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A SCREENING PICTURE SPEECH IDENTIFICATION TEST FOR NEPALI SPEAKING CHILDREN

Aims & Objective:

The objective of the present study was to develop screening monosyllabic picture speech identification test for the children speaking Nepali language.

Material and Methods:

A prospective study was conducted in speech and hearing unit, Ganesh Man Singh Memorial Academy of ENT and Head and Neck Studies, Institute of Medicine, Maharajgunj, Kathmandu, Nepal from feb 2006 to august 2006. 30 Nepali speaking children of age group 5-6 years were chosen for the study. A list of CVC monosyllabic Nepali words were constructed in which words were selected within the vocabulary of 5 to 6 years old children. A commercial artist drew the black and white pictures of each word in consultation with the author. After construction of the material, monosyllabic words were presented through the audiometer at 40 dB. The study was conducted in a sound treated two room setup.

Results:

A picture speech identification test was constructed for assessing hearing ability of the children of age 5-6 years.

Conclusion:

At present, no test material is available for assessing speech identification in children of 5-6years age in Nepali. A picture speech identification test was constructed using phonemically balanced monosyllabic words. A criterion measurement cut-off point of 95 % was considered, to make the pass-fail decision. This test can be used to evaluate hearing ability of the children for early identification and rehabilitation.

Keywords: Monosyllabic, Speech identification test.

INTRODUCTION:

Hearing is an act of perceiving sound present in the environment. Hearing, in children is most important because the ability to develop and use oral language is closely related to their ability to process speech through hearing. Erber (1982) pointed that hearing is the avenue for communication and majority of what we learn throughout our lives, occurs through hearing and speech. The crucial role of hearing in spoken language development is indicated by the language delay observed among children with bilateral hearing loss (Lach and Ling, 1976). Therefore it is the essential duty of an audiologist to identify, evaluate and rehabilitate aurally handicapped individuals. Elliot (1963) pointed that hearing assessment through pure tones provides information regarding the sensitivity of an individual's hearing ability but not on the receptive auditory ability. Giolas and Epstein (1963) stated that speech audiometry measures listeners' understanding of speech and also gives information for planning and management of aurally handicapped.

A number of studies have been carried out towards developing pictures speech identification test in western as well as Indian scenario in different Indian languages to assess the hearing ability of the children. Abrol B.M. (1971) developed a picture speech identification test for children in Tamil. Hemalatha R. (1981) developed Picture speech Reception threshold for children in Kannada. The study was conducted for the children of age range 4-8 years using closed set 20 polysyllabic words in Kannada. Prakash (1999) developed a picture speech identification test for children in Tamil using phonemically balanced monosyllable, bisyllable and trisyllable words in closed set format. Chaudhari B.K. (2003) developed picture speech identification test for Hindi speaking children using 50 phonetic and phonemically balanced monosyllabic words in closed set format. However, to assess the children speaking Nepali, no screening picture speech identification test has been developed yet. Hence, the present study has been taken up, to fulfill the need. Thus the aim of present study is to develop a screening speech identification test in Nepali language to evaluate the hearing ability of the children for early identification and rehabilitation.

MATERIAL AND METHODS:

A prospective study was conducted in speech and hearing unit, Ganesh Man Singh Memorial Academy of ENT and Head and Neck Studies, Institute of Medicine, Maharajgunj, Kathmandu, Nepal from feb 2006

to august 2006. Prior to the study, a familiarization of the words and pictures was done in 15 subjects of age 5-6 years to determine whether the selected items were within the recognition vocabulary of the children and pictorial representations were adequate. 100 monosyllabic words were selected from the book meant for children. Each subject was tested individually during the words and picture familiarity test. The subjects were either asked to name the pictures or point to the picture named by the examiner. For speech identification test, the words were retained only if 95 percent of the children could name the picture and identify the picture correctly.

All the subjects included in study were native speakers of Nepali Language residing in urban area having normal speech and language development, within age range of 5-6 years. They had normal hearing and had no history of otological, neurological, psychological and ophthalmologic problem. After the familiarity check was done, the present study was carried out in two stages. Stage one: construction of the test material and stage two: obtaining normative data.

Stage one: Construction of test materials

The test pictures were selected after familiarization of words and pictures. Test items were selected according to the frequency of their occurrence in Nepali language. The phonemes, which were having a high frequency of occurrence, were selected and those phonemes, which were having low frequency of occurrence, were not included while constructing test materials. Out of 100 monosyllabic words, 80 words were found to be familiar to the children. Among the 80 words, 25 words were used as test items and rest were used as distracters. The pictures were arranged in 25 sets where each set consisted of 4 pictures out of which one being the target word and 3 were distracters. Either the initial or final sounds of the test item were similar to the distracters words.

Stage Two: Obtaining Normative Data

30 subjects were chosen for the present study. They met the same criteria as the subjects involved during familiarization check. These children were taken from different culture and socio- economic background. A two channel calibrated diagnostic audiometer (Elkon 3N3) was used. Study was conducted in a sound treated two-room set up. The test items were presented through earphone at 40 dB SL. Subjects were instructed to point to the appropriate picture

corresponding to the target word which they heard. Prior to test administration, puretone audiometric evaluation (attaining 20 dB HL or less at 0.5, 1, 2, 4, and 8 KHz) and familiarization of test materials was done for each subject. Three practice items (monosyllabic words) were used for a familiarization of test materials before administering the test items.

The response was recorded on a score sheet. A correct response was marked as "one" and incorrect was marked as "zero". The data obtained were subjected to statistical analysis to find out the Mean score, S.D and confidence level and to judge the pass- fail criteria. A criterion measurement cut off point of 95% was involved, to make the pass fail decision. The children falling below the criteria were suspected to have the hearing impairment and further suitable referral were made for comprehensive diagnostic evaluation.

RESULTS:

Test scores reveal that out of 30 subjects, 11 subjects got 96 % and 19 subject could score 100%. The data obtained were subjected to statistical analysis to find out the mean score, SD and confidence level and to judge the pass- fail criteria.

Tab.1: Description of Mean score, S.D and confidence level.

Presentation Level	Age	Measure		95% confidentialInterval for mean		Maximum score	Minimum score
		Mean	S.D	Lower Bound	Upper Bound		
40 dB SL	5-6 Yrs.	24.6333	0.49013	24.4503	24.8164	25	24

Table 1 shows description of mean score, S.D and confidence level. The above table explains about the total mean scores, S.D., and confidence level for all subjects. The total mean score was found to be 24.6333 and S.D. was 0.4901. A 95% confidence interval for mean was found and under that the lower bound was 24.4503 and upper bound was 24.8164. In the scores obtained from all the subjects, the minimum score obtained was 24 where as maximum score was 25.

Tab.2: Comparison of score between Males and Females.

	Score	Sex		Total
		Male	Female	
	24(96%)	4(26.7 %)	7(46.7%)	11(37.7%)
	25(100%)	11(73.3%)	8(53.3%)	19(63.3%)
Total		15(100.0%)	15(100.0%)	30(100.0%)

Table 2 shows comparison of score between males and females. P= .256 NS (not significant). Table 2 also explains gender wise comparison of scores obtained from the total of 30 subjects (15 males, and 15 females). Among the 30 subjects, 11 (36.7%) scored 24 which represent 96% scores and 19 (63.3%) have the total scores of 25 which represents 100% scores. Among 15 males, 4(26.7%) males got 24/25 score and 11(73.3%) could score 25/25, where as among female group, 7 females (46.7%) scored 24/25 and 8(53.3%) could score 25/25. Overall data reveal that even though the number of male subjects scoring 25/25 was more than the female group, this difference was not statistically significant (p>0.05).

DISCUSSION:

The results of picture speech identification test show that the normal hearing children of age range 5-6 years obtained 95% correct response on the PB monosyllabic test stimuli. The children obtaining scores below the cut-off criteria were further evaluated for suspected hearing

loss. Therefore, the developed monosyllabic material can be used for speech identification for Nepali speaking children with the age range of 5 to 6 years for hearing screening purposes. The test materials can also be used for auditory training or prescribing the amplification devices as well.

CONCLUSION:

Speech identification test is a challenging part of audiological test battery. By assessing speech identification ability, we'll be able to obtain valuable information about child's use of audition. The present study appears to be a potentially valuable clinical tool in pediatric audiology. Therefore, it should be routinely included in pediatric audiological evaluation.

Recommendation: The screening test should be standardized on a large population, clinical validation of the screening test should be done. We can include more tests and can develop a diagnostic test in future.

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