

Spectrographic Analysis of "Hoarseness"*

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There is no satisfactory definition for the term hoarseness. Acoustically, hoarseness has been said to be a combination of breathy and harsh voice. It is apparent that hoarseness is a complex concept and probably not fully accountable on any one perceptual dimension.

Hence this study was an attempt to reduce the confusion involved in the term "hoarseness" by seeking quantitative measurement of hoarseness of voice.

The following hypotheses were proposed :

- (1) There is no difference in the degree of perception of hoarseness of different vowels.
- (2) There is no difference in the spectrographs of different degree of hoarseness.
- (3) There is no difference in fundamental frequency variation with varying degrees of hoarseness.

To test the hypotheses, 17 hoarse voice subjects and 9 normals were selected and their voice samples consisted of four vowels, such as [a], [e], [i] and [u]. Voice samples were analyzed subjectively and spectrographically.

From the results of the present study, the following conclusions have been drawn :

- (1) The vowel [e] being perceived as having greater hoarseness than vowel

[u], vowel [u] was perceived greater hoarseness than vowel [a] was perceived more hoarseness than vowel [i].

- (2) The spectrographs of different degrees of hoarseness do differ from each other and difference depends upon the degree of hoarseness. It was possible to find a common pattern among these spectrographs which were categorized based upon subjective judgement. In spite of these common patterns, it was difficult to categorize some of the spectrographs. Thus it may be appropriate to view the results of spectrographic analysis as a continuum representing varying degree of hoarseness ranging from no hoarseness to severe hoarseness in lieu of categorizing them as discrete groups like mild, moderate and severe hoarseness.
- (3) No difference was observed between no hoarseness group in terms of fundamental frequency variation. where as in the groups of moderate hoarseness and severe hoarseness showed more fundamental frequency variations.

Recommendations

- (1) To conduct the similar study on large population with varied pathological conditions of larynx.
- (2) The other parameters like optimum frequency, amplitude variation in hoarse voice subjects, may be studied.

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