

Descriptors of breathy, rough, and healthy voice quality in common sense

Descritores de qualidade vocal soprosa, rugosa e saudável no senso comum

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ABSTRACT

Purpose: Identify the terms mentioned by the general population for healthy, rough and breathy vocal quality. **Methods:** A test was carried out with 50 participants, in person, without academic or professional ties with Speech Therapy. The task was to hear three voices and define them freely. The first voice presented was predominantly breathy; the second, predominantly rough and the third, vocally healthy. The sustained emission of the vowel /ε/ and the count from one to ten were presented. Each participant should respond to the command: “Listen to that voice. Which term would you name it?”, Typing the answer on a line displayed on the PowerPoint screen. **Results:** For the healthy voice, the term that was repeated the most was “normal” (36%), other terms were: “clean”, “common”, “standard”, “clear”, “clear”, “firm”, “good”, “open sound”, “defined”. For the rough voice, twenty-five participants (50%) responded with the term “hoarse” and the others were divided into terms such as “noisy”, “smoker’s voice”, “deep”, “elderly”, “cavernous”, “abnormal”, among other similar terms. For the breathy voice, twenty-four participants (48%) used the term “tired”; five participants assigned the adjective “weak”; three responded with the term “out of breath”; there were two correspondences to the terms “dragged” and “sick”; and the other participants responded with terms similar: “exhausted”, “lazy”, “sleepy”, “fatigued” and the like. **Conclusion:** The terms “normal” for a healthy voice, “hoarse” for a rough voice and “tired” for a breathy voice, allow a more usual perception of these clinical parameters of vocal quality, for individuals outside the technical-scientific language of Speech Therapy.

Keywords: Voice; Voice disorders; Voice quality; Auditory perception; Hoarseness

RESUMO

Objetivo: Identificar os termos referidos pela população em geral para a qualidade vocal saudável, rugosa e soprosa. **Métodos:** foi realizado um teste, de modo presencial, com 50 participantes sem vínculos acadêmicos ou profissionais com a Fonoaudiologia. A tarefa consistia em ouvir três vozes e defini-las livremente. A primeira voz apresentada era predominantemente soprosa; a segunda, predominantemente rugosa e a terceira, vocalmente saudável. Apresentou-se a emissão sustentada da vogal /ε/ e a contagem de 1 a 10. Cada participante deveria responder ao comando: “Ouça essa voz. Com qual termo você a nomearia?”, digitando a resposta em uma linha disposta na tela do PowerPoint. **Resultados:** para a voz saudável, o termo que mais se repetiu foi “normal” (36%); outros termos foram: “limpa”, “comum”, “padrão”, “clara”, “límpida”, “firme”, “boa”, “som aberto”, “definida”. Para a voz rugosa, 25 participantes (50%) responderam com o termo “rouca” e os demais se dividiram em termos como “ruidosa”, “chiada”, “voz de fumante”, “grave”, “idososa”, “cavernosa”, “anormal”, entre outros termos similares. Para a voz soprosa, 24 participantes (48%) usaram o termo “cansada”; cinco atribuíram o adjetivo “fraca”; três responderam com o termo “sem fôlego”; houve duas correspondências aos termos “arrastada” e “doente” e os demais participantes responderam com termos semelhantes: “exausta”, “preguiçosa”, “sonolenta”, “fatigada” e afins. **Conclusão:** os termos “normal” para voz saudável, “rouca” para voz rugosa e “cansada” para voz soprosa possibilitam a percepção mais usual desses parâmetros clínicos de qualidade vocal, para indivíduos alheios à linguagem técnico-científica da Fonoaudiologia

Palavras-chave: Voz; Distúrbios de voz; Qualidade vocal; Percepção auditiva; Rouquidão

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INTRODUCTION

Interpersonal relationships are predominantly established by oral communication. When the bond to be established is with a health professional, understanding what the patient brings as a complaint and making yourself understood takes on essential importance and is the basis of clinical reasoning⁽¹⁾. The communication between health professionals and patients influences treatment adherence and therapeutic success⁽²⁾.

Particularly in voice clinic, the complaint brought by the patient is loaded with subjective perceptions because the vocal quality itself is a perceptive phenomenon. Thus, patients often compare their voices with other voices or make various inferences, even pointing to personality attribute estimates. Moreover, emotional aspects and even stereotypes associated with cognition, competence, and humor, among others, are conjectured by the person who hears an unknown voice⁽³⁾. Therefore, healthy, rough, and breathy voices are perceived somehow, and the speech therapist or researcher in the field needs to investigate how these vocal qualities are understood since the two deviations under consideration, roughness, and breathiness, are the most common in the voice clinic.

The terms breathiness and roughness are frequently used by speech therapists, both in the clinic and in scientific studies. However, these entries are not usual for the general population or other healthcare specialties. Therefore, mentioning these terms in therapy or inserting them in a research questionnaire to evaluate vocal aspects, for example, may compromise the patients' answers because they misunderstand their meanings. With that in mind, this study aimed to identify the terms referred to by the general population for healthy, rough, and breathy vocal quality.

METHODS

The Research Ethics Committee approved this study of the Universidade Federal da Paraíba - CEP/UFPB (Opinion no. 29404219.0.0000.5188), and all participants signed the Informed Consent Form (ICF). Fifty undergraduate students, 25 females and 25 males, averaging 20 years of age, with no academic or professional ties to Speech-Language Pathology or Music, were personally recruited on the university campus. We used a Snowball strategy for recruitment, in which each participant referred at least two others to participate in the survey.

The task consisted of listening to three voices and defining them by associating the auditory stimulus with words that came freely to the volunteer's mind. The vocal samples were presented over a headset, at comfortable intensity, self-referred by the subject. On average, the test lasted five minutes. We selected the voices from the voice bank of the Integrated Laboratory for Voice Studies (LIEV) of the Speech Pathology Department of the Universidade Federal da Paraíba (UFPB) and have them judged by a speech therapist specialized in voice with more than ten years of experience in perceptual-auditory vocal evaluation. We evaluated the voices using the GRBAS (*overall dysphonia Grade, Roughness, Breathiness, Asthenia, and Strain*) scale, which provides a classification of the overall grade, roughness, breathiness, strain, and asthenia.

The first voice presented was predominantly breathy (to a moderate degree); the second, predominantly rough (to a

moderate degree); and the third, vocally healthy (no vocal quality deviation). We chose voices with an overall degree of moderate deviation to make the investigated vocal quality deviation evident to the listener, avoiding lighter or extreme deviations. The sustained emission of the vowel /É/ and the counting from 1 to 10 were presented. Each participant should respond to the command: "Listen to this voice. What term would you use to name it?" by typing the answer on a line laid out on the PowerPoint screen (Figure 1).

RESULTS

The term most repeated for healthy voice was "normal" (36%); other terms were "clean", "ordinary", "standard", "clear", "limpid", "firm", "good", "open sound", "defined".

Regarding the rough voice, 25 participants (50%) answered with the term "hoarse", and the rest were divided into terms such as "noisy", "squeaky", "smoker's voice", "deep", "old", "cavernous", "abnormal", among other similar terms.

Regarding the breathy voice, 24 participants (48%) used the term "tired", 5 assigned the adjective "weak", 3 responded with the term "breathless", 2 matched the terms "slurred" and "sick", and the remaining participants responded with similar terms: "exhausted", "lazy", "sleepy", "fatigued", and so on.

DISCUSSION

Speech-Language Pathology professionals and students deal directly with human communication, and thus communication and comprehension skills have a vast bibliographic production in the area. However, there is little opportunity for critical reflection on the communication and understanding between the speech therapist and the patient during professional training. Therefore, there is a need to consider the possible difficulties that language barriers can generate in this relationship.

Roughness and breathiness are among the most frequent vocal qualities in dysphonic individuals. They are widely used terms in clinical practice and scientific research, even though they are not usual entries outside Speech-Language Pathology.



Listen to this voice.
What term would you use to name it?



vowel (é)



Counting from
1 to 10

Figure 1. PowerPoint presentation screen to define terms equivalent to healthy voice, breathiness, and roughness

Source: Elaborated by the authors

Breathiness is usually caused by incomplete glottal closure, which produces an excessive airflow during phonation⁽⁴⁾. Perceived breathy vocal quality is related to confidentiality, affectivity, sadness, and distrust⁽⁵⁾.

There are reports of COVID-19 patients manifesting symptoms related to upper respiratory tract infection, pharyngitis, coughing, and shortness of breath, among other symptoms, which compromise the energy needed for phonation, consequently generating alterations in vocal production. In addition, breathiness was the most affected parameter in patients with COVID-19-related dysphonia, which is especially associated with reduced respiratory capacity. Such findings are consistent with the participants' perceptions of weakness, shortness of breath, tiredness, fatigue, and breathlessness in this research regarding the breathy voice^(6,7).

Roughness is associated with an irregularity in the vocal fold vibration, generating a noise perception due to vibratory frequency and amplitude changes. In addition, the rough voice involves strain adjustments and presents high aperiodicity. Thus, rough vocal quality perception is associated with anger and other negative feelings or characteristics. The greater the noise and aperiodicity in the vocal signal, the greater the listener's negative judgment⁽⁸⁾.

Since the roughness parameter is associated with noise in the vocal signal, there is a negative impact on life quality, especially for older women. Due to increased roughness resulting from natural changes in the aging process, they need to deal with a deeper voice, different from the voice in their youth. After menopause, it is natural that the vocal folds suffer from edema, which justifies this roughness, and this is also why roughness perception is associated with an older person's voice. Such findings support the rough voice perception as "noisy", "squeaky", "low", and "old", as answered by this study's participants^(9,10).

Roughness is the main voice characteristic when there are nodules in the vocal folds, in addition to low *pitch* and high intensity. Such characteristics are commonly associated with aggressiveness, anxiety, an invasive personality, lack of control, and competitiveness. In the vocal fold paralysis case, breathiness is the most evident parameter in vocal quality and is frequently associated with tiredness, lack of control and energy, and emotional instability⁽¹¹⁾. There is evidence of areas in the brain related to processing vocal quality, which analyze the vocal signal and elicit judgments based on affectivity and attractiveness. The brain prefers voices with greater periodicity and predictability in the vocal signal because more aperiodic sounds require greater effort from the cortex in the recognition work⁽¹²⁾.

The voices considered pleasant are those whose frequency and intensity are moderate and compatible with the speaker's age and gender, without vocal signal aperiodicity and with a balance between the source (vocal folds) and filter (resonance and articulation). There is an association between deviant voice perception and the judgment of negative attributes related to physical or emotional health status, such as weakness, illness, insecurity, fear, anger, and sadness, among others. In addition, vocal quality is related to the speaker's identity. Therefore, more unstable features in the emission, which are present in deviant voices, may negatively impact the listener regarding the dysphonic person⁽¹³⁾.

As a result of the association between dysphonic voice and negative personality traits, dysphonic individuals are stereotyped as aggressive, tense, less attractive, less powerful, less agreeable and trustworthy, less active, and weak. Therefore, knowing how dysphonia affects socialization and the impact these issues have on patients' life quality is a necessary professional exercise. Furthermore, the fact that female patients constitute a majority in the search for vocal rehabilitation can be better understood, given that the judgment of deviant female voices is more negative than that of male deviant voices⁽¹⁴⁾.

Thus, this study revealed that individuals unaware of Speech-Language Pathology perceived the healthy voices as normal, and the deviant breathy and rough voices were defined with negative attributes related to the speakers' state of health or personality. Therefore, the therapist can be better understood and consequently achieve greater therapeutic effectiveness if he/she uses common sense terms, such as those found in this study, to communicate breathiness and roughness deviations to the dysphonic patient or voice research participants.

CONCLUSION

The terms "normal" for healthy voice, "hoarse" for rough voice, and "tired" for breathy voice provide a more common perception of these clinical parameters of vocal quality for individuals unaware of the technical-scientific language of Speech-Language Pathology.

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