

**Development of Phonological Awareness in English in Marathi Speaking Children
(5 to 7 years)**

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Abstract:

Phonological awareness has been considered to be a pre requisite for development of reading in alphabetic languages like English, at least in the preschool period and found to facilitate reading in the school age.

Aim: To study the effect of gender and age on the development of phonological awareness skills in English in typically developing children with mother tongue Marathi and English as a medium of instruction in school in the age range of 5 to 7 years at 4 levels of phonological awareness i.e.: Word level, Syllable level, Rhyme level and Phoneme level.

Method: A tool for assessment of phonological awareness (Chintala, 2014) consisting of 25 tasks with 6 items each at the four levels of phonological awareness was used. 60 Marathi speaking children studying in Sr KG (>5≤6 yrs) and Std 1st (>6≤7 yrs) English medium school participated in the study.

Results: The development trend found in the children is almost similar to the development reported in the West, but not the same. Differences are found with respect to the age of acquisition of the tasks at different levels.

Conclusion: The assessment of phonological awareness skills in English, in Marathi speaking children in the age range of 5 to 7 years is different than reported in the West and hence use of separate norms for the Indian children is recommended.

Key Words: *Word level, Syllable level, Rhyme level, Phoneme level*

Introduction

Phonological awareness refers to the awareness of the sound structures in a particular language, which includes identification, isolation, discrimination and manipulation of the sounds. A majority of the researchers have described phonological awareness that involves the detection and manipulation of sounds of spoken words at three levels of sound structure, viz: syllables; onsets and rimes; phonemes (Mattingly, 1972; Goswami & Bryant, 1990; Treiman & Zukowski, 1991; Stanovich, 1992; Gillon, 2004) . Lane (2005) illustrated phonological awareness at word level in addition to the three described by other investigators.

The development of phonological awareness has been studied quite extensively in the West due to the established link between development of phonological awareness and later reading abilities, especially in the preschool and kindergarten period. Phonological awareness is considered to be a pre requisite for the development of reading, or at least facilitate the development of reading in alphabetic languages like English (Liberman, Shankweiler, and Liberman, 1989). Studies conducted on adult illiterates (Morais, Cary, Alegria, & Bertelson, 1979), and pre readers (Liberman, Shankweiler, Fischer, & Carter, 1974; Wagner & Torgesen, 1987) who show poor performance on phonological awareness tasks and more specifically tasks at phoneme level provide evidence for the view that phonological awareness may be considered as an outcome of reading instruction. Many others consider the relation between phonological awareness to be reciprocal in nature (Bradley, & Bryant, 1983; Perfetti , Beck, Bell, & Hughes, 1987; Wagner & Torgesen, 1997; Burgess, & Lonigan, 1998; Caravolas, Hulme, & Snowling, 2001; Hogan, Catts and Little, 2005).

Review of Literature

Research on English speaking monolingual children has revealed the hierarchy of acquisition to be isolation/ identification, and manipulation of words at syllable level, followed by onset and rime level and finally at phoneme level (Adams, 1990). Similar hierarchy is reported in other languages like Spanish (Denton, Hasbrouk, Weaver & Ricco, 2000) and Italian (Cossu, Shankweiler, Liberman, Katz & Tola, 1988).

Studies in India and abroad have also discussed the effect of first language on the development of phonological awareness in second language. Also, literature suggests that bi-literate children are found to have better phonological awareness skills as compared to mono-literate children (Campbell & Sais, 1995; Chen, Anderson, Li, Hao, Wu & Shu., 2004; Canbey, 2011). Campbell and Sais (1995) conducted a study on phonological awareness in 5 year old monolingual English speakers and Italian – English bilinguals and reported that the bilingual advantage over the monolinguals was seen in three out of four tasks of phonological awareness. Similarly, Chiang and Rvachew (2007) suggested that acquisition of English (L1) vocabulary and phonological awareness skills may help in acquiring French (L2) phonological awareness skills. Canbey

(2011) conducted a comparative study on three groups of pre-school children who were Turkish-English bilingual, monolingual Turkish and monolingual English. Age of the children ranged from 4yrs 4months to 4 years 5 months. Bilingual children performed better as compared to monolingual children on the task of initial phoneme identification. These could be due to increased exposure to oral language (Bialystok & Herman, 1999), cross transfer between languages (Kuo & Anderson, 2010) or due to increased metalinguistic skills (Laurent & Martinot, 2010). The effect of first language on the phonological awareness skills of second language however, may be influenced by the closeness between the two languages (Bialystok, Majumder & Martin, 2003).

Children attending English medium schools in India have a non-English mother tongue and are exposed to English in schools at around 3yrs of age. They begin reading phonetically by around 5-6yrs of age. In India, children are exposed to writing and spelling almost simultaneously while learning to read. In the western countries, initial emphasis is on reading skills alone. Hence, it is important to investigate whether the development of phonological awareness in children learning English in Indian schools follows the same trends as reported in the West. Studies have been carried out in India on children whose mother tongue is Gujarati, Oriya, Kannada or Hindi and have learnt English as the second language (Gokani, 1992; Sankaranarayanan, 2003; Mishra & Stainthrop, 2007; Tiwari, 2010). Tiwari (2010) conducted a study to investigate the reading acquisition in Malayalam- English bilinguals learning to read and write in two distinct writing systems (alphasyllabic and alphabetic). She observed that participant's performance on phonological awareness was better in English whereas performance on word and non-word reading was better in Malayalam. All these studies were carried out on children above 6 years of age. However, reading development in Indian curriculum begins before 6 years. Hence, development of phonological awareness in children younger than 6 years needs to be studied.

To the best of the researcher's knowledge, only one study has been carried out on development of phonological awareness in English in children with mother tongue Marathi. Shah (2010) investigated phonological awareness in English in 120 Marathi speaking children in the age range 4-6 years. Stimulus provided was in both auditory and visual form. Phonological awareness tasks included blending, segmentation and deletion of compound words, counting syllables, rhyming words (identification and production), phoneme identification (initial and final position). Results revealed that children in the age range of 5- 6 years scored better than younger age group i.e. 4 to 5 years on syllable counting task. All children in this study scored better on blending followed by segmentation and then deletion. Results also revealed significant difference in phonological awareness performance across the different types of stimuli. Best performance was seen in auditory discrimination task followed by identification of initial phonemes. Significant difference across age groups was seen but not across gender. However, very few tasks at limited number of levels have been included. Studying the development of these children at all the levels of phonological awareness is required as the development in these children may be different as compared to the children with English as first language. This can be due to the influence of the structure of Marathi on development of phonological awareness in English. Hence, there is a need to study the development of phonological awareness in English in children with mother tongue Marathi at all the four levels of phonological awareness. Hence, the present study was undertaken with the aim to study the effect of gender and age on the

development of phonological awareness skills in typically developing children with mother tongue Marathi and English as a medium of instruction in school in the age range of 5 to 7 years at 4 levels of phonological awareness i.e: Word level, Syllable level, Rhyme level and Phoneme level.

Methodology

60 typically developing Marathi speaking children studying in English medium school participated in the study. Group I included 30 children, 15 boys and 15 girls attending Senior KG ($>5 \leq 6$ yrs) and Group II had 30 children, 15 boys and 15 girls attending 1st standard ($>6 \leq 7$ yrs). All children fulfilled the following inclusion and exclusion criteria.

Inclusion criteria

Typically developing children within the age range of $>5 \leq 7$ years who were native speakers of Marathi language were included in the study. All the children attended English medium school for a minimum of 2 years.

Exclusion criteria

Children with any known speech problems, motor problems or craniofacial abnormalities, with known history of hearing loss or with a family history of hearing loss were excluded from the study. Also children with poor academic performance and with any known behavioural or psychological problems as reported by their teachers were excluded from the study.

The Phonological Awareness tool developed by Chintala (2014) was used. Table 1 gives the summary of tasks used at four levels.

Table 1:

Tasks at the four levels for assessment of phonological awareness in children (Chintala, 2014)

Level	Tasks
Word level	Sentence segmentation
Syllable level	Syllable segmentation, Initial syllable deletion, Final syllable deletion, Syllable blending, Initial syllable substitution Final syllable substitution
Rhyme level	Rhyme production, Rhyme identification/ recognition Rhyme matching
Phoneme level	Initial phoneme identification,

	Medial phoneme identification, Final phoneme identification, Initial phoneme isolation Final phoneme isolation, Phoneme blending, Initial phoneme deletion Final phoneme deletion, Phoneme segmentation, Initial phoneme substitution Final phoneme substitution, Initial phoneme oddity Final phoneme oddity Initial phoneme deletion in consonant blend Final phoneme deletion in consonant blend.
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Each task consisted of 6 stimulus words/ sentences. In addition, 2 practice items were included for the children to understand the task. The administration and scoring for the tool was done as per the instructions of the original author of the tool.

All children were tested individually in relatively quiet and familiar surroundings, i.e. in their respective schools. The responses given by the children were recorded using a digital audio recorder. Before administering the protocol, participant information sheet was given to the parents of the children and which was also explained by the researcher. A written consent and case history was taken from parents of all the participants. Initially, rapport was established with the child and all the tasks in each level were administered one by one through auditory mode only. Practice items were demonstrated before each task was administered. Children were given intermittent breaks when required depending on the temperament of each child. The responses were recorded on a recording sheet prepared for the purpose while the child was giving the response. Each correct response was given a score of 1 and incorrect response was given a score of 0. Scores were calculated per task, per level and total for the whole tool.

The data obtained were tabulated and subjected to statistical analyses using SPSS /PC Version 19 program. Mean and standard deviation was calculated for each group. MANOVA was used to analyze the effect of age group and gender on phonological awareness at four levels i.e., word level, syllable level, rhyme level and phoneme level.

Results:

MANOVA indicated that there was no main effect of gender [$F(4, 53) = 1.267, p > 0.05$]. A significant main effect was present for age [$F(4, 53) = 26.417, p < 0.05$]. The results of descriptive analysis and MANOVA at the four levels across gender and age are as follows:

I. Word level

The task at word level was sentence segmentation, where the children had to count the number of words in the sentence. The mean scores and the SD across gender and age groups is given in Table 2 and Figure 1 which indicates a slight increase in scores with an increase in age.

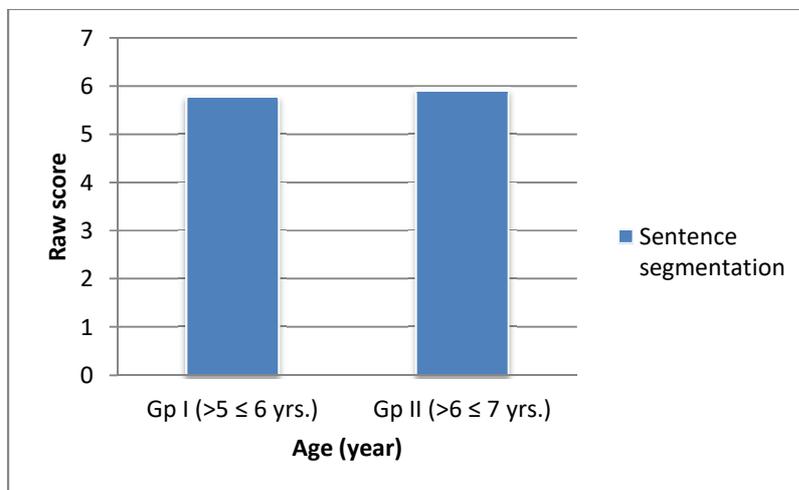
However, MANOVA indicated that the difference across gender and age is not statistically significant [$F(1, 58) = 1.536, p > 0.05$; $F(1, 58) = 0.337, p > 0.05$ respectively]. The scores are close to 6 even for the lower age group. Thus, phonological awareness skills at word level does not undergo an active development in the age range of 5 to 7 years and may be achieved by or before 6 years of age.

Table 2.

Effect of gender and age at word level

Task of PA	Age groups	Males- Mean (SD)	Females Mean (SD)	Group Mean (SD)
Sentence segmentation Max Score - 6	>5≤6	5.8 (0.56)	5.73 (0.47)	5.77 (0.52)
	>6≤7	5.93 (0.30)	5.86 (0.34)	5.90 (0.32)
Mean total word level score Max Score – 6		5.86 (0.30)	5.79 (0.40)	

Figure 1.



Effect of age at word level.

II. Syllable level

Children of both gender as well as both age groups performed equally well in almost all syllable level tasks as seen in Table 3 and Fig 2. , except final syllable substitution, where Group II

performed better than Group I. Results of MANOVA also indicated that the difference in the two age groups was statistically significant only for the final syllable substitution task as given in Table 4. Maximum achievable score was obtained by both groups of children in syllable segmentation, syllable blending task, and final syllable deletion, indicating that these tasks are easy and achieved by or before 6 years of age. Means of both the initial syllable and final syllable substitution task scores are less as compared to the maximum achievable score for both the groups. However, the score for the higher age group does increase significantly for the final syllable substitution task as it approaches the maximum achievable scores. This indicates that the development for the final syllable substitution task is active in the period of 5 to 7 years and children may achieve it soon after 7 years of age. The initial syllable substitution task on the other hand will probably continue developing beyond 7 years of age. Thus, the trend in the development of syllable level tasks appears to be as follows: syllable segmentation, syllable blending, initial and final syllable deletion (achieved by or before 7 years of age), final syllable substitution (achieved after 7 years of age), and lastly initial syllable substitution (achieved after 7 years of age).

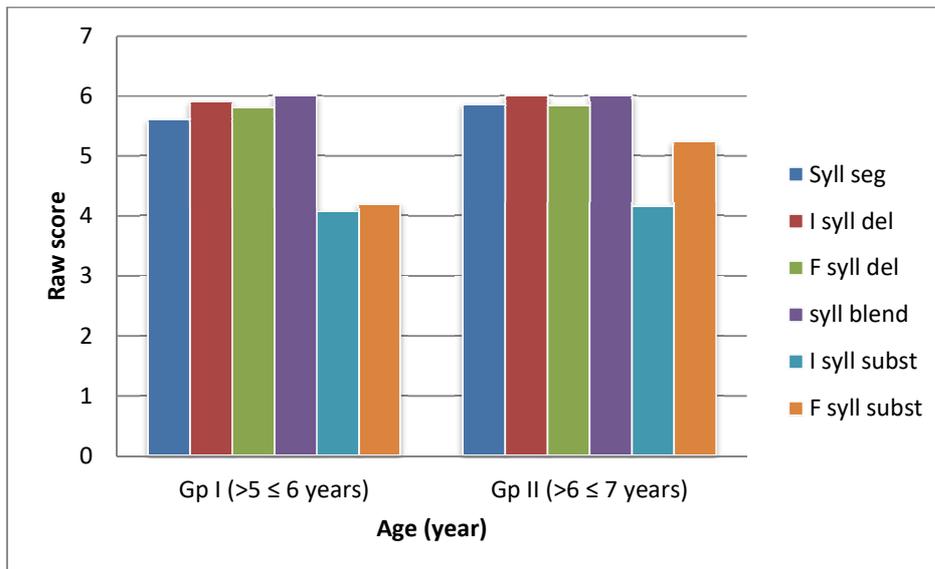
Table 3.

Mean and SD at syllable level across gender and age

Task of PA	Age groups	Males- Mean (SD)	Females- Mean (SD)	Group Mean (SD)
Syllable segmentation Max achievable score:8	>5≤6	5.6 (0.35)	5.66 (0.41)	5.63 (0.38)
	>6≤7	5.86 (0.48)	5.8 (0.48)	5.83 (0.48)
Mean total for syllable segmentation		5.73 (0.43)	5.73 (0.44)	
I Syllable deletion Max achievable score:6	>5≤6	5.93 (0.25)	5.93 (0.25)	5.93 (0.25)
	>6≤7	6 (0)	6 (0)	6 (0)
Mean total for initial syllable deletion		5.96 (0.25)	5.96 (0.25)	
F Syllable deletion Max achievable score:6	>5≤6	5.73 (0.45)	5.93 (0.25)	5.83 (0.37)
	>6≤7	5.73 (0.45)	5.93 (0.25)	5.83 (0.37)
Mean total for final syllable deletion		5.73 (0.45)	5.93 (0.25)	
Syllable blending	>5≤6	6 (0)	6 (0)	6 (0)

Max achievable score:6	>6≤7	6 (0)	6 (0)	6 (0)
Mean total for syllable blending		6 (0)	6 (0)	
I Syllable substitution Max achievable score:6	>5≤6	4.06 (0.59)	4.06 (0.7)	4.06 (0.63)
	>6≤7	4.26 (1.03)	4.06 (0.79)	4.16 (0.91)
Mean total for initial syllable substitution		4.16 (0.81)	4.06 (0.74)	
F Syllable substitution Max achievable score:6	>5≤6	4.46 (1.12)	3.93 (0.96)	4.19 (1.06)
	>6≤7	5.13 (0.74)	5.33 (0.48)	5.23 (0.62)
Mean total for final syllable substitution		4.79 (0.93)	4.63 (0.72)	
Total Syllable level Max achievable score:38	>5≤6	33.13 (2.69)	33 (2.23)	33 (2.43)
	>6≤7	34.93 (1.22)	35 (0.53)	34.9 (0.92)

Figure 2



Effect of age at syllable level tasks

Table 4.

Results of MANOVA across the *two age groups at syllable level*

Source	Dependent variables	Df	F	Sig.
AGE	Syllable segmentation	1, 58	2.231	.11
	Initial syllable deletion	1, 58	2.000	.163
	Final syllable deletion	1, 58	.000	1.000
	Syllable blending	1, 58	-	-
	Initial syllable substitution	1, 58	.235	.630
	Final syllable substitution	1	21.492	.000

III. Rhyme level

Although there did not appear to be a difference across gender, the children from Group II (>6 ≤7 years) appeared to perform better than Group I (>5 ≤6 years) for the two tasks of rhyme production and rhyme identification but not rhyme matching as reflected in Table 5 and Fig 3. MANOVA showed that this difference was statistically significant for rhyme production [F (1, 56)= 5.35, p<0.05] and for rhyme identification [F (1,56)= 4.95, p<0.05]. But it was not statistically significant for rhyme matching [F (1, 56) = 0.58, p>0.05]. Thus, there is an active development in the age group of 5 to 7 years for rhyme production and rhyme identification. However, the children in Group II did not reach maximum achievable score for both the tasks indicating that the development probably continues beyond 7 years of age. There is no significant development for rhyme matching / oddity in the 5 to 7 years age range. Scores of this task too were not near the maximum achievable scores, thus indicating that the task is not achieved by 7 years of age and also continues developing beyond 7 years.

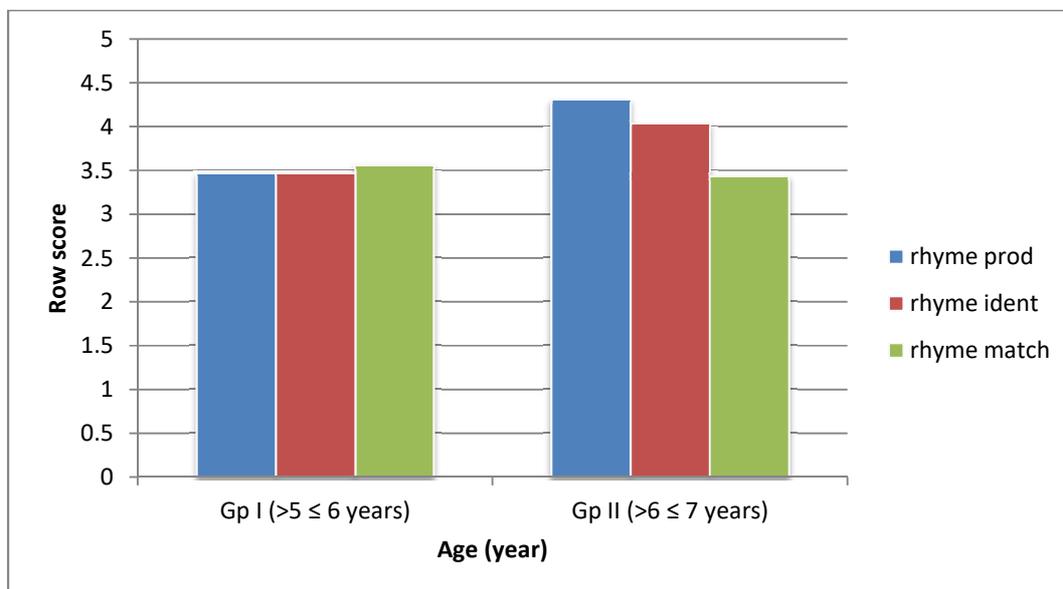
Table 5.

Mean and SD at rhyme level across gender and age

Task of PA	Age groups	Males-Mean (SD)	Females-Mean (SD)	Mean (SD)
Rhyme production Max achieved score: 6	>5≤6	3.4 (2.16)	3.53 (1.55)	3.46 (1.85)
	>6≤7	4.26 (0.96)	4.4 (0.82)	4.3 (0.88)
Mean total for rhyme production task		3.83 (1.56)	3.96 (1.1)	

Rhyme identification Max achieved score: 6	>5 ≤ 6	3.33 (0.48)	3.69 (1.05)	3.46 (0.81)
	>6 ≤ 7	3.93 (1.22)	4.13 (1.06)	4.03 (1.12)
Mean total for rhyme identification task		3.61 (0.85)	3.86 (1.05)	
Rhyme Matching Max achieved score: 6	>5 ≤ 6	3.46 (1.12)	3.66 (0.9)	3.56 (1.04)
	>6 ≤ 7	3.53 (0.95)	3.33 (0.72)	3.43 (0.8)
Mean total for rhyme matching/ oddity task		3.49 (0.6)	3.49 (0.81)	
Total Rhyme level Max achieved score: 18	>5 ≤ 6	10.26 (2.65)	11.73 (2.46)	10.53 (2.75)
	>6 ≤ 7	10.8 (2.9)	11.86 (2.09)	11.8 (2.24)

Figure 3



Effect of age on all rhyme level tasks

IV. Phoneme level

The phoneme level tasks can be divided as recognition tasks and manipulation tasks. ‘Recognition’ tasks includes tasks requires the ability to distinguish phonemes (Castle, 1999; Chard & Dickson, 1999; Nicholson, 1999), whereas ‘manipulation’ task is “the ability to manipulate phoneme either by segmentation, blending or changing individual phonemes within words to create new words” (Chard and Dickson, 1999). Thus, for the purpose of clarity and ease, the tasks used in the present study at phoneme level are being presented in two sections, recognition tasks and manipulation tasks.

a. Recognition tasks of phoneme level

As seen in Table 6 and Fig 4, there did not appear to be a difference across gender for both the age groups for all the tasks at phoneme level. Results appeared to be almost same for the two age groups for initial phoneme identification. Very poor performance was seen in both age groups for middle phoneme identification task. Group II appeared to perform better than Group I for final phoneme identification task. Both groups performed equally well for the initial phoneme isolation task, but Group II appeared to perform better for the final phoneme isolation task. Both groups performed almost similar in both initial and final phoneme oddity task. Initial phoneme tasks were easier for both the groups than final phoneme tasks except identification task for Group II. Group II scored almost maximum achievable mean scores in final phoneme identification.

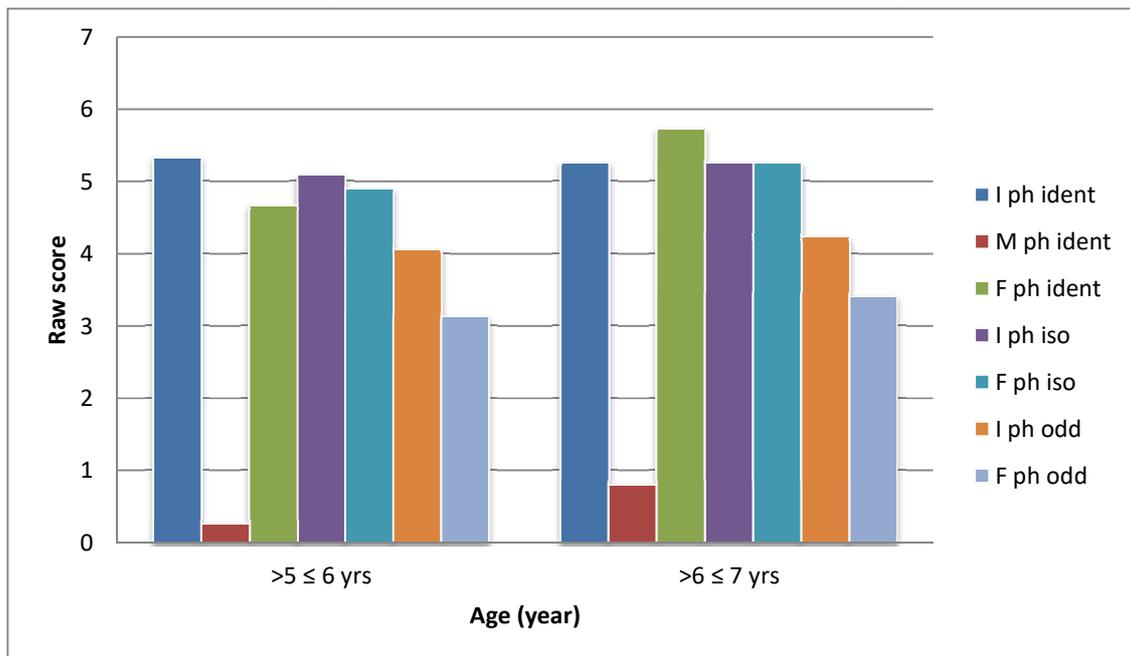
Table 6.

Mean and SD across gender and age for phoneme recognition tasks

Task of PA	Age groups	Males – Mean (SD)	Females- Mean (SD)	Mean (SD)
Initial phoneme identification Max achievable score: 6	>5≤ 6	5.46 (0.5)	5.2 (0.67)	5.33 (0.59)
	>6≤ 7	5.26 (0.45)	5.26 (0.45)	5.26 (0.44)
Mean score for initial phoneme identification task		5.36 (0.47)	5.2 (0.56)	
Middle phoneme identification Max achievable score:6	>5≤ 6	0.46 (1.12)	0.06 (0.25)	0.26 (0.82)
	>6≤ 7	0.86 (1.18)	0.73 (1.03)	0.8 (1.09)

Mean score for medial phoneme identification task		0.69 (1.15)	0.39 (0.64)	
Final phoneme identification Max achievable score:6	>5 ≤ 6	4.86 (1.06)	4.46 (0.74)	4.66 (0.92)
	>6 ≤ 7	5.6 (1.05)	5.86 (0.35)	5.73 (0.78)
Mean score for final phoneme identification task		5.23 (1.0)	5.16 (0.54)	
Initial phoneme isolation Max achievable score:6	>5 ≤ 6	5.13 (0.63)	5.06 (0.59)	5.09 (0.6)
	>6 ≤ 7	5.2 (0.41)	5.33 (0.48)	5.26 (0.44)
Mean score for initial phoneme isolation task		5.16 (0.52)	5.19 (0.53)	
Final phoneme isolation Max achievable score:6	>5 ≤ 6	5.12 (0.86)	4.6 (0.82)	4.9 (0.88)
	>6 ≤ 7	5.93 (0.25)	5.86 (0.35)	5.26 (0.3)
Mean score for final phoneme isolation task		5.52 (0.55)	5.23 (0.58)	
Initial phoneme oddity Max achievable score:6	>5 ≤ 6	4.26 (0.88)	4.2 (0.67)	4.06 (0.77)
	>6 ≤ 7	4.2 (0.77)	3.93 (0.79)	4.23 (0.78)
Mean score for initial phoneme oddity task		4.23 (0.82)	3.79 (0.72)	
Final phoneme oddity Max achievable score:38	>5 ≤ 6	3.26 (0.7)	3.0 (0.65)	3.13 (0.68)
	>6 ≤ 7	3.46 (0.74)	3.33 (0.48)	3.4 (0.61)
Mean score for final phoneme oddity task		3.36 (0.7)	3.16 (0.56)	

Figure 4.



Effect of age at phoneme level (recognition tasks)

Results of MANOVA indicated that the difference in the two age groups was significant for only three tasks of phoneme recognition. These tasks were middle phoneme identification [$F(1,56)=4.48, p<0.05$], final phoneme identification [$F(1,56)=23.43, p<0.05$], and final phoneme isolation [$F(1,56)=37.06, p<0.05$]. Initial phoneme identification does not show active development in the 5-7 years age range. Also, the mean obtained for Group II is not at the maximum achievable score. Thus, it appears that the development continues beyond 7 years of age. The Mean scores for medial phoneme identification are found to be very low but the difference is statistically significant between the two age groups indicating that the development is active in the 5-7 years age range and continues beyond 7 years. Hence this task can be considered as the most difficult one and probably would be the last to develop. The final phoneme identification is found to be actively developing in the 5 to 7 years age range as there is a statistically significant difference between the two age groups. The scores of both the age groups are close to maximum achievable score. Thus, the development may be achieved after 7 years but before medial phoneme identification.

Significant statistical difference is found as per MANOVA only for final phoneme isolation indicating a significant difference between the two age groups. However, the mean scores are not at the maximum achievable scores for the tasks of phoneme isolation, both initial and final, indicating that the development continues beyond 7 years of age.

Both initial phoneme oddity and final phoneme oddity tasks do not develop actively in the 5-7 years age range as indicated by MANOVA [$F(1, 56) = .686, p > 0.05$] and [$F(1, 56) = 2.508, p >$

0.05] respectively. Also, the scores are not at or near maximum obtainable scores. Hence the development of these tasks appears to develop beyond 7 years of age.

As seen in Fig 4, maximum score is obtained in the initial phoneme identification task followed by initial phoneme isolation, final phoneme isolation and final phoneme identification. Middle phoneme identification task appears to be most difficult and probably last to develop task among the phoneme recognition tasks

b. Manipulation tasks in phoneme level

As can be seen from Table 7 and Figure 5, the mean scores for all the phoneme manipulation tasks for the older group appeared to be higher as compared to the younger group, with no difference across gender.

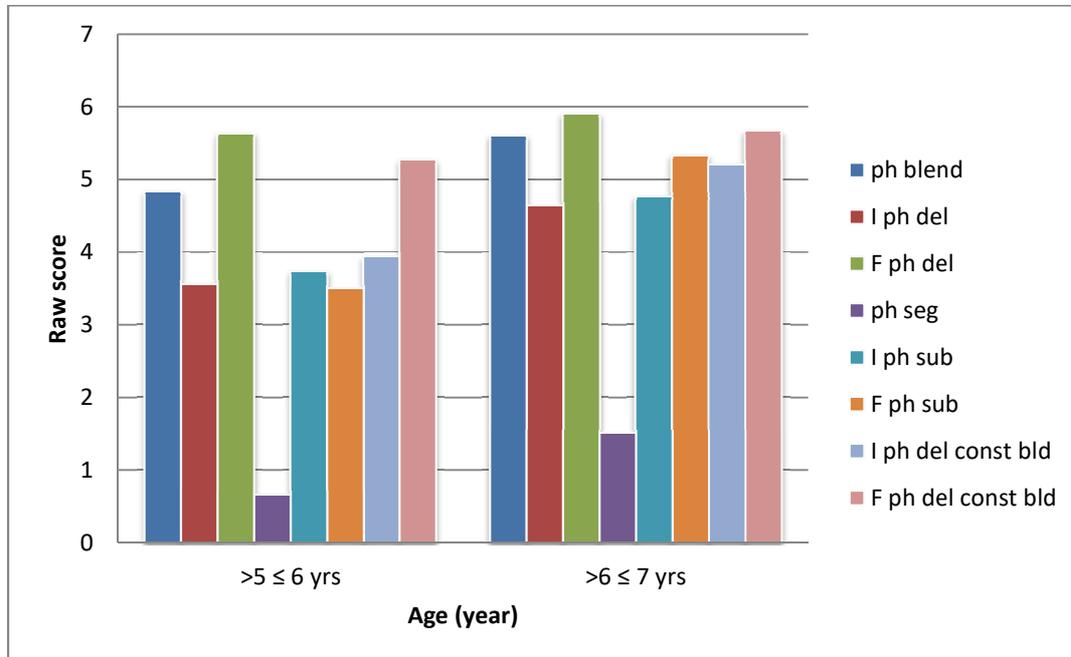
Table 7.

Mean and SD across age for phoneme manipulation tasks

Task of PA	Age groups	Males- (SD) Mean	Females- (SD) Mean	Mean (SD)
Phoneme blending Max achievable score: 6	>5≤6	4.86 (0.83)	4.8 (0.77)	4.83 (0.79)
	>6≤7	5.73 (0.45)	5.6 (0.5)	5.6 (0.47)
Mean score for phoneme blending		5.29 (0.64)	5.2 (0.63)	
Initial phoneme deletion Max achievable score:6	>5≤6	3.6 (1.29)	3.53 (1.06)	3.56 (1.16)
	>6≤7	4.73 (1.08)	4.53 (0.91)	4.63 (0.96)
Mean score for initial phoneme deletion		4.16 (1.18)	4.03 (0.98)	
Final phoneme deletion Max achievable score:6	>5≤6	5.66 (0.61)	5.6 (0.73)	5.63 (0.66)
	>6≤7	5.86 (0.35)	5.93 (0.25)	5.9 (0.3)
Mean score for final phoneme deletion task		5.76 (0.48)	5.76 (0.49)	

Phoneme segmentation Max achievable score:6	>5≤6	0.73 (0.96)	0.6 (0.82)	0.66 (0.88)
	>6≤7	1.8 (0.94)	1.2 (1.2)	1.5 (1.1)
Mean score for phoneme segmentation task		1.26 (0.95)	0.9 (1.01)	
Initial phoneme substitution Max achievable score: 6	>5≤6	3.93 (1.09)	3.53 (0.83)	3.73 (0.98)
	>6≤7	4.6 (1.49)	4.86 (0.74)	4.76 (1.16)
Mean score for initial phoneme substitution task		4.26 (1.29)	4.19 (0.78)	
Final phoneme substitution Max achievable score:6	>5≤6	3.53 (1.35)	3.26 (0.74)	3.49 (1.07)
	>6≤7	5.2 (1.01)	5.46 (0.91)	5.33 (0.95)
Mean score for final phoneme substitution task		4.36 (1.18)	4.36 (0.82)	
Initial phoneme deletion constant blend Max achievable score:6	>5≤6	3.93 (0.79)	3.93 (0.7)	3.93 (0.73)
	>6≤7	5.26 (0.7)	5.13 (0.83)	5.2 (0.76)
Mean score for initial phoneme deletion consonant blend task		4.32 (0.74)	4.26 (0.76)	
Final phoneme deletion constant blend Max achievable score:6	>5≤6	5.26 (1.09)	5.26 (0.85)	5.26 (0.98)
	>6≤7	5.66 (0.61)	5.66 (0.61)	5.66 (0.6)
Mean score for final phoneme deletion consonant blend task		5.46 (0.85)	5.46 (0.73)	
Total phoneme level Max achievable score: 90	>5≤6	59.8 (4.79)	57.53(5.04)	58.66 (4.97)
	>6≤7	70.66 (3.45)	68.4 (3.62)	69.53 (3.66)

Figure 5



Effect of age at phoneme level (manipulation tasks)

MANOVA indicated that the differences in the scores between the two groups were statistically significant for all tasks [F(1,56)=23.65, $p < 0.05$ for phoneme blending; F(1,56)=14.48, $p < 0.05$ for initial phoneme deletion; F(1,56)= 10.54, $p < 0.05$ for phoneme segmentation; F(91,56)= 13.65 for initial phoneme substitution; F(1,56)= 47.37, $p < 0.05$ for final phoneme substitution; F (1,56)= 41.43, $p < 0.05$) for initial phoneme deletion constant blend] except in final phoneme deletion task [F (1,56) = 3.83. $p > 0.05$]; and final phoneme deletion in consonant blend [F (1,56)= 3.49, $p > 0.05$]. Scores achieved by Group II children for tasks like phoneme blending, final phoneme deletion and final phoneme deletion in consonant blend are closer to the maximum achievable score for the tasks. Out of these, phoneme blending shows an active development between 5 -7 years whereas the other two tasks do not develop significantly between 5-7 years of age. All the other tasks like initial phoneme deletion, phoneme segmentation, phoneme substitution (initial & final) and initial phoneme deletion consonant blend show an active development in the 5-7 years age range and continue to develop beyond 7 years of age. Out of these, phoneme segmentation has the lowest mean scores indicating that it is the most difficult tasks among the phoneme manipulation tasks studied.

Thus, the order of acquisition of the phonological awareness tasks in English in Marathi speaking children attending English medium schools is as follows: Tasks of sentence segmentation at word level, syllable segmentation, initial and final syllable deletion, syllable blending, initial phoneme identification, final phoneme deletion and final phoneme deletion in

consonant blend are achieved before or by 6 years of age. Final syllable substitution, rhyme production and identification, middle and final phoneme identification, phoneme blending, initial phoneme isolation and deletion, initial and final phoneme substitution, and phoneme segmentation develops significantly from 5 years to 7 years and is developed or continues developing beyond 7 years. Tasks like initial syllable substitution, rhyme matching, initial phoneme isolation and initial and final phoneme oddity also develop by or beyond 7 years of age but does not develop significantly in the age range of 5 to 7 years.

Discussion:

The results of the study indicated that there is no difference between the two genders across any of the tasks of phonological awareness of children in the age range of 5 years to 7 years. This was true for phonological awareness at all the four levels, viz; word level, syllable level, rhyme level and phoneme level. This is in agreement with the study by Lonigan, Burgess, Anthony & Barker (1998). Not many studies to the author's best knowledge have reported on the effect of gender on the development of phonological awareness in children.

A majority of the studied reported in both the Western and Indian literature have reported a definite development of phonological awareness in English in the age range of 5 to 7 years (Lieberman, Shankweiler, Fischer & Carter, 1974; Goswami & Bryant, 1990; Treiman & Zukowski, 1991; Stackhouse & Wells, 1997; Lonigan, Burgess, Anthony & Barker, 1998; Adams, Foorman, Lundberg & Beeler, 1998 ; Chard & Dickson, 1999; Hubbard & Mahanna-Boden, 2000; O'Keefe, 2000; Hodson, 2000; Carroll, Snowling, Stevenson & Hulme, 2003; Sterling-Orth, 2004; Anthony & Francis, 2005; Shah, 2010; Tiwari, 2010). However, the development not only varies across the four levels, but also across tasks at each level.

In the present study, both age groups scored near the maximum achievable score at word level and there was no significant difference between the two age groups. Thus, it can be construed that phonological awareness at word level in English is achieved by or before 6 years of age in Marathi speaking children. These results are in agreement with the findings reported by Adams, Foorman, Lundberg and Beeler (1998) who reported that by the end of kindergarten, children can recognize and count the number of words in a sentence.

Results of the presents showed that at the syllable level, syllable segmentation, syllable blending, initial and final syllable deletion were achieved by or before 7 years of age, whereas final syllable substitution and initial syllable substitution probably are achieved after 7 years of age. These results are in consensus with the results of studies in the literature which state that tasks like segmentation and blending are easier than the manipulation tasks like deletion or substitution (Anthony, Lonigan, Driscoll, Phillip & Burgess 2003; O'Keefe, 2000; Shah, 2010). In the present study too, segmentation and blending were found to be better than manipulation tasks like deletion and substitution. The manipulation tasks, both deletion and substitution are said to be easier in final position than in initial position (O'Keefe, 2000). Similar results are reported in the present study for substitution task especially for children in the higher age group. However, there did not seem to be much difference in the deletion tasks with respect to the position of the syllable to be deleted for the two age groups. Syllable segmentation task is reported to be achieved by only 50% of kindergartners and 70 % of first graders by Lieberman, Shankweiler, Fischer and Carter (1974); but Treiman and Zukowski (1991) reported a 100%

achievement by preschool age itself. The results of the present study are in agreement with the study by Liberman, Shankweiler, Fischer and Carter (1974).

At rhyme level, both rhyme production and rhyme identification showed an active development in the age group of 5 to 7 years and the development continue beyond 7 years of age. Rhyme matching did not develop significantly between 5 to 7 years of age and continued developing beyond 7 years of age. Comparison of the result of the present study in terms of rhyme level tasks with the studies reported in the literature (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. Development of rhyme recognition, identification as well as generation has been reported to be achieved by end of kindergarten (Adams, Foorman, Lundberg & Beeler, 1998) and performance is 100% by the first grade (Treiman & Zukowski, 1991). However, children in the present study were also found to continue developing these skills beyond 7 years of age. Similar findings were reported by Gokani (1992) who found that children of Grade II who had mother tongue Gujarati and were studying in English medium schools had low scores on rhyme recognition tasks. This may be due to the fact that children in the West are exposed to English- an alphabetic language from birth, whereas children in the present study are exposed to a non alphabetic language Marathi since birth and are exposed to English only once schooling began i.e after 3 years of age. Research has indicated an influence of first language on development of phonological awareness abilities in second language (Campbel and Sais, 1995; Chiang and Rvachew, 2007; Mishra and Stainthrop, 2007; Tiwari, 2010; Canbey, 2011). Studies on development of phonological awareness in Marathi, an Indian language which is non alphabetic has indicated that rhyming skills develops later than syllable level skills and tasks like rhyme production and rhyme recognition are difficult to perform even by Grade 4 children (Sarsambe, 2010). It has also been reported that rhyme judgement as well as rhyme matching tasks are easier than rhyme oddity as well as rhyme generation task (Hodson, 2000). Same is seen in the present study, where the rhyme matching / oddity task, was found to be more difficult as compared to the rhyme identification task. Also, rhyme generation was found to be easier as compared to the matching / oddity task in the present study.

Among the phoneme level tasks, recognition tasks were found to be easier and developed earlier as compared to manipulation tasks. This trend is similar to those reported by Anthony, Lonigan, Driscoll, Phillip & Burgess (2003). Tasks like initial phoneme identification, final phoneme deletion and final phoneme deletion in consonant blend developed before or by 6 years of age; middle and final phoneme identification, phoneme blending, initial phoneme isolation and deletion, initial and final phoneme substitution, and phoneme segmentation did develop significantly across the two age groups and continued developing beyond 7 years of age. Initial phoneme isolation, and initial and final phoneme oddity also continued development beyond 7 years of age but did not develop significantly across the two age groups. In phonemic awareness tasks, blending of phonemes is reported to be easier than segmenting words into phonemes (Harbers, Paden, & Halle, 1999), identification of the initial phoneme in a word is easier than detecting the final sound (Goswami & Bryant, 1990) and identification and/ or manipulation of the medial sound in a word is more difficult than either the initial (the easiest) or final sound in words (Hubbard & Mahanna-Boden, 2000; Konza, 2006). Same has been found in the present study. Liberman, Shankweiler, Fischer and Carter, (1974); Trieman and Zukowiski, (1991) concluded that complex phonological awareness skills like phoneme segmentation emerges later

in children after 5 to 6 years of age and continues developing beyond first grade. Children in the present study also found the task of phoneme segmentation difficult even at 6-7 years of age. In the present study, the order of development of phoneme manipulation tasks was phoneme deletion followed by blending and later segmentation. Segmentation was found to be the most difficult task among three as most of the children would do syllable segmentation at least for part of the word instead of phoneme segmentation or would insert a vowel while attempting to do a phoneme segmentation for a word with a blend like 'stand' and 'brush'. These results are in contradiction with study by Shah (2010) on 4 to 6 year old children. Results of Shah (2010) study indicated that all children scored better in blending followed by segmentation and then deletion. The difference could be attributed to the use of blends in the present study. Based on a review of literature, Moats and Toleman (2009) have summarized that by the age of 6 years children can blend words of two to three phonemes. They can also segment words with two or three phonemes, but they cannot segment blends. They reported that segmentation of blends is achieved by 6.6 years of age.

Conclusions:

The development trend found in Marathi speaking children attending English medium schools in the age range of 5 to 7 years is almost similar to the development reported in the West, but not the same. Differences are found with respect to the age of acquisition of the tasks at different levels. Hence, the assessment of phonological awareness skills in English, in Marathi speaking children in the age range of 5 to 7 years should consider these differences. However, this study needs to be conducted on a larger population for generalization of results.

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