Original Article

Development of Oral Expression Scale in Hindi for Children of Age Range 3–7 Years

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Abstract

Introduction: Oral expression pertains to the use of words and includes the ability to formulate and produce words and sentences with appropriate vocabulary, grammar, and application of conversational rules. Children's oral expression skills are essential for their learning and academic success. **Materials and Methods:** This study is aimed to develop a test for measuring the oral expression skills among native Hindi speaking children between the ages of 3–7 years and to establish normative for the same. The Oral expression comprised three subtests, namely Vocabulary, Pragmatic, and Syntax, each subtest containing 20 stimulus items, respectively. **Results:** For establishing the normative, 120 native Hindi speaking participants were selected and divided into four age groups of 1-year age interval. Each group comprised 30 participants including males and females. The results indicated that there is a significant difference in the mean scores obtained across the age groups, along with a trend of increase in score with an increase in age. Moreover, a strong positive correlation between the test and retest trials, indicated that the Oral Expression Scale can yield similar results across contexts, independent of clinic and test administrator, thus establishing it as a reliable tool for the assessment of oral expression. **Conclusion:** To conclude, the Oral Expression Scale is an efficient and reliable tool that can be used with native Hindi speakers. It may also be included as a part of test battery for evaluating oral expression skills among individuals with expression deficits like specific language impairment, attention deficit hyperactivity disorder, and Autism.

Keywords: Assessment, comprehension, oral expression, pragmatic, syntax, vocabulary

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Introduction

Verbal and nonverbal are the two domains for communication. Moreover, verbal or oral is the primary means of linguistic expression. According to Lindfors oral language is a complex system that relates sounds to meanings, is made up of three components as follows: the phonological, semantic, and syntactic.[1] In fact, it is the primary mediator of culture, the way in which children locate themselves in the world, and define themselves with it and within it.[2] The development of oral language is an on-going natural learning process. In the early age, children observe oral communication in many contexts including home, preschool, prekindergarten, and begin to develop concepts about its purposes.[3]

The development of oral language enables a child to effectively communicate their thoughts and viewpoints with others. Therefore, the development of oral language skills in kindergarten is an integral part of the daily curriculum.[4] Assessment of children's language skills includes an evaluation of oral expression skills because they are important for both normal language development and successful participation in a formal educational system. There are numerous tools available to measure expressive skills.[5]

India has 23 official languages and several more dialects. Hindi is spoken by 41% of the people as their first language and another 10% of people can speak it as their second language.[6] Although a few studies have been undertaken and published in the area of oral expression, nor do we have any standard tool to measure oral expression in our country, and particularly so in regional languages, like Hindi. However, taking into consideration the linguistic distinctiveness between the two languages, namely Hindi and English, the task of transadapting

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the tests developed in English across the western countries and administering across our population is difficult. Thus, there is a need to develop language-specific test materials. The present study is an attempt to fill up such a gap.

Research studies have also suggested that children from different language backgrounds experience language differently depending on the nature of language. Therefore, the result of the test of one language cannot be generalized over other language as it will be misleading. Hence, the test of oral expression scale constructed in English cannot be used in children who have Hindi as a native language. Hence, it is critical to develop and adapt a test of oral expression in Hindi for determining expressive language competency in Hindi speaking children.[7]

Materials and Methods

The participants of this study comprised 120 normal Hindi speaking children aged 3–7 years randomly selected from the population of native Hindi speakers attending kindergarten, play school, or normal regular school who had no clinically relevant developmental/medical condition, hearing problem, and any history of ear discharge/ear infection, or speech and language delay. Total six schools were visited in and around Kolkata, West Bengal, India. The participants were divided into four experimental groups comprising 30 participants each. The four age groups categories are Group I-Between 3.1 and 4 years, Group II-Between 4.1 and 5 years, Group III-Between 5.1 and 6 years, and Group IV-Between 6.1 and 7 years.

The test was developed based on the Oral and Written Language Scale.[8] The development of test stimulus began with random sampling of 100 words from Hindi literature books prescribed by Central Board of Secondary Education for use in kindergarten and Grade I. The words were given to 30 Hindi teachers to rate for familiarity. A three-point rating scale was used to rate words as unfamiliar (0), familiar (1), or very familiar (2). The words rated under the familiar and very familiar category were selected for further statistical analysis. Those words in which no statistically significant difference (Chi-square test, $P > 0.05$) was found were selected for the final study. Out of the obtained list of words, a total of 60 words were randomly selected using random table for inclusion in the final list. The obtained sample of 60 words was again sampled to include 20 words in each of the three categories (subtest) of spoken language which checks different aspects of verbal expression skills in children, namely lexical (vocabulary), syntactic (grammar), and pragmatic (function) structure of language. Out of the 20 words in each category, 40 sentences were constructed. The 120 sentences were given to two linguists for construct validity. A two-point rating scale was used to rate the sentences as “0” indicating rejected and “1” indicating accepted. The sentences in which no significant difference was obtained were included in the final list. Out of the sentences in the final list, a total of 60 sentences (20 sentences for each subtest) were randomly selected using the random table. After the development of stimulus items, two simple and clean line drawing pictures were created. While designing the pictures; culture, sex, and age and race biases were avoided wherever possible.

The two simple and clean-lined drawing pictures that were created corresponded to each test stimulus item-one depicting the item itself (right side of the plate), another corresponding to a contrasting grammatical construction. The picture plates were arranged in a random order so that the correct answers were distributed on the right side of the plates.

Administration of the developed test was done by giving the following instructions to each participant:

In Hindi (IPA):

mě aːpkoː kʊʧʰ ʧɪt̪t̪rə d̪eːkʰaʊŋgaː. ya t̪o aːp ʊs ʧɪt̪t̪rə ko d̪eːkʰkɔr ek vaːkyə bolẽge yaː pʰir əpne iʧʰaː / mɔn se ek vaːkyə bolẽge / əb aːp is ʧɪt̪t̪rə ko d̪eːkʰkɔr ek vaːkyə bolne ki koʃiʃ karẽ / əb aːp is ʧɪt̪t̪rə ko d̪eːkʰiye / mən is ʧɪt̪t̪rə ke bare mě kʊʧʰ boːluŋgaː pʰir main apse iske bare mě kʊʧʰ pʊʧʰʊŋgaː / ʧɔliye ɔb suru kaːrte hæːẽ:

In English: I will show you some pictures. You will make a sentence by looking at a picture or you will make a sentence on your own. Now, you see the picture and try to say a sentence or try to say a sentence on your own.

Before administration of the proper test, each participant was introduced with one practice stimulus. This was done to familiarize the subject with the test requirements and to ensure that each subject understood the task. The test materials were presented auditorily at a normal conversational rate of speech using normal intonation. The participants were asked to correctly respond using appropriate word or sentences. No gestural responses from the participants were accepted. The test was administered individually by the Speech Language Pathologist. At the beginning of each subtest, prompting was used to introduce each stimulus item. The responses were considered as incorrect after the participants reported an inability to answer even after permission to guess was granted by the clinician.

Correct answers were scored as 2 and incorrect answers as 0 if the responses were emergent (corrected with prompt) it was scored as 1. The test stimuli were once again repeated for testing participants aged <5 years of age if no response was obtained within 10 s. If participants still did not respond, 0 was entered in the examiner record booklet. The reliability of the developed test was examined by measuring the test-retest reliability. Three out of the 30 participants of each group were randomly selected and were retested after 2 weeks.

Results and Discussion

Descriptive statistics of age in each age group of all the participants were chosen for the present study (mean standard deviation [SD], minimum value, and maximum value). All the participants’ mean age of each group are given in Table 1. Statistical analysis includes one-way analysis of variance (ANOVA) for equality of means was performed to determine

homogeneity between groups against nonhomogeneity for each domain across different age groups, i.e., in the scores of vocabulary, pragmatics, and syntax. Further, *post hoc* analysis was also performed to observe if there was any difference between age groups observed if any for each domain. Results of the present study mentioned under following subheading (Performance in Vocabulary scores; Performance in Pragmatic Scores; and Performance in Syntax scores).

Performance in "Vocabulary" scores across the four age groups:

In case of vocabulary tasks, the obtained mean (SD) scores were 35.96 (1.27) for Group-I, 37.45 (0.68) for Group-II, 40 (0) for Group-III, and 40 (0) for Group-IV. Inferential graphical statistics has been used for each age group which is shown in Figure 1. Furthermore, it also depicts how the performance of the participants varies with the increase in the age from 3 to 7 years. Maximum obtainable score for vocabulary task is 40.

Further one-way ANOVA clearly depicted that at $\alpha = 0.05$ level of significance (95% confidence level) across all the age groups as the calculated F value (393.2) was greater than tabulated F value (3.23) and the $P < 0.05$ ($P = 0.001$). Hence, the conclusion can be drawn that, there is a significant difference in the mean scores of "Vocabulary" across all the four age groups. *Post hoc* analysis revealed that there is a hierarchical increase in score in the attainment of vocabulary score with an increase in age. The test statistics are summarized in Table 2.

The production of the first word generally occurs around the child's first birthday; however, it may appear as early as 8 months or as late as 16 months without indicating serious concern.[9] By this time, children have already been exposed to a great deal of language and possess a receptive vocabulary of about 50 words.[10] Once vocabulary learning begins, progress is slow and measured. However, by 18 months of age productive vocabularies typically expand to about 50 words.

Many researchers have reported that at 1 year, babies typically have only a few words, but by 2 years of age they generally have between 200 and 500 words.[11] Although they initially learn new words slowly, over this 2nd year of life, they begin to learn them more quickly.[9]

Performance in "Pragmatic" scores across the four age groups:

The Pragmatic scores obtained from the random samples have been summarized as mean (SD) scores were 23.46 (2.28) for Group-I, 29.63 (1.18) for Group-II, 38.16 (0.91) for Group-III, and 40 (0) for Group-IV. Graphical statistics for each age group is shown in Figure 2, which also depicts the variation in performance of the participants across the age.

ANOVA was performed to check across age group differences for pragmatic scores. Results shows at $\alpha = 0.05$ level of significance (95% confidence level), since the calculated F value (1244) was greater than tabulated F value (3.23) and the $P < 0.05$ ($P = 0.001$). Hence, the conclusion may be drawn that, there is a significant difference in the mean scores of "Pragmatic" across all the four age groups. *Post hoc* analysis showed that there is a trend of increase in obtained "Pragmatic" score across the age. The test statistics of pragmatic scores are summarized in Table 2.

Studies on children's pragmatic development are recognized as part of their development sequence. Pragmatic language increases with age and experience. The overall effect of the normal development of pragmatic language skills is reflected in the individual's increasing ability to communicate effectively with peers and adults across various contexts and in developing reciprocal relationships.[12]

The process of acquisition of pragmatic skills has been documented by several studies. By the age of 4 or 5 years, the child can play language games, for example, rhyming and double meaning. They can understand commands; "watch your hand" when the child is cutting with scissors is correctly interpreted as "be careful." The 4–6 years old child can construct and use adult type sentences.[13]

Table 1: Demographic data of age of different group

Group	Age (month)	Mean (month)	SD	Minimum value	Maximum value
I	36-48	43.4	1.42	37	48
II	49-60	55.3	1.65	50	59
III	61-72	68.7	1.23	62	70
IV	73-84	82.1	1.31	74	84

SD: Standard deviation

Table 2: Outcome of analyses of variance and *post hoc* analysis or "vocabulary, pragmatic, and syntax" scores

	Calculated value of *F*	Tabulated value of *F*	Significance level	*Post hoc* analysis
Vocabulary	393.2	3.230795	0.05	I < II II < III III < IV
Pragmatic	1244	3.230795	0.05	I < II II < III III < IV
Syntax	2880	3.230795	0.05	I < II II < III III < IV

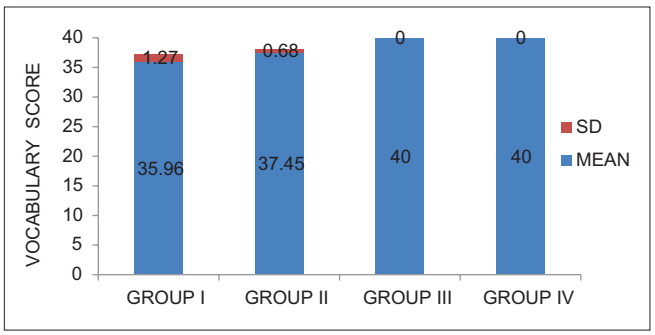

Figure 1: "Vocabulary" scores across the age range

Performance in "Syntax" scores across the four age groups:

Syntax mean (SD) scores were 15.60 (1.03) for Group-I, 21.73 (0.73) for Group-II, 34.16 (1.17) for Group-III, and 39 (1.01) for Group-IV. To summarize the scores obtained by the participants and to observe the trend across the age, inferential graphical statistics was used for each age group and is presented in Figure 3.

ANOVA clearly depicted that at $\alpha = 0.05$ level of significance (95% confidence level), since the calculated F value (2880) was greater than tabulated F value (3.23) and the value of $P < 0.05$ ($P = 0.001$). Hence, it may be concluded that there is a significant difference in the mean scores of "Syntax" across all the four groups. *Post hoc* analysis clearly revealed that with an increase in age there is an increase in obtained score of "Syntax." The test statistics are summarized in Table 2.

A lot number of studies have been reported in the literature on how children acquire syntax and which supports the findings of the present study. Developmentally adult-like sentences begin to appear during Stage III of Brown's Language Development Stages with more complex sentence construction occurring in Stage IV and beyond. Syntactic development begins to appear toward the end of 3 years when embedded sentence elements appear and mean length of utterance (MLU) is 3.0–3.75, along while joining clauses begins at 4 years of age, when MLU is 3.75–4.5. Refining of all language developmental components occurs beyond the age of 5 years till around 7 years of age, when the MLU is 4.5.[14]

Hence from the study, it reveals that as the child develops there is significantly a change in the acquisition of language and finally the child masters the rules of language.

It may thus be stated that with an increase in age there is an increase in the expression skills in each of the three parameters, namely "Vocabulary," "Pragmatic," and "Syntax." The graph depicting the mean scores in each of the parameters across the age range is shown in Figure 4.

Figure 4 indicates that in the present study a particular pattern of development of Oral Expression skill has been observed. During the initial years of language development (Group I to Group II), there is a trend of increase in expression skills of "Vocabulary" as compared to that of "Pragmatic" and "Syntax." However, this trend is almost similar during the later years (Group III to Group IV).

Test-retest analysis

A test cannot be considered reliable unless test and retest scores for the same individual has been shown not to be significantly different from one another.[15] The mean test-retest scores were 23 and 23.46 for Group-I; 31 and 29.63 for Group-II; 37.67 and 38.16 for Group-III and finally 40 and 40 for Group-IV. The summary of the scores obtained during the test and retest trials have been depicted through inferential graphical statistics. The histogram of the overall means scores across the age groups for test and retest trials are depicted in Figure 5.

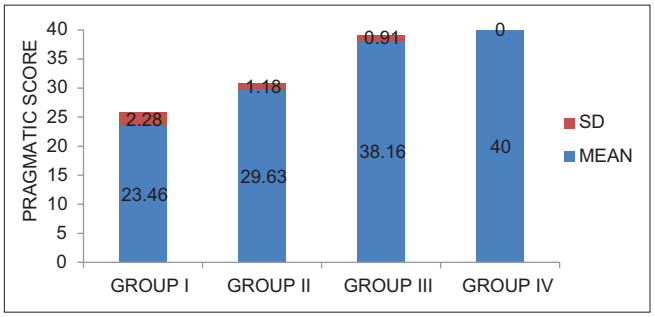

Figure 2: "Pragmatic" scores across the age range 3–7 years

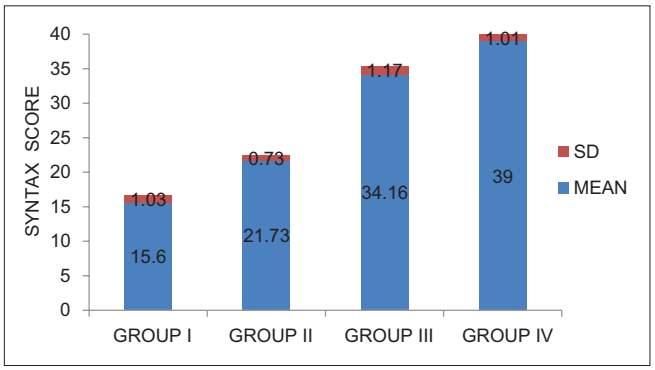

Figure 3: "Syntax" scores across the age range 3–7 years

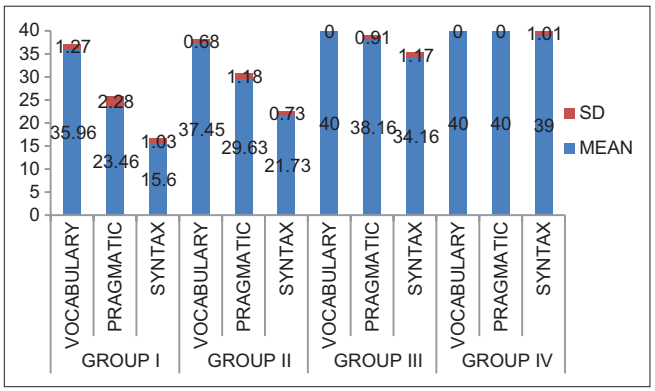

Figure 4: Mean scores of "Vocabulary," "Pragmatic," and "Syntax" across the four age groups

An important observation that has been made from Figure 5 is that during both the test and the retest trials, there is a trend of an increase in score with an increase in age.

"Paired t-test" was performed to find out if there is any significant difference between the test and retest scores obtained from the 12 representative participants (three from each age group chosen randomly) from the population after 2 weeks. The test-retest results and the correlation between the same are summarized in Table 3.

Table 3 clearly depicted that at $\alpha = 0.05$ level of significance (95% confidence level), since $P > 0.05$ indicating that there is no significant difference between the scores obtained in the test and retest trials. Moreover, a correlation coefficient (r) of 0.99 also indicated that there is a very strong positive correlation

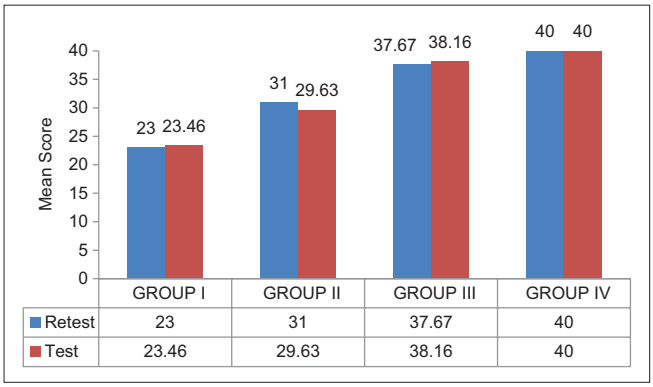

Figure 5: Mean test-retest scores

Table 3: "Paired *t*-test" and "correlation" for "test-retest" scores

Pair	*t*	df	*P*	Correlation	Interpretation
Test-retest score	0.000	6	0.638	0.99	μT = μRT

between the test and retest trials. It is thus inferred that there is a consistency in performance of the same subject across a second administration of the test material.

Conclusion

The present study aimed to develop a test for measuring Oral Expression skills among Hindi speaking children between the ages of 3–7 years and to establish normative for the same.

This test comprised three subtests, which also represent the important domain of oral expression of language, namely Vocabulary, Pragmatic, and Syntax.

To accomplish this, 120 participants between 3 and 7 years were divided into four age groups of 1 year interval. Each group comprised 30 participants. The results indicated that in all the three subtests, there is a significant difference in the mean scores obtained across the age groups, along with a trend of increase in score with increase in the age range

During the retest session, data of 12 participants were compared to the data obtained 2 weeks before find out if there is any significant difference between the tests and retest scores. The results showed that there is a strong positive correlation between the test and retest trials, which states that this test will provide similar results across contexts, independent of clinic and test administrator.

Thus, to conclude, the Oral Expression Scale in Hindi is an efficient, reliable tool to be used among native Hindi speakers between the age ranges of 3–7 years. It may also be included as a part of test battery for evaluating Oral Expression skills among individuals with expression deficits such as SLI, ADHD, and Autism, and thereby helping in planning management strategies during therapeutic sessions.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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