot: fast, dynamic speech that is clearly pronounced is *charismatic* in a business context.

Charisma in start-up entrepreneurs

"A decisive part of their strategy and daily work is to persuade others" (Niebuhr et al. 2017)

45 participants gave the same elevator pitch. 15 received no feedback, 15 received visual feedback, and 15 received acoustic feedback based on Steve Jobs as an exemplar.

Speakers receiving acoustic feedback were rated as 41% more charismatic after training. No feedback speakers were 24% more charismatic. Speakers who were given visual feedback were 12% more charismatic.

Impact of Gender

There is a significant gender imbalance in the numbers of political and business leaders in the US and worldwide. Unfortunately, this is followed by gender imbalance in *studies* of vocal attractiveness

Novák-Tót et al (2017) compared Oprah Winfrey, Ginni Rometty (IBM) and Steve Jobs.

Female speech that is judged to be as charismatic as male speech **demonstrates more and stronger acoustic cues to charisma.**

A possible explanation is that female business leaders are overcoming gender bias in leadership assessments.

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Relationship between Trust and Attraction

This is not always an obvious relationship.

Romantically attractive strangers are rated as more trustworthy. (Wilson and Eckel 2006)

Averaged faces are more trustworthy than attractive faces (Sofer et al 2015)

Attractive men are **more** trustworthy (by women). Attractive women are **less** trustworthy (by men) (McGloin and Denes 2018)

Trust expressed via investment and voting grants business and political leaders tangible commercial and political power.

Vocal Correlates of Trust

Levitan et al. (2018) had a two-person deception game where one participant would try to successfully deceive their conversational partner about their resume.

Trust was measured by whether the interviewer believed that the interviewee was telling the truth (regardless of whether they were).

Both men and women were trusted more when they **spoke faster**. Male speakers were trusted less by speaking **high in their pitch range**.

Male interviewers mistrusted speech with high mean pitch and maximum intensity and trusted fast speech.
While female interviewers mistrusted speech with high jitter and shimmer (voice quality measures).

Likeability (Weiss and Burkhardt (2012))

"This voice is pleasant" vs. "I like this person"

Positive factors of likeability include minimal disfluencies and
  no discernible accent**.
Negative factors include high pitch, lower articulation rate and lower
pronunciation precision.

The presence of negative factors can lead a voice to be unlikeable, while both
likeable and unlikeable voices demonstrate positive factors.

**The role of accent and social assessment is much more complicated than this,
and too complicated to survey here.

"Would You Buy a Car From Me?" On the Likability of Telephone Voices

Felix Burkhardt, Björn Schuller, Benjamin Weiss, Felix Weniger

Problem

- Speech based classification: "attempts to categorize people based solely on on their voice and way of speaking. The categories may be relatively invariant like **age, gender or dialect**, or time changing like **emotional state**."

Database

- **Agender database**

  ○ 940 speakers of mixed and age and gender

  ○ Recorded over telephone (landlines and cell phones)

  ○ Drawbacks:

    ■ Signal less clear (limited bandwidth)

    ■ Short responses

    ■ Not great for likability ratings

  ○ However, more real-world like

    ■ "e.g. if a call center agent would like to test the likability of his/her own voice."

Data Selection

Table 1: *Distribution of age (Y: young, A: adult, S: senior) and gender (F, M) groups in the data.*

# YF	# YM	# AF	# AM	# SF	# SM	sum
121	112	135	129	147	155	800

- All German speakers in Germany, no balance of dialects

- One sentence for each speaker, commands

- Longest sentence spoken by speaker

  - *"mach weiter mit der Liste"* (continue with the list)

  - "ich hätte gerne die Vermittlung bitte" (I'd like an operator please)

Judging Likability

- 32 participants

  - 15 female, 17 male; aged 2—42

- Participants rated half of the 800 utterances

- Therefore, each utterance from the database rated 16 times

- Told to rate likability; ignore quality of recording and lexical content

- 7 point scale

- No significant effect of participants' age or gender on ratings

Automatic Analysis

Table 2: *60 low-level descriptors (LLD).*

4 energy related LLD
Sum of auditory spectrum (loudness)
Sum of RASTA-style filtered auditory spectrum
RMS Energy
Zero-Crossing Rate
50 spectral LLD
RASTA-style filt. auditory spectrum, bands 1–26 (0–8 kHz)
MFCC 1–12
Spectral energy 25–650 Hz, 1 k–4 kHz
Spectral Roll Off Point 0.25, 0.50, 0.75, 0.90
Spectral Flux, Entropy, Variance, Skewness, Kurtosis, Slope
5 voice related LLD
F_0
Probability of voicing
Jitter (local, delta)
Shimmer (local)

Table 3: *33/6 applied functionals.*

33 base functionals
quartiles 1–3
3 inter-quartile ranges
1 % percentile ($\approx$ min), 99 % percentile ($\approx$ max)
percentile range 1 %–99 %
arithmetic mean, standard deviation
skewness, kurtosis
mean of peak distances
standard deviation of peak distances
mean value of peaks
mean value of peaks – arithmetic mean
linear regression slope and quadratic error
quadratic regression a and b and quadratic error
contour centroid
duration signal is below 25 % range
duration signal is above 90 % range
duration signal is rising/falling
gain of linear prediction (LP)
LP Coefficients 1–5
6 F_0 functionals
percentage of non-zero frames
mean, max, min, std. dev. of segment length
input duration in seconds

Automatic Analysis

- **Low Level Descriptors and functionals** combined to make 3996 features

- Plus other pitch and voice quality features (360)

- Plus functionals applies to pitch contour (12)

Results

- Divided features into cepstral (CEPS), auditory spectral (AUSP), prosodic (PROS), and voice quality (VOQU) features

- "Cepstral features do not enable robust regression or classification - in fact, the mean UA for classification is near chance level (52%). In contrast, *auditory spectral features seem to contribute the most to reliable automatic likability analysis* for regression as well as classification, followed by prosodic and voice quality features."

- Though raters might not have agreed on likability, robust results for automatic evaluation.

Gender and Likeability

Baumann (2017) collected likeability ratings from 220 speakers and 160 raters.

Very limited consistent acoustic correlations between the speakers' speech and the raters assessment of likeability.

but

Both male and female raters rated male speech similarly.

Female speech was rated as more likeable by female raters, than by male raters.

Likeability is a two-way street

Schweitzer et al. (2017) 46 two-party dialogs between 13 speakers all German women. Conversations were 25 minutes long, and participants filled out a questionnaire about how *likeable, competent, friendly* and *self-confident* they found their partner.

No standard acoustic correlates of any social attribute.

They did find **convergence** or entrainment effects. Lexical entrainment correlated with likeability, while convergence of peak F0 height negatively correlated.

Romantic Attractiveness

Romantic attraction is incredibly complicated.

Suggestions that the vocal traits communicate or reinforce attractive physical traits. Attractive physical traits *might* be evolutionarily advantageous.

Collins and Missing 2003 found broad agreement on 1) which female faces were attractive 2) which female voices were attractive and 3) that attractive voices belonged to attractive faces.
(This is found also in male faces and voices by Saxton et al. 2016)

Young and small female voices were high pitched while taller women have narrower formant distribution. Men tend to find high pitched voices attractive.

Women tend to find lower-pitched male voices to be attractive.

What is making the voice attractive?

The voice may be communicating and age, height and weight.

Bruckert et al (2006) low-frequency formants correlate with age, height and weight. However, female listeners were unable to use this information to assess this information from male speech.

Gonzalez (2006) found pitch reveals very little about body size, but listeners think it does (Babel et al 2011).

However, low pitch and high speaking rate seem to be consistent correlates in attractive male voices (Quene et al 2016)

Male attractiveness by heterosexual women and homosexual men

Valentová et al. (2013) investigated ratings of *attractiveness* and *masculinity* in male faces and voices by homoseuxual men and heterosexual women.

No consistent preference for *masculine* faces.

Preference for *masculine* voices only in **single homosexual men** and **coupled heterosexual women**.

Homosexual men who considered themselves to be more masculine prefered more masculine voices, but more feminine faces.

Highlights the complexity in this space by considering relationship status,

Communication **toward** attractive people

Leongomez et al. (2014) used a **video dating** scenario to investigate how people speak to people they find attractive in Czech and English. They also investigated how the presence of attractive competitor videos impact speech.

Male F0 varied most in speech toward attractive women.
Minimum F0 was also lowered.

Female F0 varied most in response to attractive competitors.

Speech directed **toward** attractive speakers was itself considered more attractive.

Speed Dating

McFarland et al. (2013) describe a very comprehensive collection and analysis of (5 min) speed-dating conversations.

Male partners who were interested in their partner demonstrated laughter, varied loudness and reduced pitch variance.

Female participants raise and vary their pitch, speak softer and took shorter turns. Female participants also described more interest when their partners interrupted them more frequently.

Entrainment in Speed Dating

McFarland et al. (2013) speakers who expressed mutual interest "mimicked" each other's rate of speech, use of function words and laughter.

In a separate speed-dating study, Michalsky and Schoormann (2017) speakers entrain in pitch register and range over time, but this is **stronger by how attractive they find the subject.**

A follow-up study (2018) showed that attractive male voices are not just low but low in the speaker's pitch range, and that attractive female voices are not just high, but high in the speaker's pitch range.

Flirting

"The speaker is attractive"

vs.

"The speaker finds their speaking partner attractive"

Speed dating experiments have enabled researchers to study flirtatious behavior by asking participants "are you attracted to your partner" and "do you think your partner was flirting with you".

Both men and women who are considered to be flirting spoke spoke faster and with higher pitch. Men also speak more quietly. (Jurafsky et al. 2009)

People are bad at this: the asymmetry of flirting

There are features that are used in the **perception** of flirting that are not used in the **expression** of flirting.

Men are perceived to flirt when the overlap less and use fewer "appreciations". These are not used by men who are flirting.

Speaking rate is a stronger indicator of a perception of flirting than the performance of flirting.

Laughter, taking fewer longer turns and asking repair questions are indicators of women intending to flirt, but are not perceived as flirtatious.

Conclusions

Political Charisma   Business Charisma   Trust   Likeability   Romantic Attractiveness

There are some findings on all of these. They tend to be very broad.

Dynamism in political charisma.

Dynamism with intelligibility for business charisma.

Trust is associated with relatively fast speech.

Clear enunciation is likeable.

Male voices with lower pitch and greater formant dispersion are attractive while attractive female voices have higher pitch and are breathier.

Challenges and Clear Gaps

Increase understanding of how listener characteristics impact perceptions of attraction.

Investigate the intersection of types of attraction.

Disentangle inherent and performative qualities of the voice.

Study women in political and business contexts.

Study romantic attractiveness in subjects that are not heterosexual & cisgender