DOES SOCIO ECONOMIC STATUS INFLUENCE PHONOLOGICAL AWARENESS SKILLS?

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Abstract

Researchers have reported the influence of various factors affecting phonological awareness in children, but there appears to be limited literature reporting the influence of socio economic status on the phonological awareness in Indian context. Hence the present study was planned to see the difference in performance between children from lower and middle socio economic status for phonological awareness tasks. A total of 20 native Kannada speaking children within the age range of 6 to 14 years were selected for the study and were divided into 2 groups, Group 1 consisted of 10 normal children with lower socio economic status & Group 2 consisted of 10 normal children with middle socio economic status. 'Test of Learning Disability' in Kannada which had 7 subtests to assess phonological awareness was used. The responses were collected from each child and statistically analysed.

Results revealed high scores for middle socio economic status children and the lower scores were obtained by lower socio economic grade children. There was significant difference in terms of performance in all tasks except, syllable oddity (final) task. Hence, it was evident from the result that, children from low socio economic status background performed below than the children from middle socio economic status. Therefore from the present study it can be concluded that socio economic status is evident for development of phonological awareness and clinician has to concentrate also on certain factors as poorer home literacy, including limited access to reading materials or modelling of reading by adults in the home, during the assessment of phonological awareness.

Key Words: Learning Disability, Poor Academic Performance, Syllable oddity.

Phonological awareness is the capacity that the individual knows that the spoken word can be segmented into smaller units, and that he can distinguish and synthesize these units (Francis 1987). It is also considered part of metalinguistic abilities, referring to the ability to perform mental operations on the output of speech- perception mechanism (Tunmer & Rohl, 1991). In the recent years like the order meta linguistic skills phonological awareness has been explored and studied, though there are conflicts to demarcate the boundaries between these skills, researchers have proposed their own classification to explain the phonological awareness skills. According to Lewis (1996) phonological awareness consists of following tasks: listening, rhyming, word awareness, phonemic awareness and syllabic awareness. Rhyming is the ability to match the ending sounds in words, alliterations is the ability to generate words that begin with the same sounds, where sentence segmentation is the ability to break spoken sentences into separate words, and syllabic awareness refers to the ability to blend syllables into words or segmenting words into corresponding syllables. This skill begins to emerge about the age of four.

Phonological awareness is the understanding of different ways that oral language can be divided into smaller components and manipulated. Spoken language can be broken down in many different ways, including sentences into words and words into syllables (e.g., in the word simple, /sim/ and /ple/), onset and rhyme (e.g., in the word broom, /br/ and /

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oom/), and individual phonemes (e.g., in the word hamper, /h/, /a/,/m/, /p/, /er/). Manipulating sounds includes deleting, adding, or substituting syllables or sounds (e.g., say can; say it without the /k/; say can with /m/ instead of /k/). Being phonologically aware means having a general understanding at all of these levels (Francis, 1999).

Operationally, skills that represent children's phonological awareness lie on a continuum of complexity. At the less complex end of the continuum are activities such as initial rhyming and rhyming songs as well as sentence segmentation that demonstrates an awareness that speech can be broken down into individual words. At the center of the continuum are activities related to segmenting words into syllables and blending syllables into words. Next are activities such as segmenting words into onsets and rimes and blending onsets and rimes into words.

Different researchers have postulated that phonological awareness is important for reading (Shapley, 2001; Gillet, 2004). An awareness of phonemes is necessary to grasp the alphabetic principle that underlies the system of written language. Specifically, developing readers should be sensitive to the internal structure of words. If children understand that words can be divided into phonemes and phonemes can be blended into words, they are able to use letter-sound knowledge to read and build words. As a consequence of this relationship, phonological awareness becomes a strong predictor of later reading success. Researchers have shown that this strong relationship between phonological awareness and reading success persists throughout school days.

According to some theories, the ability to succeed in phonological awareness tasks is related to the representational status of words in the mental lexicon (Ziegler & Goswami, 2005). For example, according to the lexical restructuring model (LRM; Metsala & Walley, 1998) the development of well-specified phonological representations is a byproduct of increases in receptive vocabulary size. Early in development, phonological entries in the mental lexicon are proposed to code fairly global phonological characteristics. As more and more words are acquired, these global features are thought to become insufficient for distinguishing between the increasing numbers of similar-sounding words, necessitating the development of phonemic-based representation. According to the LRM, receptive vocabulary growth drives lexical units toward phonemic representations. Hence, words from denser neighborhoods appear to have better specified phonological representations.

Ziegler and Goswami (2005) suggested that words in the mental lexicon were represented at different phonological “grain sizes” during development: syllable, rhyme, and phoneme. The dominant grain sizes early in development were the larger grain sizes, corresponding to the linguistic units of syllable and onset/rime. In their psycholinguistic grain size theory, Ziegler and Goswami (2005) argued that it was necessary to add the concept of grain size to the LRM. They proposed that phonemic representation emerged largely as a consequence of the orthographic learning required to read an alphabetic script. According to their psycholinguistic grain size theory, as more and more vocabulary items are acquired, the number of similar sounding words (neighborhood density) for a particular lexical entry increases, and this phonological similarity is one developmental driver for the representation of the larger grain sizes of syllable and rime. This effect of neighborhood density might be predicted to be particularly evident in onset/rime tasks, because it has been found that in spoken English at least, the majority of phonological neighbors (similar-sounding words) are in the same neighborhood because they rhyme (De Cara & Goswami, 2002). According to Ziegler and Goswami (2005), the preliterate brain may thus depend on phonological similarity in terms of onsets, vowels, and codas for lexical restructuring. The literate brain may develop fully specified phonemic representations as a consequence of orthographic learning. According to Ziegler and Goswami's theory, orthographic learning becomes a mechanism for the development of PA at the phonemic level.

The development of phonological awareness in early childhood is explained by Keram (1982). He states that Preschool children are able to use language very easily while communicating with their immediate surroundings. They can also create new meanings by participating in conversations in different environments. Every child of 3-4 years of age can easily understand a simple word, without being able to identify the phonemes of the word. Most children at this age have difficulty identifying the initial and

final sounds of the word. When children develop the ability of speak, they naturally concentrate on the meanings of words. For young children it is irrelevant that each word is made up of different phoneme sequences. For the development of literacy, however children have to learn to identify the letters of words and the sounds of these letters.

Assessment in phonological awareness serves essentially two purposes: to initially identify students who appear to be at risk for difficulty in acquiring beginning reading skills and to regularly monitor the progress of students who are receiving instruction in phonological awareness. The measures used to identify at-risk students must be strongly predictive of future reading ability and separate low and high performers. Measures used for monitoring progress must be sensitive to change and have alternate forms (Kaminski & Good, 1996).

Typically, kindergarten students are screened for risk factors in acquiring beginning reading skills in the second semester of kindergarten. Appropriate screening measures for the second semester of kindergarten include measures that are strong predictors of a student's successful response to explicit phonemic awareness instruction or beginning reading acquisition. Such predictors of successful response to segmenting and blending instruction are the Test of Phonological Awareness-Kindergarten (TOPA-K; Torgesen & Bryant, 1994), a Nonword Spelling measure (Torgesen & Davis, 1996), and the Digit Naming Rate (Torgesen & Davis, 1996). Predictors of the successful acquisition of beginning reading skills include automatized naming of colors, objects, numbers, or letters (Wolf, 1991) and segmenting ability (Nation & Snowling, 1998; Torgesen et al., 1999; Vellutino & Scanlon, 1987; Yopp, 1988). Other measures used during the second semester of kindergarten to identify students at risk for not acquiring beginning reading skills include measures of phoneme deletion.

The measures appropriate for identifying first-grade students at risk for not acquiring reading skills overlap those used in kindergarten. The TOPA-K and onset-rime are no longer appropriate, as students should have developed these skills by the end of kindergarten, whereas segmenting is still an emerging skill.

'A Test of Learning Disability in Kannada' was developed by Deepthi (2009). It is a test for assessing different domains in children with learning disability. The test contains seven subtests including two Proformae, visual discrimination tasks, reading, writing, arithmetic (addition, subtraction, multiplication and division), reading comprehension and phonological awareness tasks. Phonological Awareness task section consists of seven subsections i.e. Phoneme Oddity, Phoneme Stripping, Syllable Oddity, Syllable Stripping, Rhyme Recognition, Clusters and Blending. To standardise the test material, 270 children were selected randomly. They were reported to have no behavioral problems and academic performance were average and above average. All the subjects were attending regular school in the Mysore district. Equal number of subjects was taken from grade II to grade X (6 years to 15 years) i.e. thirty subjects from each grade were considered for the study. The test was also administered on 30 children with Learning Disability and was reported that the test could clearly distinguish the phonological awareness skills among Children with Learning Disability and normals. (APPENDIX 2: Details on Scoring and Maximum scores achievable).

Research findings reveal that various factors affect the phonological awareness abilities in children. Some of them are age, gender, cognitive factors, emotional factors, ontogenic factors, family environment or family setting in which child lives, parental co-operation, age at school entry, presence of associated problems like hearing impairment, visual defects, behavioral problems, cultural background and so on (Huffman et al., 2000). Among all these socio economic status is an important factor which has high influence on development phonological awareness in children.

Socio-economic status is a measure of an individual's or group's standing in the community. It usually relates to the income, occupation, educational attainment and wealth of either an individual or a group. These types of variables are summarised into a single figure or socio-economic index. Socio economic status is an important determinant of health and nutritional status as well as mortality and morbidity. Socio economic status also influences the accessibility, affordability, acceptability and actual utilization of various available health facilities. Socio-economic status plays a large part in influencing the development of phonological awareness in children.

Emerging body of literature indicate that children

entering school in areas of low socio-economic status(SES) have delayed written word recognitionare consisitent with poor phonological awareness (Bowey, 1 1995, Duncan & Seymour, 2000; Raz & Bryant, 1990). Such disadvantage, experienced during the first year of school, can have long-term educational implications. Socially disadvantaged children enter kindergarten from family backgrounds with one or more factors that might affect their skills and knowledge (US Department of Education, 1997). The factors include: living in a single-parent household, living in poverty, having a mother with low education, low familial literacy and poor nutrition.

Hence Social disadvantage has been reported to delay children's development of both spoken language (Locke, Ginsborg & Peers, 2002) and literacy (Bowey, 1995) skills. Locke et al.(2002) found that the spoken language abilities of preschool children reared in poverty were significantly below those of the general population, despite children's cognitive abilities being comparable.

Various researchers have reported the influence of other factors affecting phonological awareness in children. But there appears to be limited previous research on the influence of socio economic status on the phonological awareness, and comparison study between middle socio economic status and lower socio economic status in Kannada speaking children. Hence the study aimed to determine the difference in performance between children from lower and middle socio economic status for phonological awareness tasks.

Objectives

To study the difference in performance between children from lower and middle socio economic status for phonological awareness tasks.

Method

Subjects: A total of 20 native Kannada speaking children within the age range of 6 to 14 years were selected. All the subjects were formally screened for speech and hearing abilities by the experimenter and those who passed the screening were included in the study. All the participants had Kannada as their mother tongue. They had no behavioural problems. All the subjects had normal intelligence. For the study, the subjects were divided into 2 groups based on the 'Scale for measuring the socioeconomic status of a family' (developed by Aggarwal et al., in 2005). This scale consists of 22 questions based on which the scoring is done and the total score obtained suggests whether the subject belongs to upper high, high, upper middle, lower middle, poor and very poor/ below poverty line. Group 1 consisted of 10 normal children with poor socio economic status (scoring of 16-30 in the scale) & Group 2 consisted of 10 normal children with higher socio economic status (scoring of 61-75 in the scale).

Materials: 'A Test of Learning Disability in Kannada', Standardised test material to assess Learning Disability was used. The test contains seven subtests which include two Proformae, visual discrimination tasks, reading, writing, arithmetic (addition, subtraction, multiplication and division), reading comprehension and phonological awareness tasks. As the present study focused only on phonological awareness skills, only a part of this test, i.e., the section for assessing phonological awareness skills was chosen. This section consisted of seven subsections i.e. Phoneme Oddity, Phoneme Stripping, Syllable Oddity, Syllable Stripping, Rhyme Recognition, Clusters and Blending.

Instructions: The words were presented orally by the investigator to the subjects. The subjects were instructed as per the test material. Specific instructions were given to the subjects regarding each task (APPENDIX 1). A practice trial was given prior to the test administration. In each section words were arranged in the increasing order of complexity that is from bisyllabic to multisyllabic words. The instructions were repeated to the subjects who could not follow instructions when given once. This was followed for all the tasks.

Procedure: Testing was carried out in a class room of the school, which was away from the distractive environment and had a comparatively lower ambient noise level. The subjects were seated comfortably on a chair opposite to the investigator across the table and later rapport was built by speaking with the subjects, in order to get the co-operation. The test was carried out in a single sitting and the time consumed for each child was around 35 - 40 minutes. Further, the responses given by the subjects were noted by the investigator in the response sheet. The scoring of the response was done according to the instructions given in the test material, i.e., each correct response received a score of one and no score for an incorrect response. These responses were collected and calculated for both the groups and were subjected to statistical analysis.

Statistical analysis

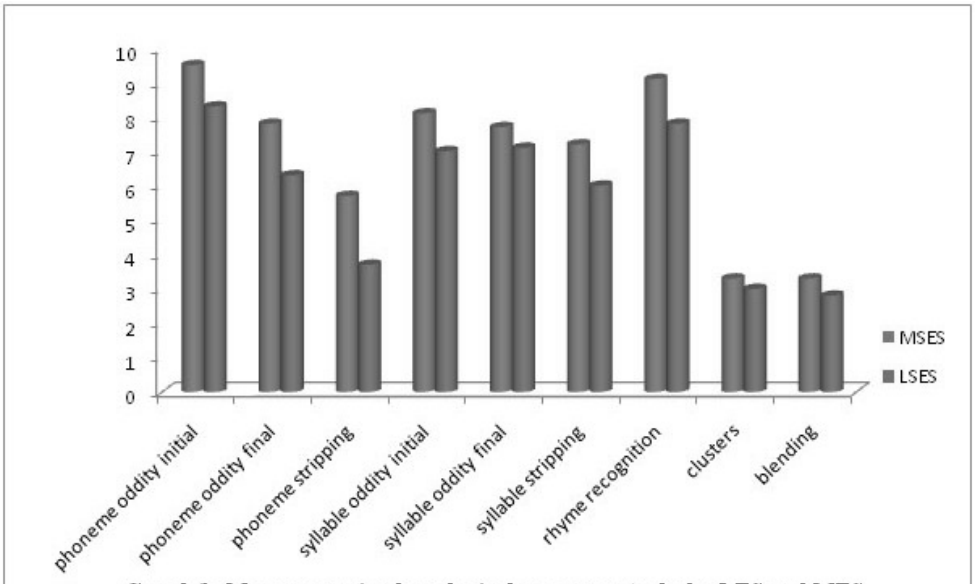
Paired sample t test was done as a part of statistical analysis between all the three groups to find out the significant difference between each of the groups across all the eight tasks using SPSS (version 17.0).

Results

The present study aimed at finding difference in the phonological awareness tasks between children from middle socio economic status and lower socio economic status. The mean and standard deviation values for lower socio economic status and middle socio economic status in phonological awareness task is shown in the Table 1 and Graph 1.

Table 1: Showing mean, standard deviation and significance scores of Low Socio Economic Status (LSES) and Middle Socio Economic Status (MSES) groups for phonological awareness tasks.

Tasks	MSES		LSES		Significance
	Mean	SD	Mean	SD	
Phoneme oddity (initial)	9.5	1.1	8.3	0.7	T =2.3, P<0.05
Phoneme oddity[final]	7.8	1.1	6.3	0.9	T=4.5, P<0.05
Phoneme stripping	5.7	1.2	3.7	1.0	T=4.3, P<0.05
Syllable oddity[initial]	8.1	1.2	7	0.9	T=3.2, P< 0.05
Syllable oddity[final]	6.2	1.1	5.9	1.7	T=1.0, P<0.05
Syllable stripping	7.2	1.3	6	1	T=1.8, P<0.05
Rhyme recognition	9.1	2.5	7.8	1.8	T=1.2, P<0.05
Clusters	3.3	2.1	3	1.6	T=0.5, P<0.05
Blending	3.3	2.1	2.8	1.7	T=0.5, P<0.05



Graph 1: Mean scores in phonological awareness tasks by LES and MES

From table 1 and graph 1 it can be noticed that there was increase in mean scores among middle social economic status when compared to lower socio economic status. There was significant difference in terms of performance in all tasks except, syllable oddity (final) task. The scores also showed better performance for phoneme oddity (final). Similar trend was seen in syllable oddity task, where the scores were better for syllable oddity (initial) when compared to syllable oddity (final). In Rhyme recognition tasks the scores were comparatively higher. Poor performance is seen in clusters and blending tasks. It was evident from the result that, children from low socio economic status background performed below than the children from middle socio economic status.

Discussions

The present study sought to examine difference in phonological awareness between children from lower socio economic status and children from middle socio economic status. The results indicated that the children from a low SES background had poorer skills on all tasks. These findings were consistent with results of studies indicating that children from homes of lower SES performed more poorly on measures of phonological awareness (e.g., Bowey, 1995).This is also supported from the study by (McIntosh and Liddy, 1999) who indicated that the preschoolers from a low SES background did not perform as well as their average SES peers on the total Quick Test of Language. (initial) task when compared to phoneme oddity

From the study it was also evident that children from LSES performed well below the children from MSES in phoneme stripping and rhyme recognition tasks. The findings were consistent with the study by (Dodd & Gillon, 2001), indicating that children from a low SES background performed well below the level expected for their chronological age for rhyme awareness and phoneme isolation subtests of PIPA. Consistent with prior studies, SES differences were found on most of the measures of phonological awareness and language (Bird et al., 1995). Children from higher SES background outperformed children from lower SES backgrounds.

Conclusion

The present study revealed that children from lower socio economic status performed poorly than the children from lower socio economic status in phonological awareness tasks. The obtained difference in performance between the two groups is supported with the review that children from homes of higher SES are more likely to have had exposure to activities that help them realize their potential; therefore, displays of lower phonological awareness most likely represent lower capacity. In contrast, children from homes of lower SES may not have had exposure to such reading-related activities, so poor performance on phonological awareness tasks (Walker et al., 1994). Therefore from the present study it is concluded that socio economic status is evident for development of phonological awareness because poorer home literacy, including limited access to reading materials or modelling of reading by adults in the home, has been cited as a main causal variable leading to reduced academic performance including reading and writing ability. Alternatively, it may reflect need for a longer time period to generalize learning in low SES children.

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APPENDIX 1: PHONOLOGICAL AWARENESS TASKS

TASK 1: PHONEME ODDITY

This section consisted of two parts i.e. Phoneme oddity (initial) and Phoneme oddity (final). The subjects were instructed to listen to the words and to choose the one which did not belong to the set.

1. Phoneme oddity (initial): The test material consisted of fifteen sets of words. Each set consisted of four words, of which three of them begin with same sound (phoneme) and one word begin with different sound (phoneme). The subjects were instructed to listen to the words and to choose the one which did not belong to the set.

2. Phoneme oddity (final): The test material consisted of fifteen sets of words. Each set consisted of four words, of which three of them end with same sound (phoneme) and one word end with different sound (phoneme). The subjects were instructed to listen to the words and to choose the one which did not belong to the set.

TASK 2: PHONEME STRIPPING

This section consisted of fifteen words. The subjects were asked to listen to the words carefully and they were instructed to strip (delete) a particular sound from the word and say the rest of the word.

TASK 3: SYLLABLE ODDITY

The subjects were instructed to listen to the words and to choose the one which did not belong to the set. This section consists of two parts i.e. Syllable oddity (initial) and syllable oddity (final).

1. Syllable oddity (initial): This material consists of fifteen set of words. Each set consisted of four words, of which three of them begin with same syllable and one word begin with different syllable.

2. Syllable oddity (final): This material consists of fifteen set of words. Each set consisted of four words, of which three of them end with same syllable and one word end with different syllable.

TASK 4: SYLLABLE STRIPPING

The test consists of fifteen words. The subjects were instructed to strip (delete) a particular syllable from the word and say the rest of the word.

TASK 5: RHYME RECOGNITION

This section consists of fifteen pair of words, both rhyming and not rhyming. The subjects were instructed to identify whether the paired words were rhyming or not.

TASK 6: CLUSTERS

This section consists of fifteen words. The subjects were instructed to identify the cluster in the presented word and then were asked to simplify the cluster by naming the sounds which constituted the clusters.

TASK 7: BLENDING

This section consists of fifteen pair of phonemes. The subjects were instructed to combine the two sounds to make a cluster orally.

APPENDIX 2: AVAILABLE NORMS FOR BOYS AND GIRLS FOR 'TEST OF LEARNING DISABILITY IN KANNADA' (FOR PHONOLOGICAL AWARENESS TASKS).

Phoneme Oddity

Grade	N	Phoneme Oddity (Initial)				Phoneme Oddity (Final)			
		Males		Females		Males		Females	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
II	30	9.13	1.59	9.58	1.23	7.90	2.18	7.72	2.10
III	30	11.66	1.81	11.32	1.54	9.36	2.26	9.42	2.42
IV	30	12.76	2.13	11.98	1.38	11.06	1.61	11.68	1.43
V	30	13.50	1.83	13.43	0.92	12.73	1.25	11.98	1.38
VI	30	14.63	0.85	14.62	0.81	13.73	1.46	13.42	1.52
VII	30	14.96	0.18	14.96	0.16	14.23	1.27	14.02	1.31
VIII	30	14.96	0.18	14.96	0.12	14.70	0.74	14.81	1.20
IX	30	14.96	0.18	14.98	0.10	14.96	0.18	14.96	0.20
X	30	14.96	0.18	14.98	0.10	14.96	0.18	14.96	0.18

Phoneme Stripping

Grade	N	Phoneme Stripping			
		Males		Females	
		Mean	SD	Mean	SD
II	30	1.13	1.25	1.11	1.20
III	30	2.70	3.42	2.23	3.45
IV	30	4.00	3.45	4.12	3.43
V	30	4.56	3.52	4.72	3.50
VI	30	8.53	3.63	7.94	3.52
VII	30	9.50	3.39	9.32	3.46
VIII	30	10.53	2.47	10.56	2.34
IX	30	12.00	2.10	12.43	2.28
X	30	13.30	1.44	13.56	1.23

Syllable Oddity

Grade	N	Syllable Oddity (Initial)				Syllable Oddity (Final)			
		Males		Females		Males		Females	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
II	30	11.56	2.99	11.62	2.72	10.76	2.45	10.53	2.52
III	30	11.83	2.27	11.74	2.36	11.30	2.19	11.21	2.28
IV	30	13.36	1.80	13.46	1.65	12.90	1.84	12.92	1.71
V	30	14.00	1.31	14.07	1.28	13.90	2.02	13.43	2.18
VI	30	14.83	0.53	14.87	0.46	14.90	0.40	14.92	0.32
VII	30	14.93	0.25	14.96	0.21	14.96	0.18	14.96	0.18
VIII	30	14.96	0.18	14.96	0.18	14.96	0.18	14.96	0.16
IX	30	14.96	0.18	14.96	0.16	14.96	0.18	14.96	0.16
X	30	14.96	0.18	14.96	0.16	14.96	0.18	14.96	0.16

Syllable Stripping

Grade	N	Syllable Stripping			
		Males		Females	
		Mean	SD	Mean	SD
II	30	6.80	6.19	6.86	6.21
III	30	10.26	5.59	10.53	5.73
IV	30	13.46	2.97	13.12	3.43
V	30	14.06	1.41	14.35	1.76
VI	30	14.10	1.72	14.84	1.59
VII	30	14.86	0.43	14.96	0.37
VIII	30	14.96	0.18	15	0
IX	30	15	0	15	0
X	30	15	0	15	0

Clusters

Grade	N	Cluster			
		Males		Females	
		Mean	SD	Mean	SD
II	30	0	0	0	0
III	30	5.50	4.59	5.62	4.43
IV	30	8.83	3.89	7.95	3.63
V	30	10.26	4.59	10.21	4.49
VI	30	13.70	1.26	13.42	1.56
VII	30	13.83	1.59	13.76	1.68
VIII	30	13.86	0.97	13.83	0.87
IX	30	14.63	0.76	14.24	0.76
X	30	14.96	0.18	14.93	0.16

Blending

Grade	N	Blending			
		Males		Females	
		Mean	SD	Mean	SD
II	30	0	0	0	0
III	30	3.56	3.83	3.67	3.43
IV	30	5.66	5.35	5.32	5.26
V	30	7.03	5.10	6.97	5.09
VI	30	11.36	2.42	10.96	2.98
VII	30	12.40	1.94	12.34	1.89
VIII	30	13.86	1.22	13.78	1.42
IX	30	14.10	1.02	14.09	1.18
X	30	14.43	0.93	14.36	0.84

Rhyme Recognition

Grade	N	Rhyme Recognition			
		Males		Females	
		Mean	SD	Mean	SD
II	30	10.16	2.80	10.32	2.64
III	30	12.73	2.72	12.71	2.74
IV	30	13.60	1.56	13.61	1.43
V	30	13.60	1.61	13.60	1.35
VI	30	14.06	1.14	14.26	1.12
VII	30	14.43	0.89	14.48	0.74
VIII	30	14.80	0.48	14.85	0.38
IX	30	14.96	0.18	15	0
X	30	15	0	15	0