iJRASET
International Journal For Research in Applied Science and Engineering Technology

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

**Volume:** 11 **Issue:** VIII **Month of publication:** Aug 2023

**DOI:** https://doi.org/10.22214/ijraset.2023.55324

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538*
*Volume 11 Issue VIII Aug 2023- Available at www.ijraset.com*

# Phonological Awareness in Children with and Without Speech Sound Disorder

Ms. Nisha U V[1], Dr. Satish Kumaraswamy[2]
[1]*Final Post Graduate Student,* [2]*PhD in Speech, and Hearing, Dr. M. V. Shetty College of Speech and Hearing Malady Court, Kavoor, Mangalore-15*

## I. INTRODUCTION

Phonology is the branch of linguistics concerned with the study of speech sounds with reference to their distribution and patterning ( Norquist, 2019).

Spoken language may seem like streams of uninterrupted speech. Individuals can accurately perceive the component sounds of language and distinguish phonological differences of each sound when the phonological perception and awareness are functioning normally.

Phonological awareness is the ability to recognize and work with sound in spoken language (National Initiative for Proficiency in Reading with Understanding and Numeracy, 2021). Examples include identifying words that rhyme, recognize alliterations, segmenting a sentence into words, identifying the syllables in a word, blending and segmenting onset-rimes.

Phonological processing, phonemic awareness, phonological sensitivity, phonemic analysis, phonetic awareness and linguistic awareness have been used interchangeably with the term phonological awareness.

Phonological awareness (PA) involves a continuum of skills that develop over time and which are crucial for success especially important at the earliest stages of reading development in pre-school, kindergarten and first grade for typical readers.

Phonological awareness difficulties can lead to speech sound disorder because children who are unable to auditorily discriminate between sounds will be unable to produce the different sounds effectively**.**

Speech sound disorder is a common problem in early childhood (Harrison, 2009). Children with speech sound disorder are thought to have difficulty with one or more aspects of phonological processing comprising speech intelligibility, acceptability, including the perception, creation and storage of underlying representations and production of speech (International Expert panel on Multilingual children speech, 2012).

Children with Phonological disorders have multiple speech sound production errors and compromised intelligibility. They may or may not have language difficulties in other domains such as vocabulary and grammar. The speech sound difficulties of children with Phonological disorders tend to be more pronounced than the difficulties of children with articulation problems who may exhibit distortions, substitutions, addition and omission.

The development of phonological awareness can be challenging for children with speech sound disorders (SSD). Understanding the significance of phonological awareness and implementing effective strategies to enhance it can greatly support their overall language and literacy skills.

Kang (2020) examined the effect of an integrated phonological awareness intervention for children with speech-sound disorders after providing production practices for approximately 12 weeks. Assessment of Phonology and Articulation for Children (APAC) test score revealed that children showed consonant accuracy of about 50–80% in word levels.

Martins, Ribeiro, Pastura and Monteiro (2020) examined phonological rehabilitation in school children with ADHD and dyslexia and observed significant difference between before and after remediation assessment in phonological processing skills, such as syllabic and phonemic awareness, working memory and lexical access.

Jain, Priya and Joshi (2020) investigated the relation between temporal processing and phonological awareness in children with and without misarticulation. The results showed that there was a significant difference in temporal and phonological processing of children with misarticulation.

Razak (2015) examined the phonological awareness and reading skills of Malayalam-English biliterate children with learning disabilities. The results revealed that overall performance of children with LD was poorer when compared to typically developing children. Developmental lag was observed in phonological awareness in children with LD.

A substantial body of research work exists on difference in phonological awareness between children with and without speech sound disorders.

The purpose of the study is to understand the difference in phonological awareness in children with and without speech sound disorder, thereby ruling out normal development of phonological awareness and its difference according to the influence of context.

## II. REVIEW OF LITERATURE

Phonological awareness is the ability to manipulate individual sounds (phonemes) in words and rudimentary phonological skills, such as judging whether two words rhyme (Francis 2005).

Phonological awareness has been the topic of interest among researchers because of its intimate and intricate relationship with primary literacy acquisition skills such as reading and spelling. It is viewed as a bridge between language and literacy (Morais, 1989) and the enormous research progress archived on this topic promoted to call it a "scientific success story" (Stanovich, 1988). Phonological awareness might be the important barrier to reading acquisition discovered so far (Gough and Hillinger, 1980).

Phonological awareness refers to an individual's awareness of the sound (phonological) structure of spoken words. Children exhibiting phonological awareness consciously recognize (or at least are sensitive to) the phonological units comprising a word. At a relatively younger age (3 to 4 years), children become aware that spoken words contain syllables and that syllables within words contain smaller sound units. With increasing age, children become more aware of the intrasyllabic units of syllables and words, including onsets, rimes, and individual phonemes.

Phonological awareness performance is a strong predictor of long-term reading and spelling success. Students with strong phonological awareness are likely to become good readers, but students with weak phonological skills will likely become poor readers (Blachman, 2000).

Phonological awareness skills in preschool and kindergarten years also strongly predict how well a child reads in the school years. Phonemic awareness is a subset of phonological awareness in which listener can hear, identify, and manipulate phonemes, the smallest units of sound that can differentiate meaning. Separating the spoken word cat into three distinct phonemes /k/ /a/ and /t/ requires phonemic awareness.

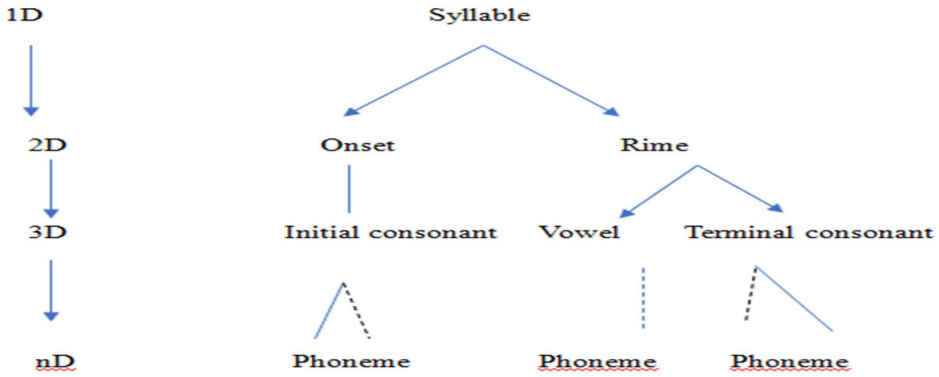
Phonological awareness can be taught very early and will play a role in helping children learn to read and spell. Children as young as two years old can learn to read by developing phonemic awareness, and they can learn to read fluently, (Eleanor 2009).

### *A. Development Of Phonological Awareness*

Trieman, 1987 reported phonological awareness develops from an awareness of large units, such as word or syllables, towards an awareness of small units, such phonemes. The development could be disjoint, occurring as a sudden insight, perhaps resulting from the production of alphabetic literacy. Alternatively, it could be progressive proceeding from large structures (syllables), though intermediate structures (onset -rime) and then to small structures (phonemes).

The progression from syllable to onset rime might occur spontaneously, perhaps with the help of non-alphabetic stimulation, such as songs and rhymes, with alphabetic training still being required for the lower (phonemic level) or it could be that implicit awareness of the intermediate structure also normally requires an input from literacy, such as isolation of initial letters and consonant clusters or focus on families of rhyming words.

These possibilities can be grouped around hierarchical model of syllable which was adopted from linguistic research by Trieman (1992). A syllable is represented as consisting of an (optimal) onset (initial consonant or cluster) and an (obligatory) rime (vowel plus terminal consonant) plus an optimal appendix (grammatical particle). The rime component is divided into (obligatory) peak (vowel) and (optimal) coda (terminal consonant or cluster).



The highest (onset /rime) division is referred to as the two-dimensional (2D) level. The assumption here is the syllable may be represented in a one-dimensional (1D) format, as a simple list, or in a 2D format as a list of possible onsets which may combine multiplicative with the member of list of possible rimes. At the next level, the division of the rime defines a three-dimensional (3D) structure formed by the combination of elements from a list of possible onsets or initial consonants, a list of possible vowels and a list of possible terminal consonants. It may be noted that this identifies a second intermediate level between syllable and phoneme which is distinguished by the preservation of IC clusters and TC clusters. This level has not been much discussed recently but emphasized by Gibson and her associates in their early work on spelling patterns (Gibison 1970). At the lowest level, referred to many -dimensional (nd), the IC, V and TC structures may unpack into a set of phonemes. They might exist as a linear string or might be grouped according to the phonological and positional structure provided by the hierarchy.

Given this stimulation, we propose two alternative accounts of phonological awareness:

1.Progressive top down: - Development proceeds from awareness of the highest level (1D) through intermediate level (2D,3D) to the lowest level (nD). A subsidiary hypothesis is that access to the lower (nD) level normally requires alphabetic literacy training.

2.Disjoint, bottom up: There is an abrupt transition from awareness of syllable (1D) to awareness of phoneme (nD), normally dependent on alphabetic literacy training, which may be followed by imposition of a 3D grouping and ultimately, a 2D grouping, perhaps also facilitate literacy.

According to hypothesis 1, Phonological awareness development will follow the sequence: 1D → 2D → 3D → nD. Under hypothesis 2 the sequence will be 1D → nD → 3D → 2D. In both cases the transition of the nD(phoneme)level should occur after the beginning of alphabetic instruction.

More encompassing perspective of phonological awareness includes reference to skills ranging along a continuum of shallow to deep levels of awareness (Phillips, and Burgess, 2003).

At more shallow levels of phonological awareness, children show sensitivity to the sound patterns that recur across and within words. At these levels, children may recognize, for instance, that the words bell and tell demonstrate certain phonological similarities (i.e., these words rhyme) and that bell can be divided into two components (i.e., its onset and rime: b + ell). They are also likely to be able to blend and segment multisyllabic words (e.g., doorbell, pancake) and to identify when words share the same singleton onsets (e.g., me, moon).

At the opposite end of the continuum, representing deeper levels of sensitivity, children demonstrate more conscious levels of awareness regarding a word or syllable's phonological structure. With access to deeper levels of sensitivity, children can compare, contrast, and even manipulate phonological segments within and across syllables and words. For example, they can delete phonemes in words to create new words (such as deleting the first sound in the word track to create rack) and can count the number of sounds in individual words.

Phoneme awareness is fully realized when children can recognize that each word or syllable consists of a series of discrete phonemes and can explicitly identify, blend, and segment these phonemes.

Phonological awareness has often been studied within the context of children's literacy development. Although children's ability to consciously represent and manipulate the phonological structure of words is highly mediated by their linguistic abilities and experiences, the fundamental role that phonological awareness plays in reading development has encouraged many scientists and practitioners to study phonological awareness within the framework of literacy development.

Emergent literacy is the precursor for reading and writing skills that are acquired by most children within the preschool and kindergarten period.

These skills lay the foundation for later skilled and fluent reading. The two primary domains of development within this preliterate period are print knowledge (knowledge about forms and functions of written language) and phonological awareness (Justice and Ezell, 2004)

Storch and Whitehurst (2002) reported that at the end, preschool children with sophisticated levels of print knowledge and phonological awareness are more likely to develop into proficient conventional readers and writers as compared to preschoolers with low levels of awareness.

children's development of phonological awareness occurs on a continuum representing a hierarchy of sensitivity to the linguistic units that compose words. The order of the linguistic units to which children become increasingly sensitive appears to be based on the size of the unit (Treiman and Zukowski, 1996).

Children's early sensitivity to larger units, such as syllables and rime units, represents shallow levels of awareness, whereas later sensitivity to phonemes represents deep or higher levels of awareness (Burgess and Lonigan, 1998).

*B. Awareness Of Rhyme*

Sensitivity to rhyme is often viewed as one of the earliest benchmarks in the growth of phonological awareness. It is one's ability to represent words as discrete units that can be analyzed on a distinctly phonological basis. The ability to detect and produce patterns of rhyme across words, observed in children as young as 2 years of age, has been viewed as a critical entry point in the development of phonological awareness (Hempenstall, 1997). Sensitivity to rhyme begins to emerge in some children not long after they exhibit productive use of oral language.

E.g.: wall, ball, fall, cat

Ans: cat

*C. Awareness Of Syllables*

Initially, children begin to recognize that multisyllabic words can be segmented at the level of the syllable (e.g., that butterfly can be broken into three parts). Usually around 4 years of age, children begin to exhibit explicit awareness of syllabic distinctions within multisyllabic words. Subsequently, children show increased sensitivity to distinctions within intrasyllabic units. Specific patterns govern children's growth in sensitivity to intrasyllabic units within the syllable. In the early stages of sensitivity to syllable structure (when children are not yet perceiving phonemes as the basic linguistic unit), children show greater facility at segmenting syllables into onsets and rimes when onsets occur as singleton consonants rather than consonant clusters (Treiman, 1983).

E.g.: Hotdog can be readily divided into hot and dog

Baby can be segmented into ba-by

*D. Awareness Of Alliteration*

Alliteration describes the sharing of a phoneme across two words or syllables, such as bad and big. Sensitivity to alliteration is also an early indicator of phonological awareness. By age 3, a few children will begin to show sensitivity to alliteration across words, and by age 5, many children from advantaged backgrounds will demonstrate this level of phonological awareness.

E.g., Child is asked to find the different word from a group of words.

Duck, Door, Dog, Cake

Ans: Cake

Pula Renta Pedoot, Ana Manhani Caceres-Assceco (2017) found alliteration and rhyme skills in children with specific language impairment and concluded that the children with specific language impairment presented difficulty in alliteration and rhyme tasks, indicating poorer performance than their peers without language impairment.

*E. Phoneme Awareness*

The ability to identify phonemes as the unit comprising syllables and words is not exhibited with mastery by many children until about 6 or 7 years of age (Ball, 1993),

Lonigan and colleagues (1998) found that 5-year-old children from advantaged backgrounds could complete at least one item successfully on a phoneme-deletion task.

Phoneme awareness comprises two areas of growth: phoneme segmentation and phoneme blending.

Phoneme segmentation is the ability to sequentially isolate all the individual sounds in a syllable or word, or to segment a sound from a word or syllable.

E.g.: Dog - /d/ /o/ /g/

. Phoneme blending is the ability to take a sequence of phonemes and build them into a larger linguistic unit.

E.g.: /d/ /o/ /g/ -Dog

Phoneme segmentation and blending are critical requisites for learning to read. There is a developmental trend in children's performance on phoneme segmentation and blending tasks. In general, performance on phoneme blending tasks is superior to that on segmentation and elision tasks (Lonigan, 2009).

Phonological awareness is distinguished by the task performed and size of the unit of the sounds. Different phonological skills are distinguished by the type of task performed includes blending sounds together, separating words into their constituent sounds, recombining sounds of words, and judging whether two words have some sounds in common. Distinctions among phonological awareness skills based on unit of word structure include whether syllables are the focus of the task or whether smaller intrasyllabic units, like onsets, rimes, or phonemes, are the focus.

A phonological awareness test has been administered to people of different ages, reading levels, and languages. Two overlapping patterns of development are evident. First, children become increasingly sensitive to smaller and smaller parts of words as they grow older. Children can detect or manipulate syllables before they can detect or manipulate onsets and rimes, and they can detect or manipulate onsets and rimes before they can detect or manipulate individual phonemes within intrasyllabic word units.

Second, children can detect similar and different sounding words before they can manipulate sounds within words, and children can generally blend phonological information before they can segment phonological information of the same linguistic complexity. Finally, children refine phonological awareness skills they have already acquired while they are learning new phonological awareness skills contrary to a strict stage theory of development. (Anthony, 2003).

Phonological awareness difficulties can lead to articulation disorder because children who are unable to auditorily discriminate between sounds will be unable to produce the different sounds effectively**.**

Phonological awareness difficulties can cause speech sound disorders in children because if a child is unable to hear or think about the differences between units of sound in our speech, they will be unable to produce them correctly. This can lead to frustration as they cannot hear the errors in their speech and listeners may not be able to understand them.

Speech sound disorder (SSD) is defined as a developmental disorder characterized by articulatory and/or phonological difficulties that affect a child's ability to be understood by others, leading to reduced speech intelligibility, in the absence of other cognitive, sensory, motor, structural, or affective issues. (McGrath, 2007)

Speech Sound Disorders (SSDs) is a generic term used to describe a range of difficulties producing speech sounds in children (McLeod and Baker, 2017).

In Speech Sound Disorder, phonemes, or the basic units of speech, can be added, omitted, distorted, changed, or substituted in a manner which makes the speaker difficult to understand (American Speech Language Hearing Association, 2014)

Addition of sounds is defined as including unneeded sounds in the pronunciation of the word. Omission involves deleting sounds or syllables, e.g., the word Doggie is pronounced as "oggie". Distortions involve altering the correct sound of the word, which includes lisping. Substitution is using an incorrect sound to pronounce the word, e.g., cry is pronounced as "Cwy".

According to the DSM-5, there are four criteria for Speech Sound Disorder:

*1)* Persistent unintelligible speech consisting of phoneme addition, omission, distortion, or substitution, which interferes with verbal communication.
*2)* There is interference with either social participation, academic performance, or occupational performance (or any combination thereof).
*3)* The onset of symptoms is during childhood.
*4)* The symptoms cannot be accounted for by another medical or neurological condition, including TBI (Traumatic Brain Injury) (American Psychiatric Association, 2013).

Kang (2020) analyzed effect of an integrated phonological awareness intervention for children with speech-sound disorders. Three children in the age group of five years with speech sound disorders participated in this study, and the results revealed that children showed consonant accuracy of about 50–80% in the word levels of the Assessment of Phonology and Articulation for Children (APAC) test. They had no previous experience in speech therapy or specific phonological awareness training. Integrated phonological awareness, which emphasized production practices for target phonemes as well as phonological awareness tasks, was provided to the three children for approximately 12 weeks, and all three children showed improvements in consonant accuracy in spontaneous speech as well as all target phonemes. Also, they showed progress in phonological awareness skills at the syllable and body-coda levels.

Martins, Ribeiro, Pastura and Monteiro (2020) investigated phonological rehabilitation in students with ADHD and dyslexia. This study included 32 elementary school students from the second to eighth grades, both genders, with DSM-5 diagnoses of ADHD and dyslexia. All of them went through a phonological remediation curriculum that included 18 weekly sessions. The findings demonstrated a statistically significant difference in phonological processing skills such as syllabic and phonemic awareness, working memory, and lexical access before and after rehabilitation evaluations. The rhyming task was studied separately because it represents a different degree of segmentation, and there was no significance for this outcome. Aside from these findings, they observed a statistically significant difference in reading speed and comprehension. They conclude that the phonological rehabilitation program aids in the development of phonological processing, reading speed, and reading comprehension in this population.

Jain, Priya and Joshi (2020) investigated the relation between temporal processing and phonological awareness in children with misarticulation.

Temporal processing and phonological skills were evaluated in 32 participants in the age range of 6–10 years, equally divided into two groups. Gap detection test and duration pattern test were used to assess temporal processing abilities, and phonological sensitivity training kit in Kannada (PhoST-K) assessed phonological processing abilities. The results showed that there was a significant difference in temporal and phonological processing between the two groups of children. A significant correlation between gap detection ability and deletion tasks and between duration pattern ability and oddity tasks was obtained.

Based on the results, it is recommended to assess the temporal process pertinent to central auditory processing in children with SSD, as a close relationship between temporal processing abilities and phonological awareness exists.

Razak (2015) analyzed phonological awareness and reading skills of Malayalam-English biliterate children with learning disabilities. The participants include 15 children with learning disabilities. The phonological awareness subsection, like rhyme recognition, syllable deletion, phoneme deletion, and phoneme oddity, was used as a stimulus. The reading subsection included reading words and 22 non-words in Malayalam and reading regular words, irregular words, and non-words in English, and results revealed that overall, the performance of children with LD was poorer when compared to typically developing children (TDC) on phonological awareness. A developmental lag was observed in phonological awareness in children with LD. The findings were similar in both Malayalam and English. This developmental lag in phonological awareness in both languages could be due to a general phonemic deficit. which would in turn hamper their ability to process both written and spoken language.

Tambyraja and Farquharson (2023) analyzed phonological processing skills in children with speech sound disorders. This study includes 157 children, and all of them have undergone school-based speech therapy. and the result revealed that children with SSD demonstrated a range of phonological processing difficulties, particularly on the measure of verbal short-term memory.

Schuele (2004) reported children with speech disorders face increased risks of having trouble with phonological awareness and subsequent reading and spelling impairment.

Rvachew and Grawburg (2009) investigated the co-relationships of phonological awareness in preschoolers with speech-sound disorders. This study includes two groups of 4-year-old children: one with normally developing speech and language skills and the other with moderately or severely delayed expressive phonological skills but age-appropriate receptive vocabulary skills. Each group received tests of articulation, receptive vocabulary, phonemic perception, early literacy, and phonological awareness skills. The groups were matched for receptive language skills, age, socioeconomic status, and emergent literacy knowledge. The children with expressive phonological delays demonstrated significantly poorer phonemic perception and phonological awareness skills than their normally developing peers. The results suggest that preschool children with delayed expressive phonological abilities should be screened for their phonological awareness skills even when their language skills are otherwise normally developing.

Preston and Edward (2010) analyzed phonological awareness and type of sound errors in in preschool children with speech sound disorders and found that Poorer phonological awareness is associated with lower receptive vocabularies and more atypical sound errors. Results are interpreted in the context of the accuracy of phonological representations.

Ambrose and Fey (2012) analyzed phonological awareness and print knowledge of preschool children with cochlear implant. Twenty-four children with cochlear implants (CIs) and 23 peers with normal hearing (NH) were examined, ranging in age from 36 to 60 months. Children's print knowledge, phonological awareness, language, speech production, and speech perception abilities were evaluated in this study, and the results revealed that. For print knowledge, the CI group's performance did not differ much from that of the NH group. There was a lack of phonological awareness and print understanding. It was concluded that children with cochlear implants can develop age-appropriate early reading abilities by preschool age, but they are likely to lag their normal hearing peers in phonological awareness. Intervention programs for these children should provide teaching and help these youngsters develop their speech and language skills.

Shavaki (2021) developed a program for training phonological awareness and assessment of its effectiveness on reading skills of elementary first graders with cochlear implants. It was a single-subject intervention. Phonological awareness intervention program was developed and validated by experts' opinions. Six elementary first graders with cochlear implants and weak or delayed reading development, in the 5-7-year-old range, were trained in phonological awareness skills. Auditory test of phonological awareness skills was used to evaluate the subjects' phonological awareness skills. Nama reading test was also used to determine the level of reading performance. The results showed that all six subjects with cochlear implants had improvements of both phonological awareness skills and reading skills after participating in the phonological awareness intervention program. This improvement was not only observed immediately after intervention but was also preserved in follow-up. The findings of this study demonstrated the importance of planning an intervention program about phonological awareness skills for elementary first graders with cochlear implants.

Donicht (2019) investigated spelling errors and phonological awareness skills in children with typical and atypical phonological development. This study included 50 children divided into two groups: those with typical phonological development (TPD) and those with atypical phonological development (APD). Results revealed that in relation to the number of spelling errors in writing, these were similar in the TPD and APD groups, except for the contextual-arbitrary errors that were greater for the APD. It was observed that the number of written spelling errors decreased with the increase in schooling. Concerning the average performance in phonological awareness, the TPD performed better than the APD in syllabic and phonemic awareness.

Anthony and Aghara (2011) investigated the factors that put children with speech sound impairments at risk for reading difficulties. The language, literacy, and phonological skills of three groups of preschool-age children were compared to those of a group of 68 children with SSDs, and the findings revealed that phonological processing may underpin the difficulties in phonological awareness and reading in those children with Speech sound disorders.

Namratha (2003) investigated phonological awareness and reading skills in children with hearing impairment. The experimental group consisted of five hearing-impaired children, while the control group consisted of age- and gender-matched normal hearing youngsters. Reading readiness tests and meta phonological tests were administered to these children, and the results revealed that children with hearing impairment perform poorly on the phonological awareness task.

Sonali (2007) analyzed early reading of Kannada: the pace of acquisition of orthographic knowledge and phonemic awareness. It indicated the acquisition of orthographic knowledge and phonemic sensitivity are processes that are central to early reading development in several languages.

It was hypothesized that in Kannada when compared with developmental pace reported in English early reading, akshara knowledge acquisition would take longer and phoneme awareness would be slower to emerge.

Iyyer (2000) investigated relationship between reading acquisition and meta phonological awareness in Malayalam speaking children. The participants were Malayalam-speaking children of four groups, i.e., 20 students, each of first to fourth grade. The results showed that phonological awareness is a significant factor in Malayalam reading, which is proved to be an important factor in reading alphabetic orthographies.

Tiwari, Krishnan, Rajashekhar and Chengappa (2011) investigated reading acquisition in Malayalam – English biliterates. The participants were 210 children, Assessments were done on phonological awareness of word and non-word reading and orthographic knowledge tasks in each language.

Rhyme recognition, syllable deletion, phoneme deletion and phoneme oddity were the phonological awareness tasks tested. Assessment of reading was done by two reading tasks, words and non-words in each language and orthographic knowledge task checked recognition and recall of letter or akshara in both languages.

From this study, they found a developmental trend on all tested skills in both languages. In the development of phonological awareness, there was an evident difference across the languages and there was a gradual emergence of phonological knowledge in Malayalam when compared to English. They also observed that there was a maturational difference in the phonological awareness tasks across languages. Among the phonological awareness tasks rhyme recognition and syllable deletion matured faster than phoneme deletion and phoneme oddity

Need of the study

Phonological awareness plays a crucial role in learning to read any alphabetic writing system. Research shows difficulty with phoneme awareness and other phonological skills is a predictor of poor reading and spelling development. The present study highlights the importance of assessing phonological awareness in children with and without speech sound disorders. It will help for the further intervention of children with speech sound disorders. Hence it is of interest to study the development of phonological skills predictive of later reading.

## III. METHODOLOGY

### A. *Aim of the study*

The present study was carried out with the aim of analyzing phonological awareness in children with and without speech sound disorders.

### B. *Subjects*

Forty children (20 typical developed and 20 children with SSD) in the age range of 4 to 7 years participated in the study and were randomly picked up from various schools in Trivandrum.

*C. Selection criteria*

*1)* Children have Malayalam as their native language.
*2)* Aged 4 to 7years, attending normal school.
*3)* Normal oral speech mechanism

*D. Exclusion criteria*

*1)* History of speech, language, or hearing problems
*2)* Neurological deficits
*3)* Reported difficulties in behavioral and intellectual functioning.

*E. Stimuli*

Preschool and primary inventory of phonological awareness (Pearson, 2000) test was administered to each child after presenting adequate test trial and instructions.

Procedure

The stimuli were presented orally and recorded by each child in a quiet and well illuminated room. Instructions were given appropriately for each subsection as shown below.

The responses were audio recorded using PRAAT software version 6.3.03, (paul Boersma,17 December 2002). Installed in Lenovo laptop with the help of Sony INZONE H9 headset with mic.

*F. Syllable segmentation*

Child is asked to segment the syllables of words.
E.g., Banana - ba-nan-a

*G. Rhyme identification*

Child is asked to identify non-rimes from a group of words.
E.g. Wall, Ball, fall, Cat
Ans: Cat

*H. Alliteration awareness*

Child is asked to find the different word from a group of words.
E.g., Duck, Door, Dog, Cake
Ans: Cake

*I. Phoneme isolation*

Child is asked to identify the initial sound of the word.
E.g.: Dog -/d/

*J. Letter knowledge*

Child was asked to say the sound as the clinician pointed to the syllable.
E.g., S-/s/

*Analysis*

The responses were noted accordingly. Score 1 was given for the correct response and 0 for incorrect responses. The obtained data were subjected to statistical analysis to find out the significant difference within and across groups.

## IV. RESULTS AND DISCUSSION

The aim of the study was to analyze phonological awareness in children with and without speech sound disorder. The obtained data were subjected to statistical analysis to know the performance of children with and without speech sound disorder. The results are discussed below.

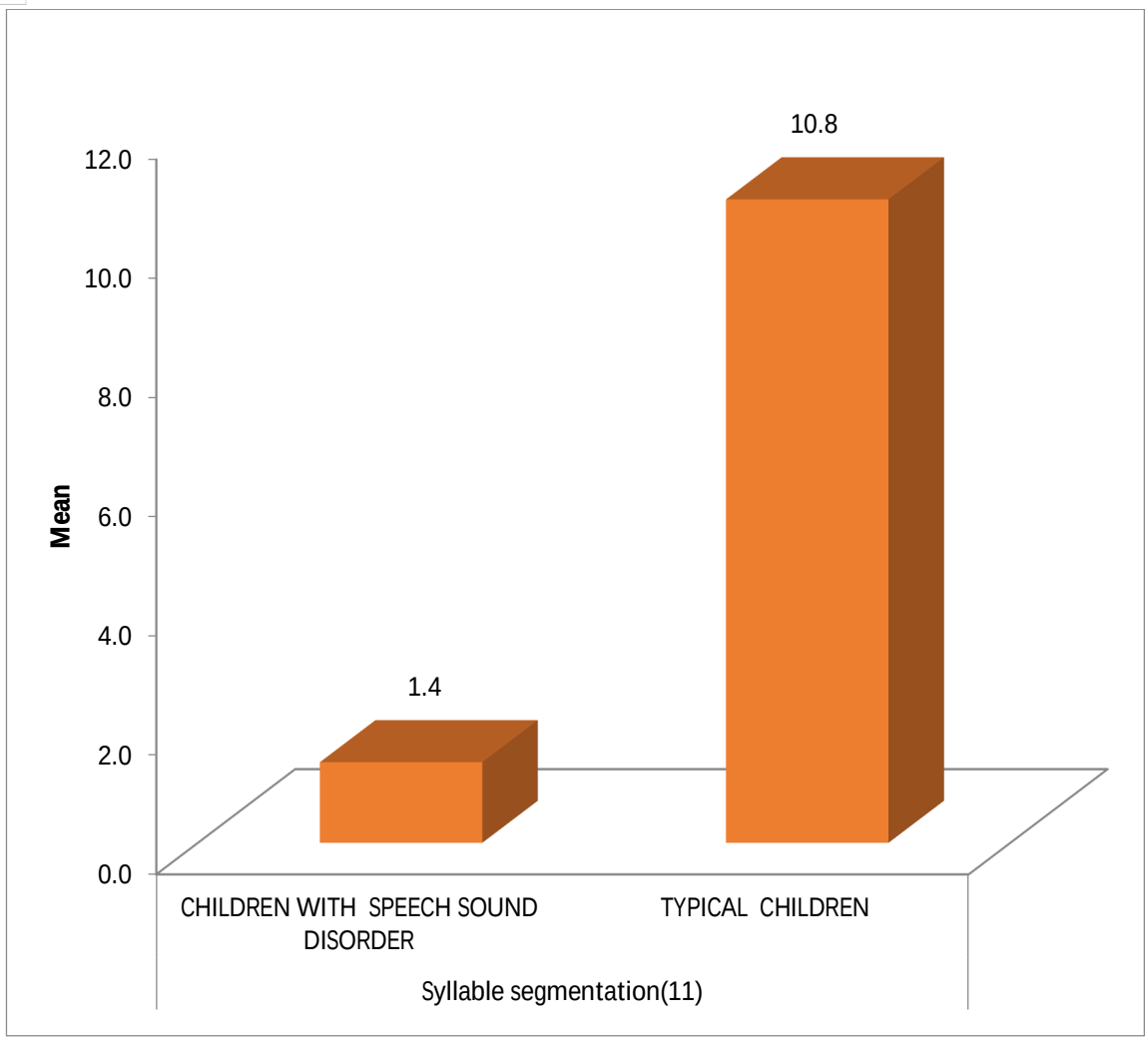



Figure 4.1: Showing the mean value of syllable segmentation in children with and without speech sound disorder.

Table 4 1: Showing mean, standard deviation and p value of syllable segmentation in children with and without speech sound disorder.

| Groups | | N | Mean | Std. Deviation | Median | IQR | | Mann Whitney test p value | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower | Upper | | |
| Syllable segmentation (11) | CHILDREN WITH SPEECH SOUND DISORDER | 20 | 1.4 | 1.5 | 1.5 | 0.0 | 2.0 | 0.000 | HS |
| | TYPICAL CHILDREN | 20 | 10.8 | 0.7 | 11.0 | 11.0 | 11.0 | | |

❖ HS -Highly Significant

From Figure 4.1 and Table 4.1, it can be concluded that typical children showed better performance in syllable segmentation tasks compared to children with speech sound disorder. Highly significant difference between typical children and children with speech sound disorder in syllable segmentation (p=0.000) was seen.

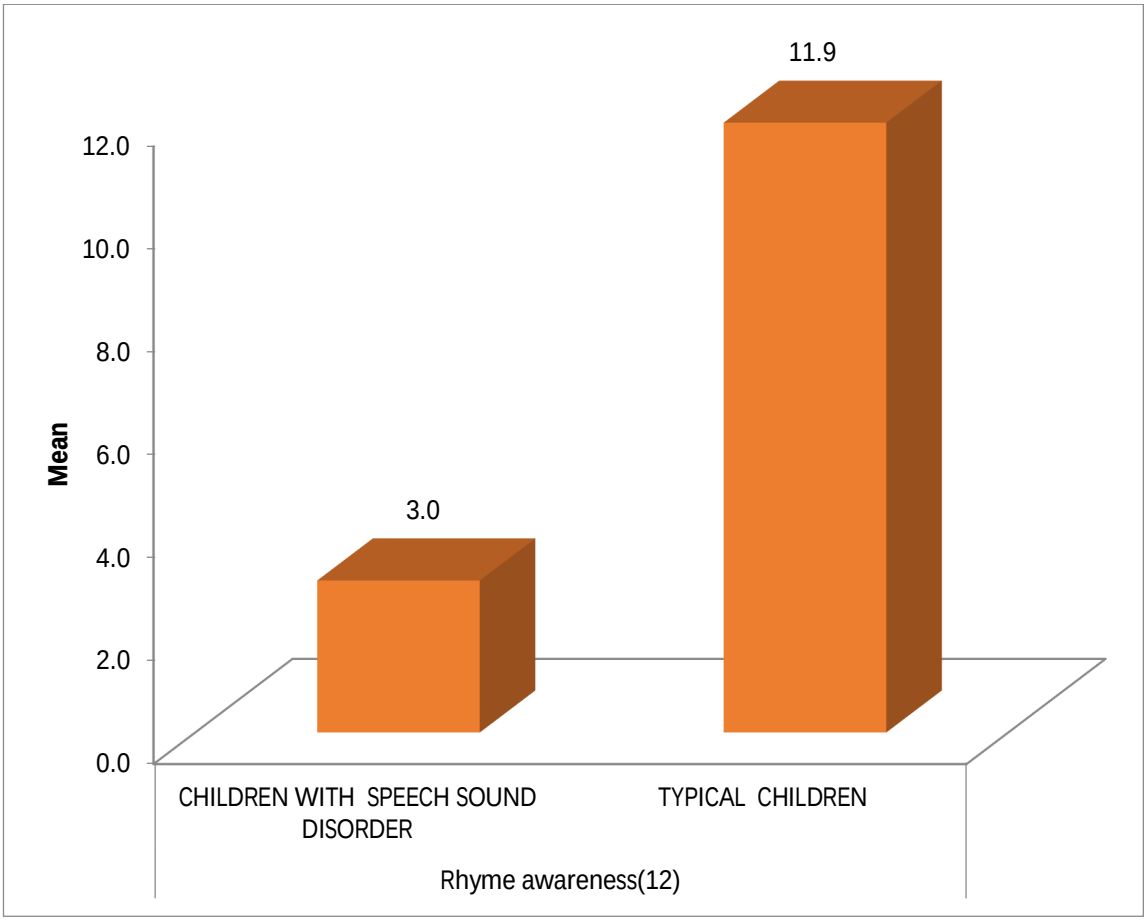



Figure 4. 2: Showing the mean value of rhyme awareness in children with and without speech sound disorder.

Table4.2: Showing mean, standard deviation and p value of rhyme awareness in children with and without speech sound disorder.

| Groups | | N | Mean | Std. Deviation | Median | IQR | | Mann Whitney test p value | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower | Upper | | |
| Rhyme awareness (12) | CHILDREN WITH SPEECH SOUND DISORDER | 20 | 3.0 | 2.8 | 2.0 | 1.3 | 3.8 | 0.000 | HS |
| | TYPICAL CHILDREN | 20 | 11.9 | 0.4 | 12.0 | 12.0 | 12.0 | | |

❖ HS-Highly Significant

From Figure 4.2 and Table 4.2, it can be concluded that typical children showed better performance in rhyme awareness tasks compared to children with speech sound disorder. Highly significant difference was noted between typical developing children and children with speech sound disorder in rhyme awareness (p=0.000).

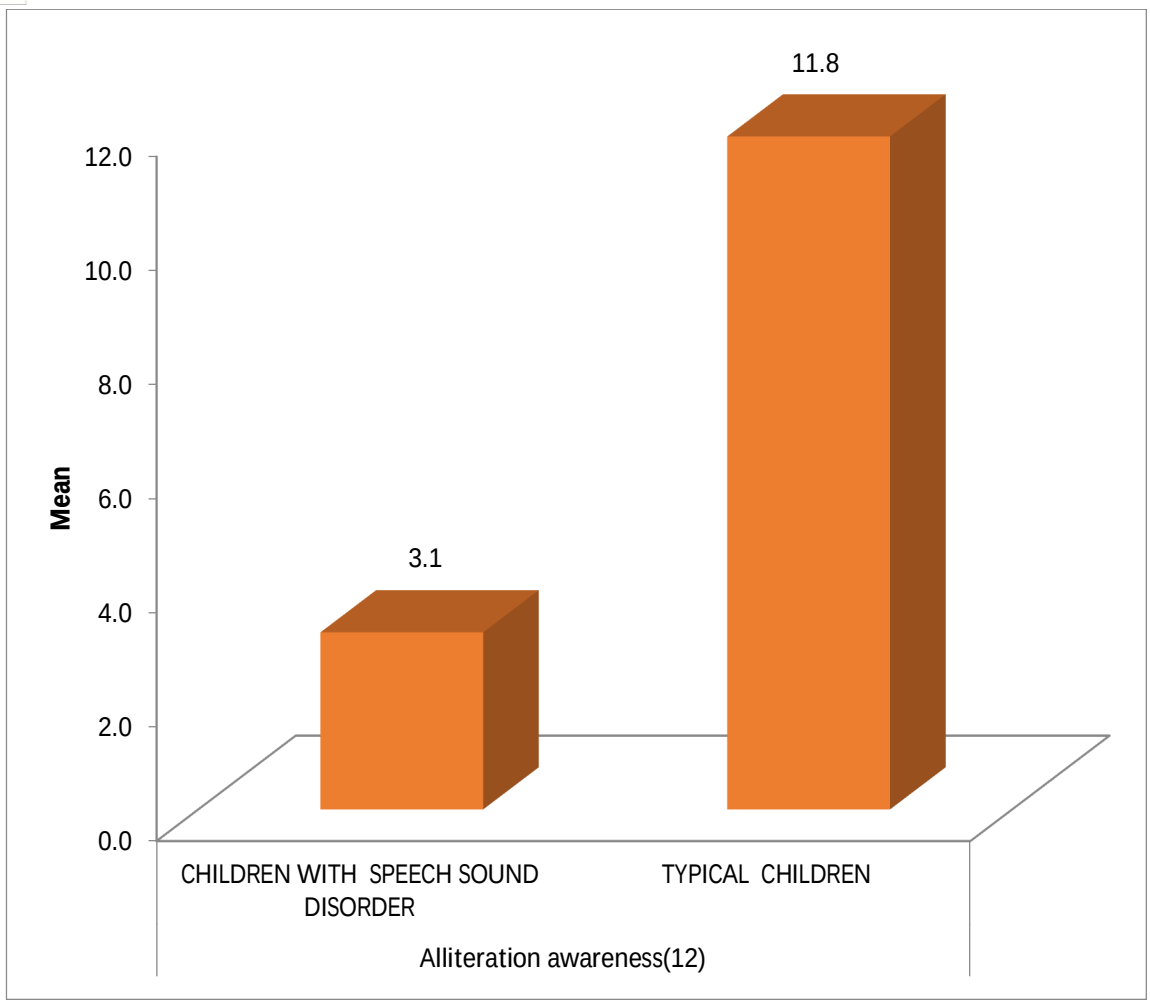



Figure 4.3: Showing the mean value of alliteration awareness in children with and without speech sound disorder.

Table 4 3: Showing mean, standard deviation and p value of alliteration awareness in children with and without speech sound disorder.

| Groups | | N | Mean | Std. Deviation | Median | IQR | | Mann Whitney test p value | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower | Upper | | |
| Alliteration awareness (12) | CHILDREN WITH SPEECH SOUND DISORDER | 20 | 3.1 | 1.9 | 2.5 | 2.0 | 4.5 | 0.000 | HS |
| | TYPICAL CHILDREN | 20 | 11.8 | 0.4 | 12.0 | 12.0 | 12.0 | | |

❖ HS-Highly Significant

From Figure 4.3 and Table 4.3, it can be concluded that typical children showed better performance in alliteration awareness tasks compared to children with speech sound disorder. High significant difference was noted between typical children and children with speech sound disorder in alliteration awareness (p=0.000).

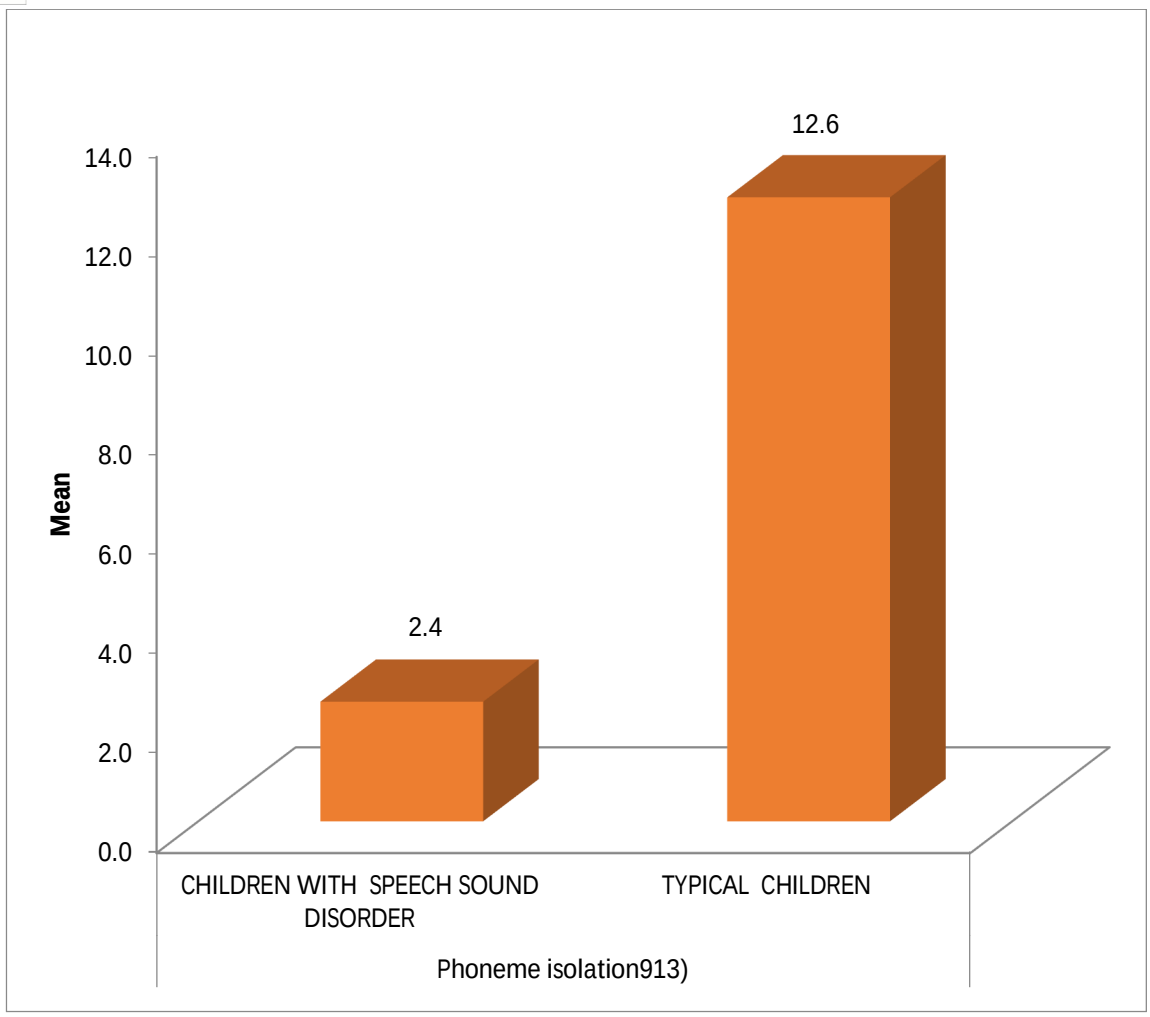



Figure 4. 4: Showing the mean value of phoneme isolation in children with and without speech sound disorder.

Table4. 4: Showing mean, standard deviation and p value of phoneme isolation in children with and without speech sound disorder.

| Groups | | N | Mean | Std. Deviation | Median | IQR | | Mann Whitney test p value | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower | Upper | | |
| Phoneme isolation (13) | CHILDREN WITH SPEECH SOUND DISORDER | 20 | 2.4 | 1.4 | 2.0 | 1.0 | 4.0 | 0.000 | HS |
| | TYPICAL CHILDREN | 20 | 12.6 | 0.6 | 13.0 | 12.0 | 13.0 | | |

❖ HS-Highly Significant

From Figure 4.4 and Table 4.4, it can be concluded that typical children showed better performance in phoneme isolation tasks compared to children with speech sound disorder. Highly significant differences were noted between typical and children with speech sound disorder phoneme isolation (p=0.000).

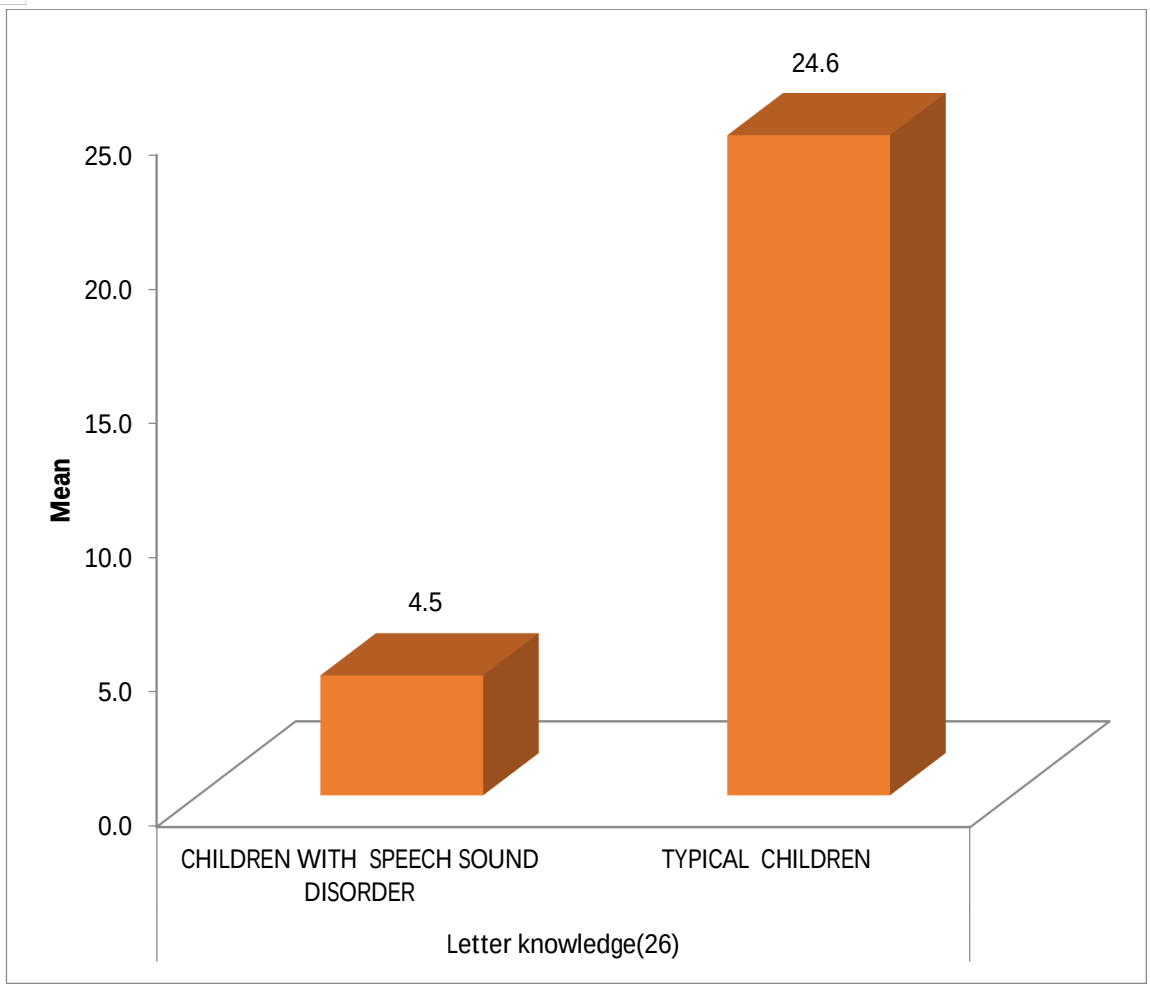



Figure 4. 5: Showing the mean value of letter knowledge in children with and without speech sound disorder.

Table4. 5: Showing mean, standard deviation and p value of letter knowledge in children with and without speech sound disorder.

| Groups | | N | Mean | Std. Deviation | Median | IQR | | Mann Whitney test p value | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower | Upper | | |
| Letter knowledge (26) | CHILDREN WITH SPEECH SOUND DISORDER | 20 | 4.5 | 3.6 | 4.5 | 2.0 | 6.0 | 0.000 | HS |
| | TYPICAL CHILDREN | 20 | 24.6 | 0.7 | 25.0 | 24.0 | 25.0 | | |

HS-Highly Significant

From Figure 4.5 and Table 4.5, it can be concluded that typical children showed better performance in letter knowledge tasks compared to children with speech sound disorder. Highly significant difference was noted between typical children and children with speech sound disorder in letter knowledge (p=0.000).

## V. DISCUSSION

The performance of children for phonological awareness skills was better in typical children compared to children with speech sound disorder. Highly significant differences across age groups were noted for all five subtests such as syllable segmentation, rhyme awareness, alliteration awareness, phoneme isolation and letter knowledge. The results of present study are in accordance with the study done by Tambyraja and Farquharson (2023) on phonological skills in children with speech sound disorders and concluded that children with speech sound disorders demonstrated a range of phonological processing difficulties. However, it is crucial to consider the heterogeneity within the population of children with SSD, as some individuals may exhibit intact phonological awareness skills despite their speech difficulties.

## VI. SUMMARY AND CONCLUSION

Phonological awareness is the ability to recognize and work with sound in spoken language (National initiative for proficiency in reading with understanding and numeracy, 2021). Phonological awareness is crucial for learning to read any alphabetic system and research shows that difficulty with phoneme awareness and other phonological skills as a predictor of poor reading and spelling development.

The present study was carried out with the aim of analyzing phonological awareness in children with and without speech sound disorder. Forty children (20 typical developed and 20 children with SSD) in the age range of 4 to 7 years participated in the study and was randomly picked up from various schools in Trivandrum. Preschool and primary inventory of phonological awareness (Pearson 2000) test was administered to each child after presenting adequate test trial and instruction. The stimuli were presented orally and recorded by each child in a quiet and well illuminated room. Instructions were given appropriately for each subsection. The responses were audio recorded using PRAAT software version 6.3.03, (paul Boersma,17 December 2002). Installed in Lenovo laptop with the help of Sony INZONE H9 headset with mic.

The obtained data was subjected to statistical analysis. The results revealed that performance of children for phonological awareness skills was better in typical children compared to children with speech sound disorder.

Thus, results of the present study arise the importance of phonological awareness by highlighting the heterogeneity within the population of children with SSD and emphasizing the need for individualized assessments and targeted interventions (Kang 2000) among SLPs, parents and teachers for children with speech sound disorder to enhance their academic achievement, social life and quality of life.

### *A. Clinical implications*

The present study demonstrates that the facilitation of phonological awareness is an important component of intervention programs for children with speech sound disorders.

### *B. Limitations of the study*

*1)* The validity of the stimuli has not been made.
*2)* The age group selected for the study was 4-7 years.
*3)* A large sample size would have yielded more reliable results.

### *C. Future Directions*

*1)* The validity of stimuli can be done.
*2)* The test can be administered to various disordered populations.

## REFERENCES

[1] Ajay, P., & Bhoomika.K.R. (2010). Auditory processing and phonological Awareness among Biliterate Normally Progressing Readers and Dyslexic Readers. International Journal of Mind, Brain&Cognition. 1(2).
[2] Anthony., Jason, L., Lonigen., & Christophe, J. (2004). The Nature of Phonological Awareness: Converging Evidence from Four Studies of Preschool and Early Grade School Children. Journal of Educational Psychology, Vol 96(1).
[3] Bentin, S., Hammer, R., & Cahan, S. (1991). The effects of aging and first-grade schooling on the development of phonological awareness. Psychological Science, 2, 271-274.
[4] Blachman, B. A., Ball, E. W., Black, R. S., & Tangel, D.M. (1999). Kindergarten teachers develop phoneme awareness in low-income, inner-city classrooms. Does it make a difference? Humanities, Social Sciences and Law, 6, 1-18.
[5] Bradly, L., & Bryant, P. (1983). Diificulties in auditory organization as a possible cause of reading backwardness. 46-747.1 ture, doi 10.1038/27174690.

[6] Corina, D.P., Hafer, S., & Welch, K. (2014). Phonological Awareness for American Sign Language. Journal of deaf studies and deaf education.
[7] Cheung, H., Chen, H.,Lai, C., Wong,O., Hill, M. (2001).The development of phonological awareness: effects of spoken language experience and orthography.81(3),227 -241.
[8] Chiang, P., & Rvachew, S. (2007). English French bilingual children's phonological awareness and vocabulary skills. Canadian journal of applied linguistics. 10(3).
[9] Cologon, K., & Cupples, L. (2011). Effects of Targeted Reading Instruction on Phonological Awareness and Phonic Decoding in Children with Down Syndrome. American Journal on Intellectual and Developmental Disabilities, 116, 111-129.
Gough, P. B., & Hillinger, M. L. (1980). Learning to read: An unnatural act. Bulletin of the Orton Society, 30, 179-196
[10] fkonin, D.B. (1963,1973). Writing and dyslexia; An historical analysis. Journal of child psychology and psychiatry. 384-400.
[11] Fletcher, J. M., Satz, P., & Scholes, R. (1981). Developmental changes in the linguistic performance correlates of reading achievements. Brain and language, 147-160.
[12] Goswami, U. (1990). A special link between rhyme skills and the use of orthographic analogies by begning readers. Journal of child psychology and psychiatry, 301-311.
[13] Gough, P. B., & Hillinger, M. L. (1980). Learning to read: An unnatural act. Bulletin of the Orton Society, 30, 179-196
[14] James, D., Rajput, K., Brown, T., Sirimanna, T., Brinton, J., & Goswami, U. (2005). Phonological Awareness in Deaf Children Who Use Cochlear Implants. Journal of speech language hearing research, Vol. 48, 1511-1528. doi:10.1044/10924388(2005/105).
[15] John, McNamara., Jackie, L.V., Sherri., V.L., & Naomi, G. (2010). An exploratory study of the associations between speech and language difficulties and phonological awareness in preschool children. Journal of Applied Research on Learning.3(7)
LeaKozminsky., & ElyKozminsky. (1991). The effects of early phonological awareness training on reading success. Language, speech, and Hearing Services in Schools. 22, 196-203.
[16] Marian. V, Blumenfeld, K.H &Koushanskaya. (2007). The language Experience and Proficiency Questionnaire (LEAP -Q): Assessing Language Profiles in Bilinguals and Multilinguals. Journal of speech language & Hearing Research,50,940-967
Marisol, C. (1994). Development of phonological awareness and reading acquisition-A study in spanish language. Reading and Writing: an interdisciplinary journal.6(3),279298.
McNeill,B., Gillon, G.T.,& Dodd, B. (2010). Phonological awareness and early reading development in childhood apraxia of speech (CAS). International Journal of Language & Communication Disorders. 44 (2), 175-192.
[17] Morais, J. (1991). Phonological awareness: A bridge between language & literacy. In D. Sawyer, & B. Fox (Eds.), Phonological awareness in reading: The evolution of current perspectives. 31-71.
[18] Morris, R.D., & Sevcik, R.A. (2010). Cross-language correlates in phonological awareness and naming speed: evidence from deep and shallow orthographies. Journal of Research in Reading. 33(4) 374-391.
[19] Prakash, P.& Rekha, D. (1993). Phonological awareness and reading acquisition in Kannada. In A.K. Srivastava (Ed.), Research in child and Adolescent Psychology, seminar Readings. 47-52. Delhi: National Council for educational Research and Training Prakash, P., Rekha,D., Nigam, R. &Karanth, P. (1993).Phonological awareness, orthography and literacy.
[20] Quentin, L.D.,Chang,H.K.,Blanca,Q. (2011). English phonological awareness in bilinguals: a cross linguistic study of Tamil, Malayalam and Chinese English-language learners' Journal of Research in Reading. Keith, E. (1988). Assessing phonological Awareness in Kindergarten children: Issues of task comparability. Journal of experimental child Psychology.38,175-190
[21] Sensenbaugh, R. (2000). "Phonemic awareness: An important early step in learning to read Retrieved from
[22] :http://www.k idsource.com/kidsource/content2/phoemic.p.k12.4.html.
[23] Shlomo, B., Ronen, H.,Sorel,C. (2008). The effect of aging and first grade schooling on the development of phonological awareness.Psychological science.2(4).471-474.
[24] Snow,C. E., Burns., and Griffin,P. (1998). Preventing reading Difficulties in young children. National research council. Retrieved from www.nap.edu/catalog/6023.htm.
[25] Sonali, N. (2007). Early reading in kannada:the pace of acquisition of orthographic knowledge and phonemic awareness.Journal of Research in Reading.30(1), 7-22.
[26] Torneus, M. (1984). Reading disability, The role of language deficiencies. Haskins laboratory status report on research. 147-160
[27] Varghese, A .M. (2012). Phonological Awareness In 5 -8-year-old typically developing English speaking children. Unpublished Dissertation. Mangalore university.
[28] Webb, M. L,. and Lederberg, A. R. (2014). Measuring Phonological Awareness in Deaf and Hard-of-Hearing Children. Journal of speech language hearing research, Vol. 57, )131-142. doi:10.1044/1092-4388(2013/12-0106
[29] Ziegler, J. C., & Goswami, U. C. (2005). Reading acquisition, developmental dyslexia, and skilled reading across languages. Psychological Bulletin, 131, 3-29.

APPENDIX

# pipa Record Form

## Preschool and Primary Inventory of Phonological Awareness

### Details

Name _____

Address _____

Age _____

Gender _____

School Year _____

School/Site _____

Teacher _____

Examiner _____

| | Year | Month | Day |
|---|---|---|---|
| Date Tested | | | |
| Date of birth | | | |
| Age | | | |

### Score Summary

| Test Scores | Raw Score | Standard Score | Conf. Interv. ___ % level | Percentile Rank |
|---|---|---|---|---|
| Syllable Segment (SSeg) | | | | |
| Rhyme Awareness (RA) | | | | |
| Alliteration Awareness (AA) | | | | |
| Phoneme Isolation (PI) | | | | |
| Phoneme Segment (PS) | | | | |
| Letter Knowledge (LK) | | | | |

### Profile Graph

| | All ages | | | 4:0 – 6:11 | | | |
|---|---|---|---|---|---|---|---|
| Subtest | SSeg | RA | AA | PI | PS | LK | |
| Standard Score | | | | | | | Percentile Rank |
| 17 | • | • | • | • | • | • | 99 |
| 16 | • | • | • | • | • | • | 98 |
| 15 | • | • | • | • | • | • | 95 |
| 14 | • | • | • | • | • | • | 91 |
| 13 | • | • | • | • | • | • | 84 |
| 12 | • | • | • | • | • | • | 75 |
| 11 | • | • | • | • | • | • | 63 |
| 10 | • | • | • | • | • | • | 50 |
| 9 | • | • | • | • | • | • | 37 |
| 8 | • | • | • | • | • | • | 25 |
| 7 | • | • | • | • | • | • | 16 |
| 6 | • | • | • | • | • | • | 9 |
| 5 | • | • | • | • | • | • | 5 |
| 4 | • | • | • | • | • | • | 2 |
| 3 | • | • | • | • | • | • | 1 |

PEARSON

www.pearsonclinical.co.uk


ISBN 978 0 7491 1768 9

H 15 16

# Syllable Segmentation

| Materials | Repetitions | Age | Discontinue Rules |
|---|---|---|---|
| Record Form<br>Stimulus Booklet | One allowed | All ages | All items given |

**Scoring:**

Record the child's responses. Score according to the child's oral segmentation NOT the drums they point to or number of claps they make.

**1 = all syllables segmented; 0 = incorrect; NR = no response.**

**Instructions:**

**When we say words we can say them in drumbeats** *(demonstrate by tapping the appropriate number of drums or clapping the syllables).* **We can say ELEPHANT like this: EL...E...PHANT. Now you do it.** *Provide appropriate feedback.*

**Now you tap out. puppy rhinocerous vestibule originator**

*Continue on to the test items but do not provide feedback.*

| Stimuli | No. of Syllables | Response | Score 1, 0 or NR |
|---|---|---|---|
| 1. Elephant | | | |
| 2. Tomato | | | |
| 3. Banana | | | |
| 4. Bat | | | |
| 5. Jam | | | |
| 6. Map | | | |
| 7. Apple | | | |
| 8. Book | | | |
| 9. Fish | | | |
| 10. Man | | | |
| 11. Net | | | |
| 12. Butterfly | | | |

**Raw Score**

**Item analysis**

| No. of syllables | Items | | |
|---|---|---|---|
| 2 | 1 | 6 | 8 |
| 3 | 2 | 5 | 12 |
| 4 | 3 | 7 | 9 |
| 5 | 4 | 10 | 11 |

2

*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538*
*Volume 11 Issue VIII Aug 2023- Available at www.ijraset.com*

# Rhyme Awareness

| **Materials** | **Repetitions** | **Age** | **Discontinue Rules** |
|---|---|---|---|
| Record Form<br>Stimulus Booklet | One allowed | All ages | All items given |

**Scoring:**

1 = correct; 0 = incorrect; NR = no response.

**Instructions:**

Do you know Humpty Dumpty? Humpty Dumpty sat on a WALL. Humpty Dumpty had a great FALL. Listen WALL – FALL sound the same. They rhyme. Let's find another one that sounds the same as WALL and FALL. WALL – FALL – BALL. BALL sounds the same. It rhymes. WALL – FALL – BALL – CAT. CAT doesn't sound like WALL – FALL – BALL. It doesn't belong.

We're going to play a game with some more words that sound the same. Listen to the words. Show me the picture that doesn't belong.

**Trial 1.** WALL FALL BALL **CAT** *Administer as above. Provide feedback.*

**Trial 2.** FEET SHEET SEAT **KEY** **Which one doesn't belong?** *Provide feedback.*

*Continue on to the test items but do not provide feedback.*

| | **Stimuli** | | | | **Score** 1, 0 or NR |
|---|---|---|---|---|---|
| 1. | car | jar | fan | star | |
| 2. | bed | shoe | head | bread | |
| 3. | kite | chair | hair | bear | |
| 4. | cat | hose | bat | hat | |
| 5. | swing | ring | wing | sun | |
| 6. | pot | hot | dot | house | |
| 7. | rose | nose | clock | hose | |
| 8. | pie | tie | toe | sky | |
| 9. | clock | rock | cat | sock | |
| 10. | frog | dog | feet | log | |

**Raw Score** ____

## Item analysis

| **Position** | **Items** | | |
|---|---|---|---|
| First | 4 | 6* | 10 |
| Second | 8 | 9 | 11* |
| Third | 3 | 7 | 12* |
| Last | 1* | 2 | 5 |

* *Item has alliterative distracters.*

3

*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538*
*Volume 11 Issue VIII Aug 2023- Available at www.ijraset.com*

# Alliteration Awareness

| Materials | Repetitions | Age | Discontinue Rules |
|---|---|---|---|
| Record Form<br>Stimulus Booklet | One allowed | All ages | All items given |

**Scoring:**

**1 = correct; 0 = incorrect; NR = no response.**

**Instructions:**

*Say*: Your name, *(say: child's name)* starts with a *(say: initial sound of name)*. I know other words that start with a *(initial sound)*, *(say: two words that share the same initial sound)*. I'm going to say all the words again but this time I'm going to say another word that starts with a different sound. *Say all of the previously mentioned words and a word with a different onset. (Say: a word with different onset)* starts with a *(sound)*. It doesn't belong.

Now let's look at the pictures in the book. Three of the words start with the same sound. One doesn't. See if you can work out which one doesn't belong.

Trial 1. LEAF LIGHT LAKE CAT Which one doesn't belong? *Provide feedback.*

Trial 2. HEAD HOUSE BIRD HAT Which one doesn't belong? *Provide feedback.*

*Continue on to the test items but do not provide feedback.*

| | Stimuli | | | | Score 1, 0 or NR |
|---|---|---|---|---|---|
| 1. | duck | door | dog | cake | |
| 2. | table | balloon | turtle | toothbrush | |
| 3. | baby | button | hammer | balloon | |
| 4. | fish | feet | fork | boat | |
| 5. | cage | cup | sun | cow | |
| 6. | hat | seat | sock | sun | |
| 7. | pig | bike | pin | pea | |
| 8. | feet | key | kite | corn | |
| 9. | elephant | bananas | butterfly | bicycle | |
| 10. | bone | bed | cup | bike | |
| 11. | book | bird | ball | leaf | |
| 12. | kangaroo | telephone | coat | camera | |

**Raw Score**

**Item analysis**

| Position | Items | | |
|---|---|---|---|
| First | 6 | 8 | 9 |
| Second | 2 | 7 | 12 |
| Third | 3 | 5 | 10 |
| Last | 1 | 4 | 11 |

4

*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538*
*Volume 11 Issue VIII Aug 2023- Available at www.ijraset.com*

# Phoneme Isolation

| Materials | Repetitions | Age | Discontinue Rules |
|---|---|---|---|
| Record Form<br>Stimulus Booklet | One allowed | 4 years + | 4 consecutive errors |

**Scoring:**

1 = initial sound (+/– schwa vowel); 0 = incorrect; NR = no response.

**Instructions:**

The first sound of your name is ... *(expect child to say initial sound and provide praise. Say initial sound if child does not respond).* Here is a picture of a DOG. The first sound of DOG is /d/. Let's try some others.

Trial 2. Tell me the first sound of APPLE. *Provide appropriate feedback.*

Trial 3. Tell me the first sound of BALL. *Provide appropriate feedback.*

*Continue on to the test items but do not provide feedback.*

| Stimuli | Response | Score<br>1, 0 or NR |
|---|---|---|
| 1. fish | | |
| 2. cake | | |
| 3. plane | | |
| 4. elephant | | |
| 5. flower | | |
| 6. lion | | |
| 7. spoon | | |
| 8. chair | | |
| 9. mouse | | |
| 10. turtle | | |
| 11. shoe | | |
| 12. igloo | | |

Raw Score

## Item analysis

| Category | Items |
|---|---|
| Single consonant sound/grapheme | 1 2 6 9 10 |
| Single consonant sound / digraph | 8 11 |
| Vowel | 4 12 |
| Part of a cluster | 3 5 7 |

5

# Letter Knowledge

| Materials | Repetitions | Age | Discontinue Rules |
|---|---|---|---|
| Record Form<br>Stimulus Booklet | One allowed | 4 years + | See below |

**Scoring:**

1 = Correct; 0 = incorrect; NR = no response.

**Instructions:**

Do you know what sound this letter makes? *(Examiner points to s.).* It says /s/? *(Say sound).* What about this one? *Examiner points to m. Provide feedback. If the child says the letter name, say* that's it's name but what sound does it make?

We're going to look at some more letters. You say what sound they make.

*Point to each letter in turn moving from left to right and then down the page. If the child does not say a sound within approximately 5 seconds move to the next item. If the child has not been able to say the sound of 10 consecutive items then say:* Look at this page. Are there any ones that you know? *Repeat for a second page if required.*

| Test Item | Response | Score 1,0 or NR |
|---|---|---|
| 1. b | | |
| 2. sh | | |
| 3. i | | |
| 4. m | | |
| 5. ch | | |
| 6. w | | |
| 7. u | | |
| 8. th | | |
| 9. e | | |
| 10. f | | |
| 11. st | | |
| 12. a | | |
| 13. k | | |
| 14. o | | |
| 15. c | | |
| 16. l | | |

| Test Item | Response | Score 1,0 or NR |
|---|---|---|
| 17. h | | |
| 18. t | | |
| 19. n | | |
| 20. d | | |
| 21. g | | |
| 22. br | | |
| 23. p | | |
| 24. z | | |
| 25. fl | | |
| 26. r | | |
| 27. sw | | |
| 28. qu | | |
| 29. j | | |
| 30. v | | |
| 31. y | | |
| 32. s | | |

## Item analysis

**Raw Score**

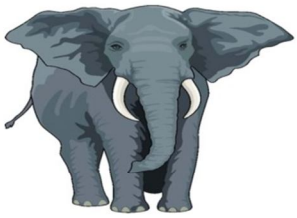
| Item category | Items |
|---|---|
| Single grapheme | 1 4 6 10 13 15 16 17 18 19 20 21 23 24 26 29 30 31 32 |
| Digraph | 2 5 8 |
| Cluster | 11 22 25 27 28 |
| Vowel monothong | 3 7 9 12 14 |

7

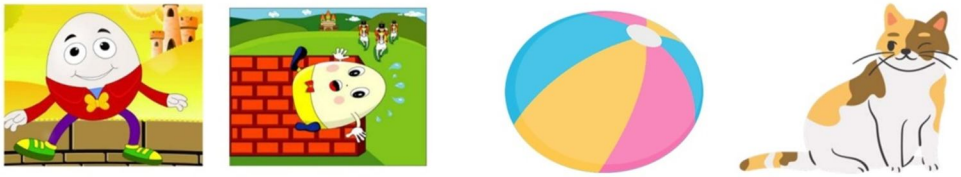
*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538*
*Volume 11 Issue VIII Aug 2023- Available at www.ijraset.com*

STIMULUS USED

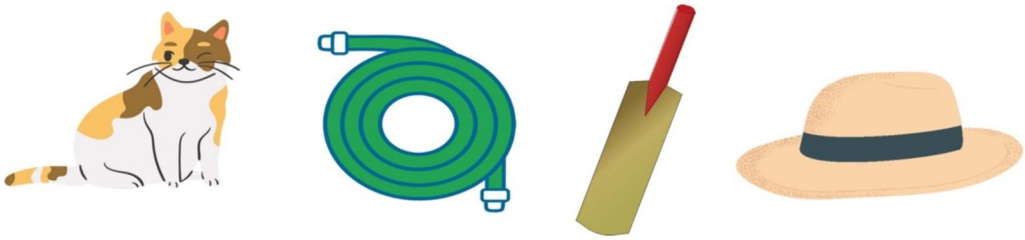
**Task: syllable segmentation**

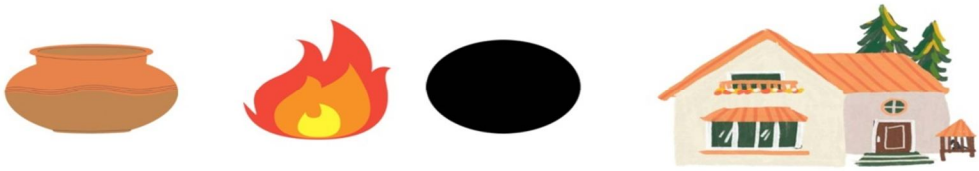


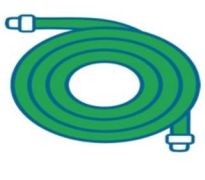
**Task 2: Rhyme awareness**

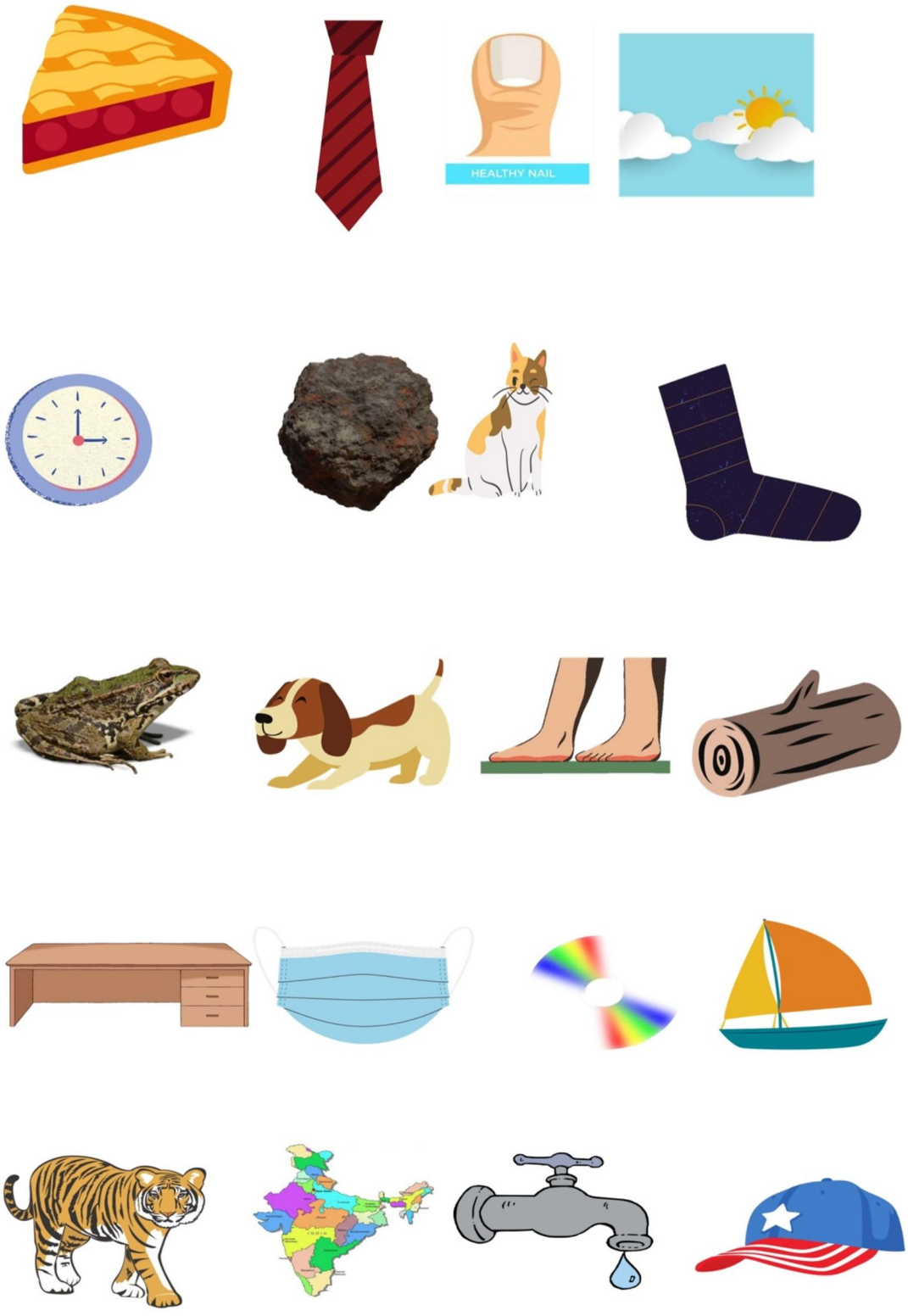






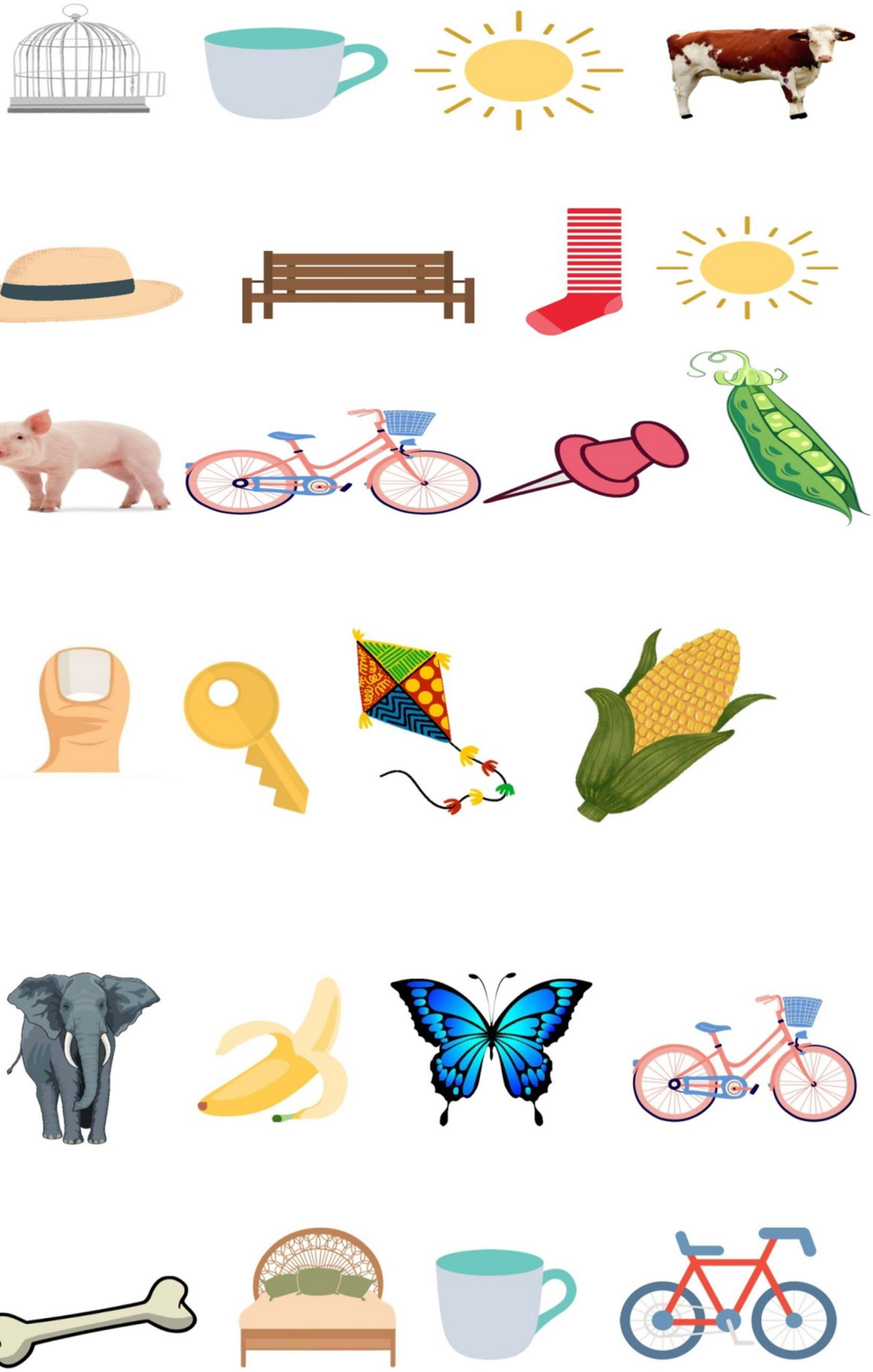





HEALTHY NAIL

**Task: Alliteration awareness**

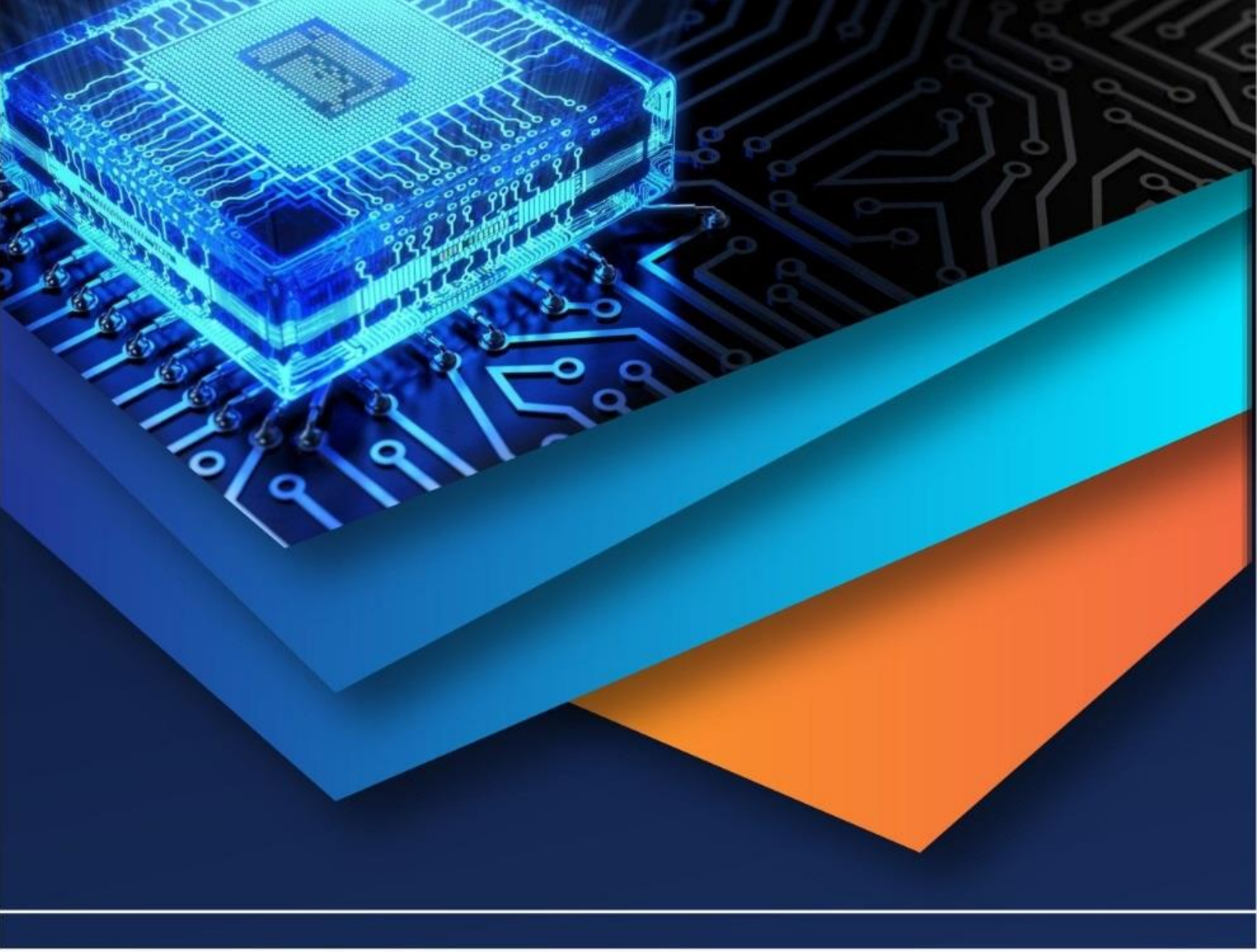
International Journal for Research in Applied Science & Engineering Technology (IJRASET)
*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538*
*Volume 11 Issue VIII Aug 2023- Available at www.ijraset.com*



**Task: Phoneme isolation**

TASK: LETTER KNOWLEDGE

| | | | |
|---|---|---|---|
| b | sh | i | m |
| ch | w | u | th |
| e | f | st | a |
| k | o | c | i |
| h | t | n | d |
| g | br | p | z |
| fl | r | sw | qu |
| j | v | y | s |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY