Pitch and Amplitude Perturbations in 10 years old Children

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Variations in pitch and amplitude is an essential aspect of normal voice. This normal variations (perturbations) in the voice can be grouped into voluntary perturbations (intonational) and involuntary perturbations(pitch perturbation-jitter and amplitude perturbation-shimmer). These involuntary perturbation measurements are quantified by different parameters such as absolute jitter, jitter factor, jitter ratio, directional jitter and similarly shimmer (dB), directional shimmer and amplitude perturbation quotient etc.

Many investigators have studied these different pitch and amplitude perturbation measurements in normals and in abnormals. They have reported that these measurements can be used for screening and diagnostic purposes of laryngeal disorders. Most of these studies have established norms for jitter and shimmer measurments in adult populations only. It is well known that children's voice characteristics differ from that of adults because of the continous neuromuscular maturation they undergo before puberty and the obvious morphological factors. So the adult data may not hold good for children. Therefore, this study was aimed at,

1. Obtaining norms, for the following 6 pitch and amplitude perturbation measurements in thirty 10 years old normal male children
   - i. Jitter ratio
   - ii.Directional perturbation quotient for jitte (DPQJ)
   - iii. Relative average perturbation (RAP 3 pt)
   - iv. Shimmer (dB)
   - v. Directional perturbaion quotient for shimmer (DPQs)
   - vi. Amplitude perturbation quotient (APQ)
2. Comparing the data obtained for 10 years old normal male children with that of adult normals.
3. Comparing the data obtained for 10 year old normal male children with that of 7 and 8 years old normal male children.

Thirty normal school going male children who had normal ENT findings, normal audiological findings and normal intelligence with no known history of voice problem, vocal abuse or other relevant vocal history were chosen for this study. After a practice session of 5-7 minutes their voice sample i.e. phonation of/a/, /i/and /u/for 5 seconds was recorded and analysed for the six parameters chosen, in the present study. The data obtained were subjected to descriptive statistics such as mean, standard deviation, ANOVA and DMRT to interpret the results and following conclusions were made.

I. Since pitch and amplitude perturbation measurement s were obtained for 30 normal 10 years old male children, the data provided may be used as norms for .that age group.

II. It was observed that the parameters which account for intensity variability show greater values for open vowels and parameters which reflect frequecy variations tend to show greater values for tense vowels *N* and /u/ as opposed to lax vowels /a/.

III. It was found that children have higher perturbation values as compared to adults as per the theoretical expectations. This only strengthens our contention that we should have seperate normative data for children.

IV. It was found that jitter ratio was sensitive to age as its value changed across age groups.

V. It was found that shimmer (dB) was not so sensitive to age as its value was same across the three age groups unlike jitter ratio.