

An Objective Measurement of Nasality

Sarguna Murthy

Student, A.I.I.S.H., Mysore.

The nasal resonance is a highly distinctive readily perceived acoustic quality which may occur with orally produced sounds to invoke specific phonetic contrasts. The penetrating quality of nasality as an acoustic property is unacceptable to listeners when it is injected dominantly and nonphonetically into speech.

Despite its easily recognized presence, the degree of excessive nasality in speech has been shown to be difficult to establish perceptually (Bradford, Brooks and Shelton [1964], Watterson and Emanuel [1981]). There was a great need for an objective measurement. Several instruments are available for measuring nasality. But there are several limitations with the instruments available for the measurement of nasality. The present study was carried out to find the efficacy of the Nasometer based on Principles of instrument developed by Fletcher (1978) using computer. And to find out the possibilities of using this instrument for the routine clinical assessment by developing a standard nasalance scale.

In the present study thirty normal subjects (15 males and 15 females) and four subjects with nasality have been used. Each subject was asked to phonate the vowels /a/, /i/ & /u/ with normal voice, with instruction to nasalize the voice during phonation and with occluded nares. Sentences with maximum nasal sounds (nasal sentences), sentences with minimum or no nasal sounds (nonnasal sentences) were also used. And thus nasalance scores were obtained for each speech sample separately then this nasalance scores for each speech samples were compared with one another. And difference between males and females were also checked. These scores were converted into a single number by using nasalance scale, i.e., [0 - (0-15) - denasal, 1 - (15 - 30) - normal, 2 - (30 -45) - mild, 3 - (45 - 60) - moderate, 4 - (60 - 75) - severe, 5 - above 75 - very severe].

Then all the speech samples were randomized and were submitted for subjective rating by three judges. They were asked to judge the severity of nasality by using five point scale after listening each sample for three times. They made markings in a responses sheet depending upon the severity of nasality as they perceived, (denasal - 0, normal - 1, mild - 2, moderate - 3, severe -4, very severe - 5)

The subjective rating were then compared with that of the objective scaling of nasality. Conclusions have been made based on the results of this study.

1. There was a significant variation in nasalance score for different stimulus materials used.
2. There was no significant difference in nasalance scores between males and females on different stimulus materials used.
3. Comparison of objective scaling and subjective rating of nasality showed that there was high correlation between nasalance score and nasalance scale.

Nasalance scores of sentences had a high positive correlation with the subjective rating. No other samples showed such high correlation. Thus the study has shown that the Nasometer can be used to measure the nasality objectively in a clinical setup.