International Journal of Pediatric Otorhinolaryngology 79 (2015) 2300–2307

Contents lists available at ScienceDirect

International Journal of Pediatric Otorhinolaryngology

journal homepage: www.elsevier.com/locate/ijporl

# Auditory perception of non-sense and familiar Bengali rhyming words in children with and without SLD

Anisha Sinha [a,*], Nachiketa Rout [b]

[a] Audiology & Speech Language Pathology, AYJNIHH, NRC, India
[b] National Institute for the Empowerment of Persons with Multiple Disabilities, ECR, Chennai, Tamil Nadu, India

ARTICLE INFO

*Article history:*
Received 7 July 2015
Received in revised form 12 October 2015
Accepted 24 October 2015
Available online 10 November 2015

*Keywords:*
Rhyming
Non-sense
SLD
Phonological awareness

ABSTRACT

*Background:* Rhyming ability is among the earliest metaphonological skills to be acquired during the process of speech and language acquisition. Metalinguistic skills, particularly metaphonological skills, greatly influence language learning during early, school grades and reportedly children with learning disorders are poor at these skills.

*Aim and objectives:* To develop and validate a Bengali rhyming checklist and study the auditory perception of non-sense and familiar Bengali rhyming words in children with and without specific learning disability (SLD).

*Method:* 60 children, age range 8–11years, participated in two groups; group-A included children with SLD and group-B, typically developing children (TDC). All participants were native Bengali speakers, attending regular school, with hearing sensitivity less than 25 dBHL, no history of ear discharge and middle socioeconomic background.

A rhyming checklist was developed in Bengali, consisting of familiar (section-A) and non-sense (section-B) words. Test–retest reliability and validity measures were obtained. The items on the checklist were audio recorded and presented to the participants in a rhyming judgment task in one to one set up. Scores were obtained and statistically analyzed using SPSS software (version-11.0).

*Result:* Children with SLD scored significantly low on the rhyming judgment task as against TDC ($p < .05$) for both familiar and non-sense words. Children with SLD performed significantly better on familiar word rhyming judgment task against non-sense words ($p < .05$). TDC showed no significant difference on familiar and non-sense words rhyming judgment tasks ($p > .05$).

*Conclusion:* Semantic content influences rhyming perception in children with SLD but has no significant effect on TDC. The developed rhyming checklist may be used as a screening tool for children at risk of SLD at primary school grades. Rhyming activities may be utilized by teachers and parents, to promote language learning in young learners.



## 1. Introduction

Over the years, India has made huge progress in terms of increasing primary education attendance rate and expanding literacy to approximately two-third of the population [1]. Its improved education system is often cited as one of the main contributors to the economic rise [2]. Role of education is now getting prioritized, wide based and is being accepted across wider sections of society.

In India, children spend one-third of their waking time in school-related activities, mainly because academics is being given prime importance by parents and society alike [3]. Proficiency in language and communication is valued as a prerequisite for success in academic, occupational, and social realms. A child who is not performing well in studies becomes a source of stress for parents, which in turn reflects on the child's persona and self esteem. Children who greatly underperformed in academic tasks, in the absence of any mental deficiency, cultural deprivation, or sensory impairment, are labeled as *learning disabled* (*LD*) [4]. The term LD has fraught with many terminological confusion and operational difficulties. The early definitions within the medical framework emphasized the underlying mechanisms and led to terms such as 'minimal brain damage', 'minimal brain dysfunction'

* Corresponding author. Tel.: +91 09350579204.
*E-mail addresses:* anishasinha08@gmail.com (A. Sinha), nachiketa76@gmail.com (N. Rout).

http://dx.doi.org/10.1016/j.ijporl.2015.10.032
0165-5876/

and 'developmental dyslexia' [5]. In the absence of hard evidence involving brain and brain damage, these medical terms were discarded in favor of those within educational framework in 1960s. In the late 1960s, the United States Office of Education (USOE) formulated a definition of specific learning disability (SLD), which focused on the presence of achievement deficits, average intelligence, and an absence of several exclusionary criteria. According to [6], a SLD may be found if a child has severe discrepancy between achievement and intellectual inability in one or more of these several areas: oral expression, written expression, listening comprehension or reading comprehension, basic reading skills, mathematic calculations, mathematics reasoning or spelling. SLD is now believed to be a result of functional problem with brain "wiring" rather than an anatomic problem and is generally inherited [7].

In India, LD movement is only a decade or two old, lagging behind the western world in this regard by around 50 years [3]. During the last decade, the movement has definitely picked up momentum and more and more children with this 'invisible handicap' are being identified. It is estimated that there are around one million children between 6 and 14 years of age in India and 56 to 70 million of them are not going to school and many of them may have dropped out of school due to scholastic problems. It is estimated that nearly 20% of school going population have scholastic problems [3]. Among the school going population, 55.8% of the poor achievers have reading disorders [8]. Evidence based research studies have indicated almost as many children with SLD in India as there are children with all the other disabilities put together. Though not all, but unfortunately, most of the children with LD involve deficits that are primarily language based, i.e. reading, writing and spelling; it is through these deficits that other academic areas including mathematics, science and others, are affected. SLD is intrinsic to individuals and can cause them to learn differently from their peers. However, if SLD is diagnosed and treated early, the child has the potential for a reasonably successful future. The cornerstone of treatment of SLD is remedial education [9–11].

Audition is fundamental to the development and use of language. Good auditory perceptual skills are required for the development of phonological awareness [12]. Learning at classroom is greatly dependent on auditory skills. Good auditory perceptual skills play a critical role in learning to read. The ability to perceive and process auditory information is critical for learning, particularly when the major part of classroom teaching involves verbal interaction. A limited number of experimental studies on visual word perception have been carried out in the past, possibly to meet the demands for objective evidence about effective methods of teaching reading; however, still there is a dearth of research related to auditory perception of metaphonological abilities in children with SLD.

Both, a young child's home environment and also method of classroom reading instructions have powerful influence on his/her phonological development. Phonological awareness is measured by tasks that require a child to reflect on or to manipulate the component sound of spoken words. There is a developmental progression from phonological awareness of "large" segments or units of phonology (syllables, onset and rimes) to phonological awareness of small segments or units (phonemes). According to [13], "The developmental process of making phonological knowledge explicit seems to be much easier for syllables, onsets, and rimes than it does for phonemes". One aspect of phonological awareness i.e. 'rhyming' has been considered in the present study. Rhyming is among the earliest stages during the acquisition of phonological awareness. A child's sensitivity to rhyme appears to develop relatively early and typically, easily [14]. Interest has been growing in the subject of rhymes as one of the metaphonological skills along with the growing interest in role of rhyming in children's learning to read and spell [15].

Nursery rhymes have been an oral tradition for centuries; indeed every tradition has its own nursery rhymes. Through nursery rhymes, parents and teachers of young children draw their attention to the fact that words have separable component sounds. 'Rhyme' is one of the two basic elements of a syllable, the other being the 'onset'. Rhyme (also written as 'rime') consists of the vowel, which is treated as the 'nucleus', plus any following consonant (s) treated as 'coda' [16]. For example, in the word 'bat', the segment/b/comprise the 'onset' and 'at' makes the rhyming part. Reading books with rhyme, rhythm and predictable text are the very means by which a child begins to develop a mental lexicon as well as the capacity to attend to sound and print, and later to map sound to print and print to sound [13]. Use of rhymes appears to be a key factor for developing phonemic awareness because it allows the child to focus on isolating and recognizing individual phoneme. However, the importance of phonological awareness skill in children exposed to transparent orthographies (example, Indian scripts) has not been unanimously supported by researches in the domain.

With only limited access to the semantic route as suggested by Dual Rout Hypothesis, Jackson and Colheart [17], children with surface dyslexia depend on the lexical route for reading. An alphabetic system like English will be cognitively difficult due to its abstract phonemic level representation (abstract g-p-c). If there is lesion in the lexical route, individual will face difficulty in reading English when compared to Bengali which has a transparent orthography. A related condition arises while reading non-sense words. Non-sense words do not provide a semantic route for word access, hence to perceive a non-sense word one depends on the lexical or sub-lexical route. Thus, children with reading disorder may experience greater difficulty in the perception of a non-sense word when compared to a familiar word.

With nearly 230 million total speakers, Bengali is one of the most spoken languages (ranking fifth, Ethnologue [18] or sixth, Encarta Encyclopedia, 2007 [19]) in the world. Bengali is the primary spoken language in Bangladesh and is the second most spoken language in India [43]. Despite such wide use of the language, only limited studies have been reported in the area of LD among native Bengali speakers. With limited research work reported, there exists a strong need for exploring the role of phonological awareness in reading development, in Indian context [20]. Studies based on LD population will further lead to better understanding of the phenomenon. Based on the above need, the present study was taken up which aimed to study the perception of non-sense and familiar Bengali rhyming words in children with and without SLD.

Objectives of the study were: (a) development and validation of Bengali rhyming checklist, (b) comparison of overall performance of participants with and without SLD on the developed checklist, and (c) comparison of performance of participants with and without SLD on the familiar and non-sense word sections of the rhyming checklist.

## 2. Method

### 2.1. Participants

60 children, age range 8–11 years, divided into two groups, Group-A and Group-B (30 subjects each), participated in the study. Group-A included children pre-diagnosed with SLD across various educational and rehabilitation centers in Kolkata, India and group-B participants were age matched typically developing children (TDC). Inclusion criteria consisted of native speakers of Bengali language, attending regular schooling, within Standard III–Standard V, no history of ear discharge, bilateral hearing thresholds within 25 dBHL, and middle socioeconomic familial background.