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Pre-reading Skills in Hindi Speaking Children between 3 to 6 Years

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Abstract

The pre reading skills are considered as good predictors of later reading achievement. In western culture there has been enough support for the fact that pre reading skills are considered as good predictors of later reading achievement. There is paucity of research in Indian literature to support the fact. Since assessing pre reading skills of children at risk will help in early detection and intervention there is need to describe and assess pre reading skills in children. The present study was designed with the aim to explore the pre reading skills in Hindi speaking children between 3 to 6 years of age. 80 Hindi speaking typically developing children, attending normal Hindi medium school were selected on the basis of inclusion criteria. Statistical analysis using SPSS software version 16 was done. Mean and standard deviation were obtained. MANOVA was carried out to compare the age groups. The findings suggested that there was a statistically significant age related difference on pre reading skills. Significant improvement was seen ($p<0.01$) on skills like listening comprehension, memory, literacy skills, reading and writing. The study has an important impact in Indian context since the materials available in assessing pre reading skills are sparse in general. This can also be used as a measure of child's progress following intervention. Validation of this tool can be done on clinical population.

Keywords: Pre reading, listening comprehension, memory, literacy skills, reading, writing.

Introduction

Reading is a complex process which involves multiple skills like alphabet identification, alphabet recall, visual discrimination, phoneme grapheme correspondence, orthographic knowledge, reading comprehension etc. It's a continuous process in which an individual learns to master these skills from early childhood through the adulthood. Chall (1983) has outlined a six

stage framework, describing pre-reading as the initial stage which include oral language development and literacy awareness, followed by the second stage of learning to read, where a child starts to use letter sound associations to read words. A child extends his/her early reading skills and uses them with accessible texts. Later, children are said to be reading to learn, in order to gain information and extend their vocabulary. Children start reading using multiple viewpoints and are able to analyze what they have read and react critically towards it. The final stage includes construction and reconstruction, where people read selectively and form opinions about what they have read.

As we know, being able to read is vital to educational achievement as it provides children with the skill to understand and enjoy a wide range of subjects both within and out of school. Beyond school, it plays an important role in our everyday lives, determining the choices available for work and further education. Thus, it is essential that we understand the processes that lead to successful reading comprehension and the ways in which these processes can be developed in young children.

There have been enormous amount of research done to find out the early predictors for later reading failures in children. (Scarborough, 1989; Whitehurst & Lonigan, 1998; Whitehurst & Fischel, 2000). A good predictor of reading ability is oral language. It refers to receptive skills as well as expressive abilities which include arranging words together in order to form grammatically correct phrases and sentences (Landry, Smith & Swank 2006). Young children begin to understand that letters provide the code to reading as they develop phonological awareness and alphabet knowledge. Along with phonological awareness, print awareness, letter knowledge, writing is also an indispensable tool for learning (Graham, Gillespie & McKeown, 2013). But these predictors are mainly studied for English Language.

It has been seen that transparency plays an important role in reading development in children across languages. A highly transparent orthography is easier to detect and uses grapheme-phoneme correspondence (Zeigler & Goswami, 2005; Wimmer & Goswami, 1994). India is multilingual country and has various written languages. It includes extremely opaque English as well as transparent Hindi orthography that are used by the same group of children.

Hindi uses Devanagari writing system. It has syllable as well as alphabetic property and hence called alphasyllabary. Hindi has a transparent orthography, i.e., grapheme to phoneme mapping is largely consistent, with complex graphemic features (Bright, 1996).

Difficulty in learning to read is the frequently encountered problem in school going children. Therefore, reading is considered to be the most important and most troublesome aspect in the elementary school curriculum. It holds importance because it is a tool, the mastery of which is essential to the learning of every school subject. It is most troublesome because pupils fail in reading far more frequently than in any other elementary skills. If pre reading assessments are given to school going children, we can predict their success and failure in learning to read. It will help to identify their reading related problems. The identified children can be trained in skills which they are poor. It will ultimately help to make them successful readers.

According to Ramaa (2000) prevalence of learning disability (LD) in India ranges from 3 to 10%. The high prevalence rate of LD indicates the need for early identification and intervention based on individual performances.

The tests available in India do not assess all the pre reading skills for children below 6 years of age. Presently, there is no assessment tool for measuring reading related skills in Hindi in preschool children to the best of the researcher's knowledge. Various researches support targeting emergent literacy skills in preschool and young elementary school students as a means of impacting subsequent reading development (Bradley & Bryant, 1985; Anjana, 2002; Yeh, 2003; Justice, Chow, Capellini, Flanigan & Colton, 2003; Bailet, Repper, Murphy, Piasta & Zettler-greeley, 2013). Since assessing pre reading skills of children at risk will help in early detection and intervention there is need to describe and assess pre reading skills in children.

To sum up, in a multilingual country like India, the availability of a variety of tools in different languages will help the speech language pathologist to obtain the complete profile of reading disabled. Reading development happens parallel to child's development of expressive language and cognition, these skills become early predictors of later language based reading

difficulty. So there is need to check the developmental trend of reading skills as efficiently and as early as possible so that early intervention can be provided.

Method

Development of Tool

An assessment tool was prepared to elicit systematic information on pre reading skills from typically developing children between 3 to 6 years of age. The items in tool developed in the present study were carefully prepared, keeping the age of children in mind. The items were also constructed after a detailed review of already existed material in Western as well as Indian literature. The familiarity check was done by 2 parents of each age group, 3 teachers of respective class and 2 speech language pathologists. The tool consists of 6 domains:

I. Listening Comprehension
II. Memory
III. Literacy Skills
IV. Phonological awareness
V. Reading
VI. Writing

Inclusion Criteria

1 Participants with age range between 3 to 6 years will be selected

2 Participants with both genders will be included

3 Participants with mother tongue Hindi and who are going to Hindi medium school will be considered for the study.

4 Participants with no hearing problem tested on four frequencies (500 Hz, 1 KHz, 2 KHz and 4 KHz) generated by audacity will be included.

5 Participants with no vision problem tested on Snellen's chart will be included.

6 Participants with no reported neurological and psychological deficits will be included.

7 Participants with parental education of higher secondary school will be included.

Administration of Pilot Study

As a preliminary trial of the test material and in order to get familiarized with the test administration, a pilot study was conducted. Pilot study was performed on 12 participants between age ranges 3 to 6 years who fulfilled the inclusion criteria and were not included in the final sample. Inter item correlation was performed. Items were deleted depending on their correlation with that of total score. Cronbach's alpha coefficient was found to be (r = 0.97) suggests a good internal consistency. Care was taken to see that test items were placed in hierarchial order of increasing performance difficulty according to chronological age of children. The easier items were placed at the beginning.

Administration of the Developed Tool to Typically Developing Children and Obtaining Appropriate Scores for Age Groups

Participants

80 typically developing children from 3 to 6 years were included in the study. All the participants were divided into three age groups as shown in table 1. Children were attending L.K.G, U.K.G & I standard.

Table 1: Shows distribution of participants & mean age of participants across group

Groups	I (> 3 ≤ 4 years)	II (> 4 ≤ 5 years)	III (> 5 ≤ 6 years)
No. of participants	25	28	27
Mean age	3.6	4.55	5.85

Test Environment

The assessment and administration was done in a quiet and well lit room. Each child was seated comfortably on a chair or a bench. The tester sat next to the child in order to avoid visual cues. Testing was done for one child at a time in order to prevent distraction due to the presence of other children.

Test Protocol

School authorities were provided with a letter seeking permission in order to perform the study. Prior to the administration of the test, screening for speech, language, behavioral and hearing problems was done. Demographic details of child along with information about their

parents' education and profession were noted. After passing the inclusion criteria, the child was seated comfortably on a chair for the administration of pre reading assessment tool. To maintain the consistency in administration, the instructions were read out from the booklet to the participant. The duration of administration was 45 minutes, depending on the motivation and cooperation of the child. The audio and video recording of the sessions were carried out while administering the test. The activities were not time bound. Each participant was given enough time to respond. The instructions were repeated twice if required. When the correct response was obtained, verbal reinforcement was given to maintain motivation level.

Results and Discussion

The main focus of this study was to explore the effect of age on pre reading abilities in Hindi speaking children. To fulfill this aim, the assessment tool was designed to elicit systematic information based on skills present in typically developing preschool children.

MANOVA was done to determine whether difference between total scores were statistically significant across age on pre reading domains. As shown in table 2 overall multivariate test results revealed that there is a statistically significant difference for age [F (12,144) = 17.73, ($p<0.01$)].

Table 2: Multivariate Test Results of pre reading skills across age groups

Age	Wilk's Lambda	F	Hypothesis df	Error df	Sig
		17.73	12	144	0.00**

**Significance at 0.01 levels.

The descriptive statistics (mean & standard deviation) are shown in graph for scores obtained by participants across each domain. The values are provided in table 3.

Table 3: Mean and SD values across age for each domain

Variable	Group I	Group II	Group III
Listening Comprehension			
Mean	17.64	27.81	39.63
SD	9.08	10.80	2.33
Memory			
Mean	10.08	13.33	17.44
SD	3.88	4.36	2.83
Literacy Skills			
Mean	11.44	13.56	19.59
SD	3.56	3.40	1.27
Phonological Awareness			
Mean	6.36	23.41	58.96
SD	9.04	16.50	10.70
Reading			
Mean	1.72	7.11	34.81
SD	2.44	8.14	12.80
Writing			
Mean	7.84	19.96	62.93
SD	8.69	14.37	15.20

Results of Domain I (Listening Comprehension)

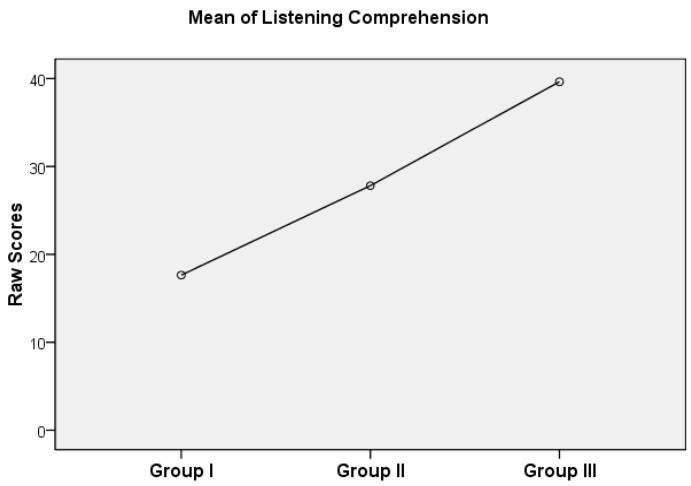

Figure1: Mean score for Listening Comprehension across groups

As shown in figure 1, the listening comprehension scores for participants were 17.64, 27.81 and 39.63. Overall the graph is showing rising pattern and means scores are increasing as age increases. To see whether the difference is significant across age groups MANOVA was carried out. The results showed that there was significant increase in scores obtained by participants as age advances {F (2) = 46.44, (p< 0.01)}.The post hoc test was carried out to see the difference within groups.

Table 4: Results of Gabriel post hoc across age group for Listening Comprehension

Listening comprehension	Group I	Group II	Group III
Group I			
Group II	0.00**		
Group III	0.00**	0.00**	

** Significance at 0.01 levels

As shown in table 4, the significant difference could be because; as the age increases their listening skills improve which lead to better auditory discrimination. Children are introduced to reading and understanding of concepts of Hindi alphabets in kindergarten and first grade. Thus lead to a better performance on listening comprehension task in age range of 5 to 6 years. On similar lines, study by Kuppuraj and Shanbal (2010) reported that children attained maximum score for auditory discrimination by 6-7 years of age. Better performance on auditory discrimination of words is seen in 5-6 years of children than younger age group by Shah (2010).

Results of Domain II (Memory)

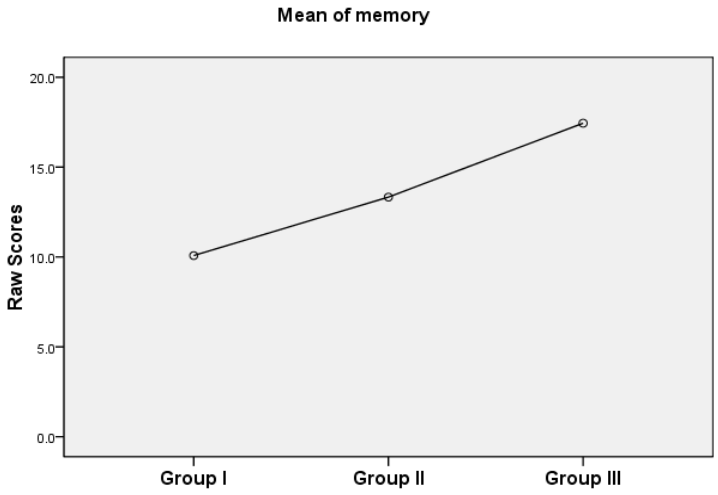

Figure 2: Mean score for Memory across groups.

As shown in figure 2 the mean scores of participants were 10.08, 13.33 and 17.44 Overall the graph is showing rising pattern and means scores are increasing as age increases. To see whether the difference is significant across age groups MANOVA was carried out. The results showed that the difference was statistically significant and there was increase in performance of participants as age advances {F (2) = 25.29, (p< 0.01)}.The post hoc test was carried out to see the difference within groups.

Table 5: Results of Gabriel post hoc across age group for Memory

Memory	Group I	Group II	Group III
Group I			
Group II	0.00*		
Group III	0.00**	0.00**	

**Significance at 0.01 levels.

Table 5 shows that the Gabriel post hoc results were significant between all age groups across memory section of the test. This analysis reveals that the performance on memory task becomes better with age.

It has been suggested that remembering becomes easier in children with age because control processes become more automatic through repeated use (Gathercole, 1998). Analysis of results of present study reveals that there was a developmental progression in the performance of children on verbal memory task. One explanation for relatively good performance from older children can be in support of the research findings on rehearsal strategies (Chi, 1977).

Results of Domain III (Literacy Skills)

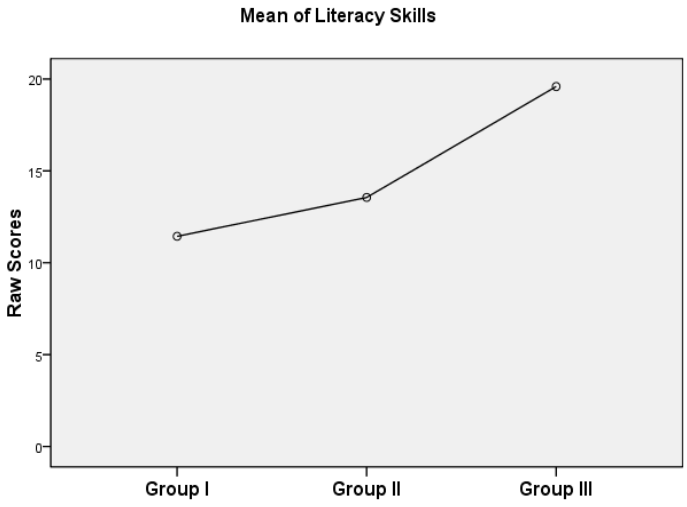

Figure3: Mean score for Literacy Skills across groups.

As shown in figure 3, the mean scores of participants were 11.44, 13.56 and 19.59 Overall the graph is showing rising pattern and means scores are increasing as age increases. To see whether the difference is significant across age groups MANOVA was carried out. The results of MANOVA indicate there was a significant incline in scores obtained by participants as age advances {F (2) = 55.32, (p< 0.01)}.The post hoc test was carried out to see the difference within groups.

Table 6: Results of Gabriel post hoc across age group for Literacy Skills

Literacy Skills	Group I	Group II	Group III
Group I			
Group II	0.03*		
Group III	0.00**	0.00**	

**Significance at 0.01 levels.

Table 6 shows that the Gabriel post hoc analysis was significant between all age groups across literacy skills section of the test. The better performance was seen in 6 years old children. This could be because the behaviors related to a child's physical manipulation or handling of books, such as page turning, left to right directionality concept of letter reading are still emerging in lower age group children and become better with increases in age. Similar results have been observed by Chall (1983) and Tompkins (2010). The findings of present study also reveal that the performance is seen to improve on print awareness task with increases in age. In Indian context, similar findings have been observed by Jagdish (1991) who studied logographic reading skills in preschoolers in the age range of 3-4.6 years. She has also concluded that the print awareness was seen to be improved with age.

Results of Phonological Awareness

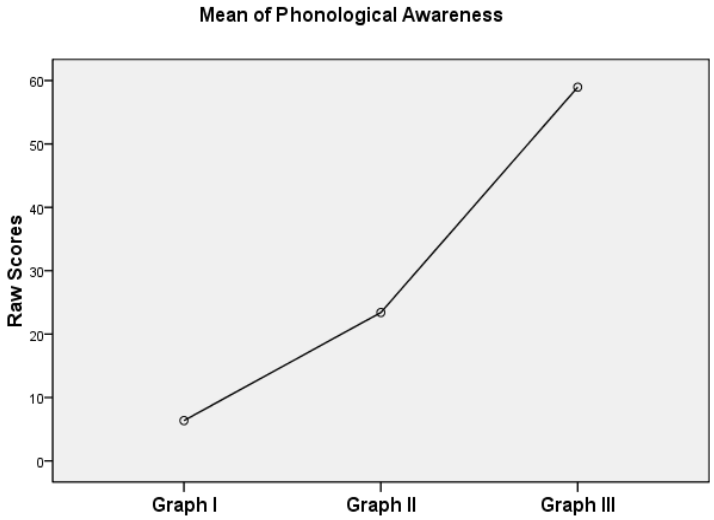

Figure 4: Mean score for Phonological Awareness across groups.

As shown in figure 4, the mean scores of participants were 6.36, 23.41 and 58.96 Overall the graph is showing rising pattern and means scores are increasing as age increases. To see whether the difference is significant across age groups MANOVA was carried out. The results of MANOVA indicate there was a significant incline in scores obtained by participants as age advances {F (2) = 119.44, (p< 0.01)}.The post hoc test was carried out to see the difference within groups.

Table 7: Results of Gabriel post hoc across age group for Phonological Awareness

Phonological Awareness	Group I	Group II	Group III
Group I			
Group II	0.00**		
Group III	0.00**	0.00**	

**Significance at 0.01 levels.

Table 7 shows that the Gabriel post hoc analysis was significant between all age groups across PA (matching initial letter) section of the test. Children in age range of 4-5 years scored better than 3-4 years old. Maximum scores were achieved by children in age of 5-6 years. The

significant difference could be because by the age of 5 or 6 years the children start developing phoneme grapheme correspondence and they start doing activities in school like writing words with same letters which lead to better performance in this age group. In Indian context, Shilpashree (2004), Ravindra (2007) and Virginia (2014) have also found that phonological awareness skills does not develop at once but emerges gradually as children matures and improves with grade.

However, it was found that for activities like rhyme identification even children in 5-6 years of age did not achieve maximum score. This indicates that the process is still developing and development continues beyond 6 years of age. Comparison of the result of the present study in terms of rhyme identification tasks with the studies reported in the literature on English speaking children (Adams, Foorman, Lundberg, and Beeler 1998) indicates that children participating in the present study acquire rhyme level skills later than the ones reported in the West.

Results of Reading

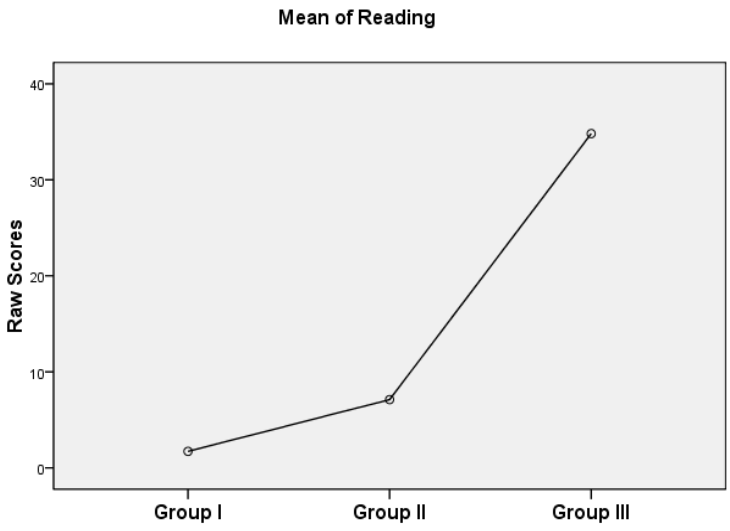

Figure 5: Mean score for Reading across groups.

As shown in figure 5, the mean scores of participants were 1.72, 7.11 and 34.81. Overall the graph is showing rising pattern and means scores are increasing as age increases. To see whether the difference is significant across age groups MANOVA was carried out. The results of MANOVA indicate there was a significant incline in scores obtained by participants as age advances {F (2) = 102.62, (p< 0.01)}.The post hoc test was carried out to see the difference within groups.

Table 8: Results of Gabriel post hoc across age group for Reading

Reading	Group I	Group II	Group III
Group I			
Group II	0.09		
Group III	0.00**	0.00**	

**Significance at 0.01 levels.

Table 8 shows that the Gabriel post hoc analysis was significant between all age groups across reading section of the test except group I & group II. The lower age could not perform the task. The difference could be because these children were still in the process of combining letters or phoneme stings to form words for meaning. Minimal improvement was seen in the next group (4-5 years age). However, much better performance was observed in children between age group of 5-6 years. The findings of present study indicated improvement in performance of children from 3 to 6 years of age. By 5 to 6 years of age children have understanding that letters combine to form words and they can be read. Hence, children start reading by 5-6 years of age and may continue to do so in further years. Similar results have been supported by Tilstra, McMaster, Van den Broek, Kendeou and Rapp, (2009) who found that children in very younger group could not perform adequately on reading tasks. Tompkins (2010) have also found that by the end of 6 years of age child understand word, letter sound & sentences , however the fluency in reading keeps on developing with increase in age.

Results of Writing

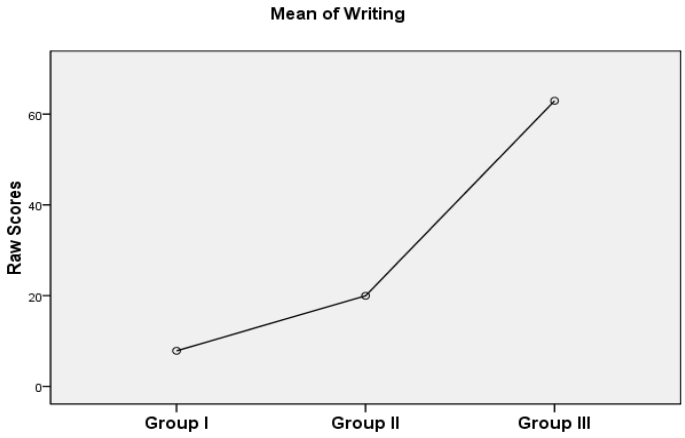

Figure 6: Mean score for Writing across groups.

As shown in figure, 6 the mean scores of participants were 7.84, 19.96 and 62.93. The graph is showing rising pattern. To see whether the difference is significant across age groups MANOVA was carried out. The results of MANOVA indicate there was a significant incline in scores obtained by participants as age advances {F (2) = 127.28, (p< 0.01)}.The post hoc test was carried out to see the difference within groups.

Table 9: Results of Gabriel post hoc across age group for Writing

Writing	Group I	Group II	Group III
Group I			
Group II	0.00**		
Group III	0.00**	0.00**	

**Significance at 0.01 levels.

Table 9 shows that the Gabriel post hoc analysis was significant between all age groups across writing section of the test. In present study, there was minimal improvement noted in older age groups of 4-5 and 5-6 years. It was also observed that children even between age group of 5-6 years could not achieve the maximum attainable score. This is in agreement with the study

done by Yashodha (1994) who stated that writing skills begin to emerge at the age of 3-4 years with the copying and gradually with increase in age other skills e.g. writing to dictation, sentence completion are acquired.

To summarize, it was found that there was a statistically significant age related difference on the performance of various pre reading skills. As age advanced the performance of children on all domains of pre reading increased. The skills like rhyme identification (phonological awareness) and some memory skills were found to be most difficult. Even the children in age range of 5 to 6 years could not obtain near maximum scores. It can be interpreted that these skills are still developing. Hence we can infer that all these domains are important to study and assess the developing trend in pre reading skills in children with mother tongue Hindi across the age range of 3-6 years. Since the participants included in the present study were not enough to make a conclusive statement, further studies should be carried out to see the developmental progression of pre reading skills in typically developing Hindi speaking children.

Conclusion

It has been found in literature that the pre reading skills are considered as good predictors of later reading achievement (Lonigan, Burges, Anthony & Baker, 1998; Pre, Konen, Hasselhorn & Krajewski, 2014). In order to avoid reading problems in later stage, one needs to assess pre reading skills. Early identification of these skills will help in early intervention. In present study significant improvement in performance was seen with increase in age. Maximum scores were obtained by children in age range of 5 to 6 years. Results have also concluded that the skills like phonological awareness, memory, reading and writing continues to develop even beyond 6 years of age. Standardization & validation of this tool can be done on larger population which will be useful in highlighting the predictors of later reading problem. This study has implications on early identification and remediation for children at risk for reading problems. The study has an important impact in Indian context since the materials available in assessing pre reading skills are sparse in general. This can also be used as a measure of child's progress following intervention. Validation of this tool can be done on clinical population like SLI, dyslexia, language based learning disabilities, children with misarticulation.

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