Listeners' Personality Traits and Judgments Made About Speakers

Brett Welch, MS, CCC-SLP†
Jason Bohland, PhD†
Christopher Brown, PhD†
Colin Vize, PhD†
Aidan Wright, PhD‡
Leah Helou, PhD, CCC-SLP†
† *University of Pittsburgh, Pittsburgh, PA*
‡ *University of Michigan, Ann Arbor, MI*

Motivation

- Voice and speech signals convey information about a speaker (e.g., sex, personality).[1,2]
- Prior literature primarily examines the features of the speech signal that correlate with listeners' judgments (e.g., [1,3]). To our knowledge, relatively few studies examine the features of listeners that influence their judgments made about a speaker.
- **The purpose of this study** is to examine the listener features that correlate with personality judgments made during a listening task, *regardless of the features of the speakers*.

Methods

We recruited:
- 197 **speakers** (targets) via social media
- 1,174 **listeners** (raters) via CloudResearch

All participants completed:
- Demographic information (e.g., age, sex)
- A personality measure (Big Five Aspect Scales; BFAS)[4]
- A depression measure (Center for Epidemiologic Studies – Depression; CES-D)[5]

Speakers recorded a series of rote, standardized, and expository speech tasks (see QR code). These tasks were combined into a single recording with 2 seconds of silence between each task.

These recordings were then played to the listeners in a random order. Listeners could rate as many or as few speakers as they wished. Listeners who rated <10 recordings were removed from the current analysis.

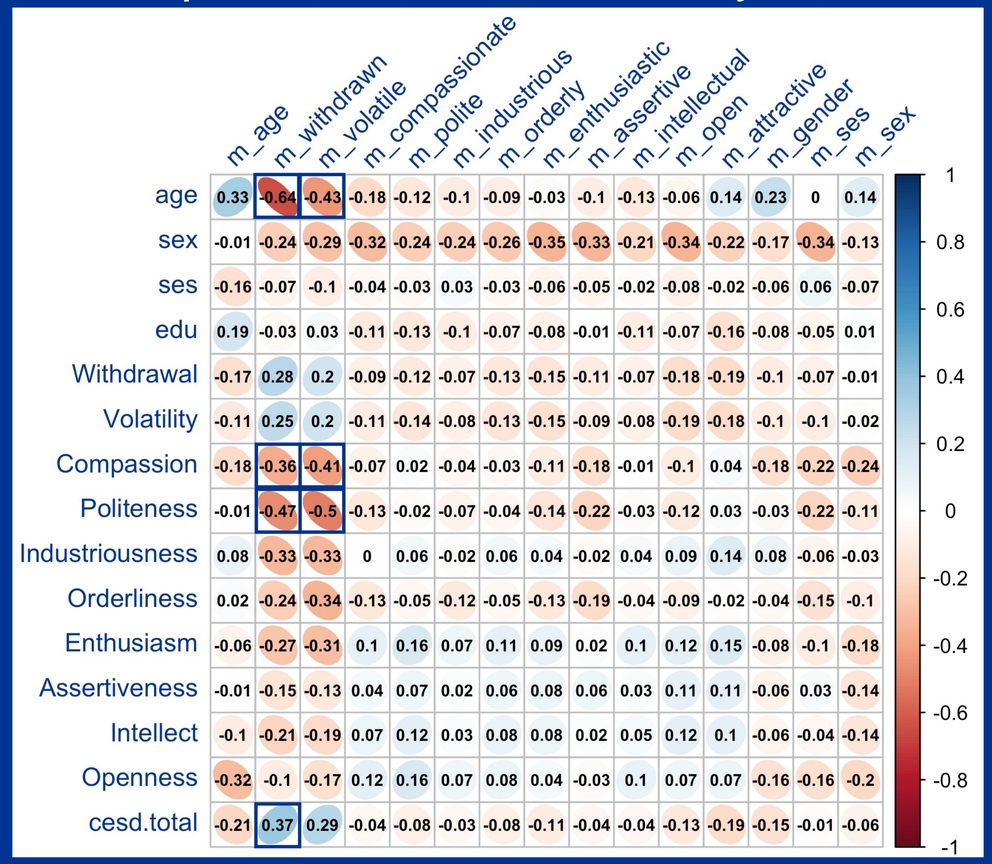
Listeners rated each speaker along:
- Sex & perceived masculinity/femininity
- Age (Likert scale in 5-year increments)
- Attractiveness (slider from 0-100)
- The 10 BFAS aspects (5-point Likert scale)

For the analysis, we generated each listener's average rating for each trait across ALL listeners they rated. E.g., for a listener who rated 30 speakers, we calculated the listener's average rating given for each trait across the 30 respective speakers.

University of Pittsburgh

Judgments about a speaker may be influenced by listener factors such as **age**, **compassion**, **politeness**, and **depression**, regardless of the unique features of a speaker.

Correlation Matrix of Listeners' Average Rating Across Speakers (x axis) and Listeners' Traits (y axis)



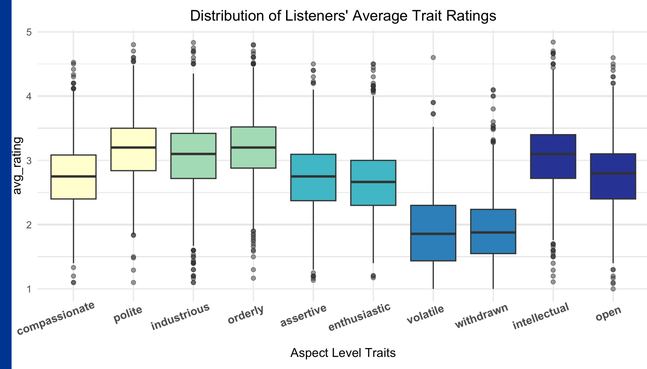
Pearson correlation coefficients (*r*) shown in each square.
Squares with a bold blue border indicate $p < .05$.

A full description of the methods, data, and results are available online:

Results

Significance levels set to $\alpha = .05$ for this exploratory study.

Number of ratings made by **listeners**				
M = 28.6	SD = 31.6	Med = 19	Min = 10	Max = 222
Number of ratings each speaker received				
M = 151.1	SD = 21.2	Med = 147	Min = 107	Max = 183



Trait	Regression Estimate	95% CI [LL, UL]	*p* value
Assertive (intercept)	2.73	[2.70, 2.77]	**< .001**
Compassionate	0.02	[-0.03, 0.06]	.41
Enthusiastic	-0.06	[-0.10, -0.02]	**.006**
Industrious	0.34	[0.29, 0.38]	**< .001**
Intellectual	0.33	[0.29, 0.37]	**< .001**
Open	0.05	[0.01, 0.10]	**.02**
Orderly	0.46	[0.41, 0.50]	**< .001**
Polite	0.44	[0.39, 0.48]	**< .001**
Volatile	-0.84	[-0.88, -0.79]	**< .001**
Withdrawn	-0.81	[-0.85, -0.76]	**< .001**

Discussion

In a large sample of listeners (N = 1,174), regardless of any speaker-specific features, listeners generally:
- Rated speakers **higher** in the personality traits of Industriousness, Intellect, Orderliness, and Politeness
- Rated speakers **lower** in aspects of Neuroticism – Volatility and Withdrawal
- The differences in these trends are relatively small, with the largest differences in Volatility and Withdrawal

When examining the features of the **listeners**, we found:
- Older individuals, and individuals higher in the traits of Compassion and Politeness tended to rate speakers *lower* on Withdrawal and Volatility
- Individuals who reported higher depression symptomatology tended to rate speakers *higher* in Withdrawal

Limitations: This exploratory study sought to recruit a large, diverse sample of speakers and listeners. As a result, not all speakers were rated by the same listeners. Yet, ignoring all features of the speakers, trends in listener behavior still emerged.

References

1. McAleer P, Todorov A, Belin P. How do you say "hello"? Personality impressions from brief novel voices. PLoS One. 2014;9(3). doi:10.1371/journal.pone.0090779
2. Welch B, Van Mersbergen MR, Helou LB. Listeners' Perceptions of Speaker Personality Traits Based on Speech. Journal of Speech, Language, and Hearing Research. 2021;64(12):4762-4771. doi:10.1044/2021_JSLHR-20-00582
3. Belin P, Boehme B, McAleer P. The sound of trustworthiness: Acoustic-based modulation of perceived voice personality. PLoS One. 2017;12(10). doi:10.1371/journal.pone.0185651
4. DeYoung CG, Quilty LC, Peterson JB. Between Facets and Domains: 10 Aspects of the Big Five. J Pers Soc Psychol. 2007;93(5):880-896. doi:10.1037/0022-3514.93.5.880
5. Radloff LS. The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. Appl Psychol Meas. 1977;1(3):385-401.