Voice and Speech Characteristics of Radio Jockeys

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Abstract

Professional voice users are a group of professionals who use their voice for professional purposes. As their profession depends on their voice, they are required to have many qualities that would assure them success in their profession. This study investigated the qualities of Radio Jockeys who are an upcoming group of professional voice users. A group of 5 Radio Jockeys were compared with 5 age and gender matched non-professional voice users on various parameters of voice, speech, fluency, and aerodynamics. The results indicated that the Radio Jockeys were superior in all the parameters compared to the non-professional voice users. Using these results a training module can be developed to train novice Radio Jockeys.

Introduction

Voice is one of the most important tools in human communication. Indeed a well functioning voice is for most people an indispensable apparatus in their everyday life. According to Stemple, Glaze & Gerdeman (1995), a large group of individuals are, by the very nature of their occupations, at greater risk of developing laryngeal pathologies than the general population. This group consists of people who are directly dependant on vocal communication for their livelihood. These people are classified as users of a ***"professional"*** voice. Dependency on their voices to function successfully in their occupations qualifies people as owners of a professional voice. At the Lions Voice Clinic, University of Minnesota, Minneapolis, anyone who needs their voice in order to carry out their job is considered a ***Professional Voice User.*** Professional Voice Users are often considered ***"Athletic"*** voice users because their voice is more extensive and strenuous than that of non-professional voice users (http://www.lionsvoiceclinic.umn.edu/page4.htm).

Table 1: Levels of Professional Voice Users.

Professional Voice Level	Description	Professional Needs
I	Elite vocal performer: Actor, singer, sportscaster, announcer	Slight vocal abnormality may be disabling
II	Professional voice user: Teacher, clergy, receptionist	Moderate vocal abnormality may affect job performance
III	Non-vocal performer: Businessman, physician, attorney	Severe vocal abnormality may affect job performance
IV	Non-vocal non-professional: Clerk, mechanic, construction worker	Vocal abnormality does not affect job performance

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According to Stemple (1993) Professional Voice Users are those individuals who are directly dependant on vocal communication for their livelihood. If you rely on your voice for your profession, you are a professional voice user. This can include singers, actors, teachers, salespersons, clergymen, air traffic controllers, lawyers, doctors or anyone else who uses voice in work setting (http://hanoverspeech.com/voice_therapy.htm). Depending on the vocal usage, professional voice users have been classified into four levels, as given in table1 (www.sandiegovoice.org/professional.html).

The complex characteristics of human voice have been the object of a wide range of human interests including scientific research. But most of the studies among professional voice users have been conducted on singers, actors, and teachers. Brown, Rotham & Sapienza (2000) did acoustic and perceptual analysis to determine the effect of vocal training on professional singers when speaking and singing. Twenty professional singers and twenty non-singers were recorded while sustaining a vowel, reading the modified Rainbow Passage and singing "America the Beautiful". Acoustic measures included fundamental frequency, duration, jitter%, shimmer%, noise-to-harmonics ratio, and presence or absence of both vibrato and singers formant. Results indicated that whereas certain acoustic parameters differentiated singers from non-singers within sex, no consistently significant trends were found across males or females for either speaking or singing. Kovačić & Budanovac, (2002) investigated the difference in acoustic characteristics of voice between adolescent actors and non-actors. The experimental sample consisted of ten actresses and ten actors while controls included thirteen girls and fourteen boys. Phonation of /a/, spontaneous speaking and oral reading provided a set of acoustic variables (F0, Jitter, Shimmer, speaking and reading ranges). T-test showed statistically significant difference between actresses and non-actresses in speaking range, reading Fo maximum, and reading range, whereas between actors and non-actors, difference was found only in reading range. Neil, Worral, Day & Hickson (2003) described the speech and voice characteristics of Broadcast Journalists. In their study they found that professional newsreaders have superior voice quality, continuity, emphasis, phrasing, and overall performance.

Media plays an important role in each sphere if life. Advancement in technology in media has provided opportunity to a variety of professionals and there is an emerging need for usage of voice in a variety of ways. Radio Jockeys are a group of professional voice users in the field of media who use their voice as dynamically as singers, teachers, or actors. A Radio Jockey is basically someone who gets paid for playing his/her favorite tunes. But Radio Jockeys not only play music, they also chat, deliver news, weather or sports, or hold conversations with celebrities or call-in listeners (http://wwwprincetonreview.com/dayInLife.asp?careered=54). The distinguishing characteristics of a good radio Jockey include: a good clear voice, legible diction, intensive knowledge of music, and excellent conversational ability (www.exchange4media.com/e4m/Radio/radiospeak.asp?rsid=25). The person must not have any speech disorders like lisp, must be able to communicate fluently and must have a high degree of self-confidence. The tonal quality of voice is also very important; the voice has to sound good (http://femina.indiatimes.com/articleshow/1919229362.cms). There are four mantras for the success of a Radio Jockey; vision, consistency, empathy and the art of communication. It's not the lingo; it's the way you present it (www.exchange4media.com/e4m/Radio/ radiospeak.asp?rsid=25). Although there is much literature about the voice of singers, teachers etc., there is none on Radio Jockeys. This information is essential for developing effective educational programs. Knowledge regarding Radio Jockeys' awareness of strategies to maintain vocal health is also lacking. As they are also professional voice users, they are at risk of vocal dysfunction. In this context, the present study compared the voice, speech and aerodynamic characteristics of Radio Jockeys with those of normal non-professional voice users.

Method

Subjects: Five professional Radio Jockeys, with a mean age of 25 years (3 females, and 2 males) from the radio station, Radiocity 91 FM, Bangalore, India, and five age and gender matched non-professional voice users participated in this study. All the Radio Jockeys had a minimum of two years of experience working as a professional radio jockey.

Material: Three vowels, /a/, /i/ and /u/ were used for assessment of voice parameters. Five minutes conversation samples with each subjects was used.

Procedure:

a) Voice parameters: Sustained phonations of /a/, /i/, and /u/ were recorded. These were fed to CSL 4300B. MDVP software was used to extract voice-related parameters.

b) Frequency range in conversation for a five-minute speech sample was measured using MDVP software.

c) Fluency Assessment: The conversation samples recorded were transcribed verbatim and the number and percentage of repetitions, filled pauses, unfilled pauses, false starts, prolongations, and parenthetical remarks was calculated by using the following formula:

% Disfluency = No. of disfluencies x 100/Total no. of words.

d) Assessment of phrasing, emphasis, modulation, and overall performance: The conversation samples of five Radio Jockeys, and five non-professional voice users were randomized and recorded. Eight speech pathologists did a perceptual analysis of these samples for phrasing, emphasis, modulation, and overall performance on a three-point scale (3=Good; 2= Normal; 1= Poor). For test-retest reliability, the same speech pathologists assessed the randomized conversation samples after a week. Test-retest reliability was calculated using Pearson's coefficient of correlation.

e) Assessment of vital capacity: The portable Vitalograph was used to measure vital capacity. Subjects took a deep inhalation, and expired into the mouthpiece of Vitalograph. Three trials were done and the best of the three was noted.

Statistical Analysis: Paired t-test and Pearson's correlation was used to find out the significant difference between perceptual analysis of speech of Radio Jockeys and normals. Test-retest reliability was measured using Pearson's correlation.

Results and Discussion

The results of each aspect studied will be presented and discussed separately for convenience of understanding.

1. Voice related parameters

MDVP Measures: Phonation of vowels /a/, /i/ and /u/ was recorded and analyzed using MDVP software of CSL 4300B software. The results indicated that subjects 3 and 4 had high frequency perturbation measures, amplitude perturbation related measures, voice breaks, and higher degree of unvoicing. However, these are not

pathological. MDVP uses peak picking method for F0 extraction. If a peak is not identified it will be considered to have voice breaks and unvoicing.

Frequency range in conversation: All the Radio Jockeys (RJ) except RJ3, had a very wide F0 range which is one important requirement for any professional speaker who uses his voice for professional purposes, especially in the media. The normal frequency range is 25 Hz. It appears that the RJs have used extremely wide frequency range.

2. Fluency Assessment:

A five-minute speech sample of each Radio Jockey was recorded and a 100 words sample was analyzed for various aspects of fluency. Of the various parameters, filled pauses and parenthetical remarks were used maximally (2.2%), and unfilled pauses (0.4%) and repetitions (0.6%) were least used by RJs. On the other hand, normals used filled pauses maximally (5.4%) and parenthetical remarks and prolongations were least used (0%). Overall, RJs showed a higher total number of disfluencies compared to normals.

3. Assessment of phrasing, emphasis, modulation, and overall performance

In general, it was observed that phrasing was judged to be the best in RJs. Emphasis and modulation were not as good as phrasing. RJs were rated ***good*** on all the four parameters compared to normals. Table 2 shows the results of perceptual analysis.

Table 2: Percent rating of RJ's and normals by 8 SLPs.

	RJ			Normals		
Parameter	Good	Normal	Poor	Good	Normal	Poor
Phrasing	77.5	21.2	1.2	18.2	62.4	11.2
Emphasis	69.9	28.7	1.25	28.7	63.7	7.5
Modulation	58.7	36.2	4.9	13.7	61.2	24.9
Overall Performance	68.7	29.9	1.2	16.2	79.9	3.7

RJs were rated to be "Good" on all the parameters 68.73% of the times. T test also showed a significant difference between RJs and normals, RJ's being better than normals.

Test-Retest Reliability: Test-retest reliability was found using the Pearson's coefficient of correlation. Coefficient of correlation was found for each of the four parameters (phrasing, emphasis, modulation and overall performance) at the three points on the rating scale (good, normal and poor). The coefficient values and the levels at which they are significant are given in table 3. Pearson's correlation indicated good test-retest reliability for all the parameters except emphasis (normal and poor ratings) and modulation (normal rating).

Table 3: Coefficients of correlation

	Good	Normal	Poor
Phrasing	.902**	.776**	.671*
Emphasis	.839**	.016	.509
Modulation	.855**	.269	.847*
Overall Performance	.891**	.830**	.8585*

[**= Correlation is significant at the 0.01 level, *= Correlation is significant at the 0.05 level (2-tailed)].

4. **Vital Capacity:** Both the female and male Radio Jockeys had vital capacities higher than normals. Table 4 shows the vital capacities.

Table 4: Vital capacity values (in liters).

Subject	Vital Capacity (lts)	Normative (lts)
1 (Female)	2.15	>1.5
2 (Female)	2.59	>1.5
3 (Female)	2.71	>1.5
4 (Male)	2.73	>2.5
5 (Male)	3.38	>2.5

Discussion

The results revealed several points of interest. First of all, in RJs, frequency and amplitude perturbation measures were higher and voice breaks and unvoicing were evident. However, these may not be considered pathological. In MDVP, peak picking is used to measure F0. If a peak is missing, it will be treated as a break and +unvoicing. The missing peak may be because of some noise or unclear signal.

Second, frequency range used by radio jockeys was wider compared to normals. This indicates the importance of bringing out liveliness in speech.

Third, interestingly, percent disfluency was higher in radio jockeys compared to normals. If parenthetical remarks are not considered, the percent disfluency will be lower in RJs compared to normals. Parenthetical remarks are considered as a sophisticated kind of disfluency and do not bring about discontinuity in speech.

Fourth, except one, all the four RJs were rated to have good emphasis, phrasing, modulation, and overall performance, compared to normals. These results suggest that if one wants to become an RJ, he should develop good phrasing, emphasis, and modulation.

Fifth, all RJs had higher vital capacities compared to normals, i.e. an average of 2.71 liters for RJs, compared to an average of 1.9 liters for normals. This is in accordance with previous studies which state that professional voice users have higher vital capacities as they have more vocal effort than non-professional voice users.

Conclusions

Knowledge of difference in voice and speech characteristics between RJs and normals is essential for effective education of novice students. The present study attempted to investigate the voice, speech and aerodynamic characteristics of an upcoming group of professional voice users, namely, Radio Jockeys (RJs). This is a relatively new profession in the field of media and hence there are not many studies done on voice and different aspects of speech of these professionals, especially in the Indian context. RJs are totally dependent on their speech for their livelihood, and hence, it is imperative for them to have certain qualities that will ensure them success in their field, which has been reported in literature by various authors. The results indicated that RJs were superior in most respects. Using these results, a training module can be developed for RJs. Also, prevalence of voice disorders in this population can be investigated and awareness of vocal hygiene can be studied.

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