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Students' Perceptions of Female Faculty Members based on Vocal Characteristics

Molly M. Kitchell and Dr. Cesar E. Ruiz, SLP.D., CCC/SLP., BCS-S

Abstract

This study examines the relationship between the acoustic properties of female faculty members' voices and the perception of the female faculty members age and personality characteristics by undergraduate students. A standardized acoustic analysis using the Multidimensional Voice Program (MDVP) and the RealPitch program was performed to determine the participating faculty members' fundamental frequency (habitual and conversation), vocal jitter, and vocal shimmer. Faculty members were then recorded reading a brief preselected passage. Student participants listened to the recorded audio samples and completed a survey regarding the faculty members' ages and personality characteristics. A Pearson product-moment correlation (Pearson r) analysis completed in SPSS Statistics v. 22.0 found statistically significant correlations between the fundamental frequency of faculty members' voices and students' evaluations of the faculty members' age, authoritativeness, approachability, attractiveness, competency, and fluency.

Introduction

Much of communication is nonverbal. Listeners interpret an utterance based not only on its content, but also on the acoustic characteristics of the speaker's voice. Listeners use these acoustic cues to infer paralinguistic information about the age, gender, and other properties of the speaker. One of the most important acoustic parameters that influences listener perceptions is fundamental frequency, or pitch (Lattner, Meyer, & Friederici, 2005). Fundamental frequency has been found to predict listener perceptions of dominance (Hodges-Simeon, Gaulin, & Puts, 2010) and attractiveness (Re et al., 2012).

Research has been conducted on the role of acoustic parameters in personal attributions for decades (Apple, Streeter, & Krauss, 1979). However, much of the existing research focuses on male voices (Tigue et al., 2012) and considers the political or economic implications of listener perceptions of characteristics such as leadership ability and trustworthiness (Klofstad, Anderson, & Peters, 2012). The purpose of the current study is to examine the relationship between fundamental frequency and listener perceptions in a previously unexplored population: university faculty members and students.

Participants

This study involved the participation of faculty members and students. Four (4) female faculty members volunteered to participate in the study. One (1) faculty member was excluded from participation due to the results of the standardized vocal analysis, which determined that her acoustic characteristics were not within the norm for her age and gender. Recorded speech samples from three (3) female faculty members were included in the final survey.

Fifty-seven (57) undergraduate students participated in the study by completing the survey. No demographic information was collected about the student participants.

Methods

A “Request for Participation” was sent to faculty members with a link to the consent form and instructions for participation. Participation consisted of completing a brief questionnaire, undergoing a standardized acoustic analysis, and reading a brief preselected passage (which was recorded). Four (4) female faculty members consented to participate. A standardized acoustic analysis using the Multidimensional Voice Program (MDVP) and the RealPitch Program was performed to ensure that the faculty members’ voices are considered normal for their age and gender. One faculty member did not qualify for inclusion in the study based on the results of the acoustic analysis, which indicated that her level of vocal jitter and shimmer were outside the normal range. Data was collected about the vocal characteristics of each faculty member (including fundamental frequency [in sustained and habitual tasks], jitter, shimmer, and vocal range) and a brief audio sample of the faculty member reading a pre-selected text was obtained using a digital recorder in a quiet room.

A “Request for Participation” was sent to the undergraduate student body with a link to the consent form and instructions for participation. Participation consisted of listening to the recorded sample of each faculty members’ speech and completing a brief questionnaire regarding their perceptions of the faculty members’ age, gender, and a selection of personality traits. Fifty-seven (57) students participated in the study.

Statistical analysis was performed to examine the relationship, if any, between the vocal characteristics of the faculty members as obtained via acoustic analysis and the students’ perceptions of the faculty members as measured by their survey responses.

Results

		AGE	AGE_RATE	COMPETENCY	INTELLIGENCE	PROFESSIONALISM	APPROACHABILITY	FLUENCY	TRUSTWORTHINESS	ATTRACTIVENESS	AUTHORITATIVENESS
F_FREQ	Pearson Correlation	-.998*	-.764*	.192	.101	.043	.290*	.220*	.114	.403*	-.214*
	Sig. (2-tailed)	.000	.000	.013	.191	.583	.000	.004	.139	.000	.006
	N	171	168	168	168	167	168	168	168	168	168

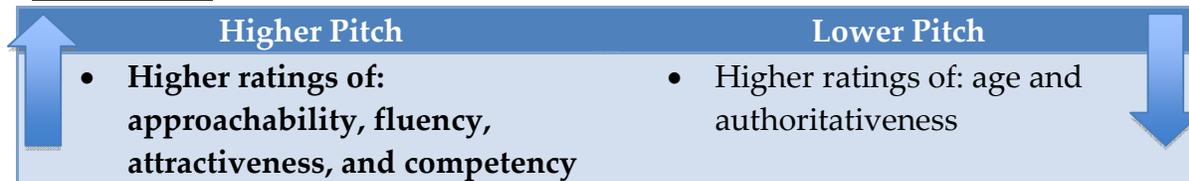
(note: need to enlarge table showing Pearson r values)

Pearson r test of correlation, completed in SPSSStatistics V.20.0, found:

- Significant negative correlation between fundament frequency and... age*, age rating* (assigned by listener), authoritativeness rating*
- Significant positive correlation between fundamental frequency and... competency rating, approachability rating*, fluency rating*, attractiveness rating*
- Significant positive correlation between age and shimmer, age and age rating* assigned by listener, jitter and shimmer*

(all these are significant at the 0.05 level--those marked with * are significant at the 0.01 level as well)

Conclusions



Overall, the results suggest that lower female voices are perceived as older and more authoritative, while higher female voices are perceived more approachable, fluent, attractive, and slightly more competent.

Intelligence, professionalism, and trustworthiness were not found to be significantly correlated with fundamental frequency.

Limitations/Recommendations

The student participants evaluated a relatively small sample of faculty voices; consequently, the range of fundamental frequencies compared was fairly restricted. The study attempted to control for variance in non-acoustic factors by preselecting the passage that faculty members read and recorded. However, there was still considerable variation in speaking rate and prosody among faculty participants. These factors may have influenced listeners' perceptions.

Additional research may be conducted employing a similar research design but examining male faculty members or faculty members with disordered voices.

Collecting demographic information about student participants would allow exploration of factors such as listener age and gender on the listeners' evaluations of faculty members.

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