

Introduction and General Methods

This database was created through generous funding from The Voice Foundation's Advancing Scientific Voice Research Grant and contains voice samples which have been rated by experienced voice professionals (at least 3 different raters with a minimum of 3 years' clinical experience) in order to provide educators with standardized materials to better train pre-service clinical voice professionals. It contains 296 audio files consisting of the sustained /a/ and /i/ vowels and the sentences from the Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V). All recordings were made in a quiet clinical environment using a head-mounted condenser microphone at a 6-centimeter distance from the corner of the mouth and the Computerized Speech Lab (CSL) using 16-bit encryption and a sampling rate of 48k. Audio recordings have been edited as best as possible to remove all clinician instructions. However, please listen to and look at each file carefully just in case there was simultaneous clinician-client talk.

Listeners rated approximately 50 files each and each file was rated twice for reliability measurement (for a total of approximately 100 ratings per rater). Raters used a computer to listen to the samples and rate voice quality via a web-based system that included custom-made electronic scales for the CAPE-V (Kempster, 2007) and the GRBAS (Hirano, 1981) using Qualtrics survey software. Listeners rated each file on a 100-point visual analogue scale (VAS) to mimic the paper-based CAPE-V protocol. **Please note that severity markers (mild, moderate, severe) were not included on the 100-point VAS to avoid influencing the concurrent rating using the GRBAS scale.** Raters were urged to rate the samples over several days to avoid fatigue.

Results

Data include a spreadsheet containing the name of each audio file, the age and sex of the speaker, and some of the audio files contain a yes/no indication of diagnosed dysphonia or patient voice complaint. This file is labeled "Demographics.xlsx".

Other spreadsheets are also included. One spreadsheet (Ratings_both_scales.xlsx) provides all raw data for the CAPE-V and the GRBAS scales (each scale is located in a different tab in this spreadsheet). Other spreadsheets separate out each voice quality by scale. In these spreadsheets, raw rater data are included as well as calculated average ratings, minimum/maximum values, and the standard deviation of ratings across all ratings. According to Nagle (2016), ratings within one centimeter (10 units) on the CAPE-V is considered to be adequate agreement. Please take the standard deviation of ratings into account when looking at each file individually.

Severity "categories" are also included (normal, mild, moderate, severe) for the GRBAS scale. Because averages across all raters were used to categorize each sample, the following thresholds were used: 0-0.5=normal; 0.6-1.5=mild; 1.6-2.5=moderate; 2.6-3=severe. Any user is free to change these thresholds as necessary. To help a user change the thresholds, I have provided the formula I used to automatically label each sample in the spreadsheet. Formula: `"=IF(L2<0.6,"Normal",IF(L2<1.6,"Mild",IF(L2<2.6,"Moderate",IF(L2<3.1,"Severe"))))"` -please remove quotation mark at beginning and end of the formula.

Rater (Listener) Reliability

Inter- and intra-rater reliability calculations are provided for the sample as a whole using Intraclass Correlations. Most files were rated by three experienced voice clinicians. Some files were rated by four experienced voice clinicians. Intra-rater reliability for audio files rated by four listeners was calculated by randomly selecting three of the four raters for each file since the number of raters was not equal across the sample.

Interrater Reliability Results

Results for CAPE-V:

Overall Intraclass Correlation for Interrater reliability = **.860** (averages used as ratings)

Intraclass Correlations by Feature (averages used as ratings):

CAPE-V Severity:	.918
CAPE-V Roughness:	.789
CAPE-V Breathiness:	.827
CAPE-V Strain:	.829
CAPE-V Pitch:	.856
CAPE-V Loudness:	.870

Results for GRBAS:

Overall Intraclass Correlation for Interrater reliability = **.859** (averages used as ratings)

Intraclass Correlations by Feature (averages used as ratings):

GRBAS Grade:	.911
GRBAS Roughness:	.787
GRBAS Breathiness:	.844
GRBAS: Asthenia:	.843
GRBAS Strain:	.845

Intrarater Reliability Results

Results for CAPE-V:

Overall Intraclass Correlation for Intrarater reliability = **.912** (assuming averages used)

Intraclass Correlations by Feature (assuming averages used):

CAPE-V Severity:	.943
CAPE-V Roughness:	.896
CAPE-V Breathiness:	.911
CAPE-V Strain:	.908
CAPE-V Pitch:	.878
CAPE-V Loudness:	.905

Overall Pearson Correlation between Trials 1 & 2 = **.839**

Pearson Correlations between Trials by Feature:

CAPE-V Severity:	.890
CAPE-V Roughness:	.814
CAPE-V Breathiness:	.833
CAPE-V Strain:	.828
CAPE-V Pitch:	.772
CAPE-V Loudness:	.824

Results for GRBAS:

Overall Intraclass Correlation for Intrarater reliability = **.889** (assuming averages used)

Intraclass Correlations by Feature (assuming averages used):

GRBAS Grade:	.905
GRBAS Roughness:	.846
GRBAS Breathiness:	.884
GRBAS: Asthenia:	.892
GRBAS Strain:	.862

Overall Pearson Correlation between Trials 1 & 2 = **.800**

Pearson Correlations between Trials by Feature:

GRBAS Grade:	.827
GRBAS Roughness:	.734
GRBAS Breathiness:	.793
GRBAS: Asthenia:	.804
GRBAS Strain:	.757

Note

The audio files can be downloaded directly from this database. To help users download all files simultaneously, please use the following link to my online storage. Given that technology changes rapidly, the link may not work in perpetuity in which case files will need to be downloaded directly from this database. Link: <https://app.box.com/s/yj4o8zzxt45e8yqleqpwlbb69jo25kq5>

References

1. Hirano M. *Clinical Examination of Voice*. Springer-Verlag; 1981.
2. Kempster G. CAPE-V: Development and Future Direction. *Perspect Voice Voice Dis*. 2007;17(2):11-13. doi:10.1044/vvd17.2.11
3. Nagle KF. Emerging Scientist: Challenges to CAPE-V as a Standard. *Perspectives of the ASHA Special Interest Groups*. 2016;1(3):47–53.

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