Pitch And Amplitude Perturbation Measures In 7 year Old Children

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Variation in pitch and amplitude is an essential aspect of-normal voice. Theses normal variations (perturbations) in the voice can be grouped into voluntary perturbations (intonational) and involuntary perturbations (Pitch and Amplitude Perturbations _ Jitter and Shimmer respectively).

These perturbations can be measured by various parameters such as Absolute Jitter, Jitter Factor Jitter Ratio, Shimmer (dB), Direction Perturbation Factors, etc.

Many researchers have studied different Pitch and Amplitude Perturbations measurements in normal and in abnormal voice and Authors generally agree that these measurements can be used for screening and diagnostic purposes of laryngeal disorders. Most of these studies have established normals for Jitter and Shimmer measurements in adult population only. It is well known that children's voice characteristics differ from that of adults because of the continuous neuromuscular maturation they undergo before puberty and the obvious morphological factors. Thus, adult data may not hold good for children in the diagnostic process. Therefore this study was aimed at:

(1) Obtaining norms for the following 6 Pitch and Amplitude Perturbation measurement in thirty 7 year old normal male children.
   (a) Jitter Ratio
   (b) Directional Perturbation Factor (for frequency)
   (c) Relative Average Pertubation (RAP 3 point)
   (d) Shimmer (in dB)
   (e) Directional Perturbation Factor (for amplitude)
   (f) Amplitude Perturbation Quotient

(2) Comparing the data obtained for 7 year old normal male children with that of adult normals.

(3) Comparing the data obtained for 7 year old normal male children with that of 8 and 10 year old normal male children.

Thirty normal 7 year old male children who had normal E.N.T. 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 to ensure stable phonation, their voice sample i.e. phonation of vowels /a/, /i/and /u/ for 5 secs each was recorded and most stable phonation of one second duration was analysed for the six chosen parameters. The data obtained was subjected to descriptive statistics such as mean, standard deviation, ANOVAand DMRT to interpret the results and the following conclusions were drawn.

1) Since thirty normal 7 year old normal male children were studied the data obtained for the six parameters can be considered as norms for this age group.
2) It was observed that children have higher Pitch and Amplitude Perturbation measurements as compared to the adults. Thus as per the theoretical expectations the Pitch and Amplitude Perturbation measurements in 7 year old children were found to be different from that of adults.
3) It was observed that Directional Perturbation Factors for frequency and Amplitude did not vary across the ages of 7,8 and 10 year old children.
4) There was a highly significant difference in Directional Shimmer across the vowels /a/, /i/ and /u/. Vowel /a/ having the highest value for the parameter.
5) There was no significant difference in Directional Shimmer across the 3 age groups 7,8,10 year old male children.