

IDENTIFICATION AND REMEDIATION OF PHONOLOGICAL PROCESS IN TAMIL WITH SPECIAL REFERENCE TO DYSLEXIC CHILDREN

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1. Introduction

Psycholinguistics is the study of mental aspects of language and speech. The term psycholinguistics was introduced by American psychologist Jacob Robert Kantor in his book "An Objective Psychology of Grammar (1936)". One of the most common reasons children are referred to the SLP (Specific Language Impairment) is delayed expressive language development. Learning disorders are actually a group of disorders, not a single disorder. It affects the brain's ability to receive, process, store, respond and communicate information. Children with LD (learning disorders) are above average intelligence but still struggle to acquire skills that impact their performance in school. It is a lifelong problem even with the right support and intervention. Children with LD have difficulty in listening, speaking, reading, writing, spelling, reasoning and recalling information. The types of learning disorders are:

- a) Dyslexia
- b) Dyscalculia
- c) Dysgraphia
- d) Dyspraxia
- e) Auditory processing Disorder
- f) Visual processing Disorder
- g) ADHD (Attention Deficit Hyperactivity Disorder).

According to the Botting & Simkin SLI theory, children with SLI exhibit a more severe form of Dyslexia. They have phonological awareness, deficits resulting in problems detecting, segmenting and blending sounds in words, hindering children's reading decoding (e.g sounding out and spelling words during reading and writing).

2. Dyslexia

A specific learning disability that affects reading, spelling and writing.

Example

Confusing letters, names and sounds, difficulties blending sounds into words, slow rate of reading, trouble to recall after reading.

The present paper tries to interpret the phonological problems faced by the special children while writing.

Some specific symptoms of Dyslexia

After format testing of writing skills these are the symptoms to conform a diagnosis of dyslexia:

- a) Difficulty with remembering simple sequences such as, naming the days of the week, counting to 10 and basic information about themselves.
- b) Difficulty to understanding the sounds of word, such as paḷam (fruit) sound with paṭam (picture).
- c) Trouble recognizing words starting with the same sound.
Ex: kāy (vegetable) & kāraṭ (carrot).
- d) Difficult to pronounce words.

3. Aim of the study

The Aim of the study is to focus on the phonological problems faced by the primary special school children in their Tamil writing skill.

4. Limitations

For the present study, the samples have been collected from 5th and 6th standard children whose mother tongue is Tamil. The informant size is 13 special children from Saravanampatti in Coimbatore district.

5. Research method

Two schools were selected in Coimbatore District. This research followed the convenient sampling method, because the sample selection was done on 13 special children who have Tamil as their mother tongue, within the age group of 9 to 11 years. Among these special children, 7 girls and 6 boys had participated. Phonological processes in writing level, like syllable structure processes and vowel processes were observed.

A special questionnaire for this task has been prepared and it is classified into 11 different divisions.

- a) Dictation words.
- b) Find out the vegetables names.
- c) Write the objects you use every day in school.
- d) Arrange the words.
- e) Hidden animals name in the anagram.
- f) Write any five fruits name.

- g) Write the missing letters.
- h) Fill in the blanks.
- i) Write our national symbols.
- j) Correct the suitable words.
- k) Fill.

6. Tool

The words are selected from the Tamil picture chart daily used in their classroom like Vegetables, Fruits, Animals, Trees, Plants, Flowers, Food, Colours, Numbers, Vehicle, Week days, Months and Activities. The researcher prepared a questionnaire based on syllabus.

- a) Eleven exercises were given in the special questionnaire. Totally 80 words in a combination of 10 vowels, 18 consonants and 2 diphthongs in initial, medial and final positions were trained.
- b) But the children had understood only six exercises were completed and 30 words were used in the combination of vowels, consonants and diphthong in all positions.

According to Stampe (1979) in Natural phonology theory, "A phonological process is a mental operation that applies in a speech to substitute, for a class of sounds or sound sequences presenting a common difficulty to the speech capacity of the individual, an alternative class identical but lacking in the difficult property".

7. Phonological processes

Phonological processes are defined as a systematic sounds of languages which are typically developed for children to use simple speech as they are learning to talk.

Types

The phonological processes are divided into three main categories: Syllable structure, Substitution processes and Assimilatory processes.

8. Distinctive feature

This feature is the most basic unit of phonological structure and it is classified into 6 types. They are Major class features, Manner features, Place of Articulation feature, Body of the tongue feature, Subsidiary features and Prosodic features.

9. Analysis

This analysis was based on the phonological processes among special children with dyslexic. It was analyzed under two main categories of vowels and consonants and it divided into two subcategories of phonological processes namely; vowel and syllable processes. The samples were described under this type of phonological processes in

10. Vowel processes

A vowel process is a systematic vowel change that affects features and sounds.

10.1 Vowel lengthening

A short vowel is being lengthened.

Ex: o > ō, e > ē and u > ū.

Sample 1

Written word: oṭṭakam (Camel)

Spoken word: oṭṭakam

Data: ōṭṭakam

Here the back rounded short vowel “o” change into back rounded long vowel “ō” in a word.

Sample 2

Written word: erutu (Ox)

Spoken word: erutu

Data: ērutu

Here the front unrounded short vowel “e” change into front unrounded long vowel “ē” in a word.

Sample 3

Written word: urulai (Potato)

Spoken word: urulai

Data: ūrulai

Here the back rounded short vowel “u” change into back rounded long vowel “ū” in a word.

Sample 4

Written word: puli (Tiger)

Spoken word: puli

Data: pulī

Here the lateral alveolar voiced short consonant “li” changes into lateral alveolar voiced long consonant “lī” in a word.

Table - I Vowel Lengthening

vowel	Boys (5)						Girls(7)					
	Age (9- 10)			Age (10-11)			Age (9-10)			Age (10-11)		
	ini	medi	fin	ini	medi	fin	ini	med	fin	ini	medi	fin
Length												
o-ō	1	-	-	-	-	-	-	-	-	-	-	-
e-ē	-	-	-	1	-	-	-	-	-	-	-	-
u-ū	-	-	-	-	-	-	1	-	-	-	-	-
i-ī	-	-	-	-	-	-	-	-	-	-	-	1

In Table - I, there are 12 special children’s data which is inclusive of 5 boys and 8 girls divided into two categories based in the age group of 9-10 and 10-11. In the age group of 9-10, 1 boy respondent had only written incorrectly the vowel sound (o-ō) lengthening initially. In the age group of 10-11, 1 boy respondent had written the vowel sound incorrectly (e-ē) by lengthening it initially.

In the age group of 9-10, girl respondents incorrectly wrote the vowel sound (u-ū) by lengthening it initially and in the age group of 10-11, the girl respondents made mistakes with the vowel sound (i-ī) lengthening in the final level.

10.2 Vowel shortening

A long vowel is shortened.

Ex: ā > a and ū > u.

Sample 1

Written word: āppiḷ (Apple)

Spoken word: āppiḷ

Data: appiḷ

Sample 2

Written word: āru (Six)

Spoken word: āru

Data: aru

Here sample 1 & 2 the central unrounded long vowel “ā” changes into the central unrounded short vowel “a” in a word.

Sample 3

Written word: ūtā (Purple)

Spoken word: ūtā

Data: utā

Here the back rounded long vowel “ū” changes into back rounded short vowel “u” in a word.

Table - II Vowel Shortening

vowel	Boys (5)						Girls(7)					
	Age (9- 10)			Age (10-11)			Age (9-10)			Age (10-11)		
	ini	medi	fīn	ini	medi	fīn	ini	med	fīn	ini	medi	fīn
Short												
ā-a	1	-	-	-	-	-	1	-	-	-	-	-
ū-u	1	-	-	-	-	-	-	-	-	-	-	-

In Table - II explained, in the age group of 9-10, 1 boy and 1 girl respondents incorrectly wrote the vowel sound (ā-a) shortening initially.

In the age group of 9-10 boy respondents incorrectly wrote the vowel sound (ū-u) shortening initially.

11. Vowel Consonants

kā > ka, tā > ta, mā > ma and pā > pa.

Here the back unrounded long vowel “ā” is changed into back unrounded short vowel “a” in a word.

Sample 1

Written word: kāy (Vegetable)

Spoken word: kāy

Data: kay

Sample 2

Written word: kāraṭ (Carrot)

Spoken word: kāraṭ

Data: karaṭ

Here the sample 1 & 2 stop voiceless long consonant “kā” changes into stop voiceless short consonant “ka” in a word.

Sample 3

Written word: tāmarai (Lotus)

Spoken word: tāmarai

Data: tamarai

Here the dental voiceless long consonant “tā” changes into stop voiceless short consonant “ta” in a word.

Sample 4

Written word: māmpaḷam (Mango)

Spoken word: māmpaḷam

Data: mampaḷam

Here the bilabial nasal voiced long consonant “mā” changes into bilabial nasal voiced short consonant “ma” in a word.

Sample 5

Written word: pāl (Milk)

Spoken word: pāl

Data: pal

Here the bilabial stop voiceless long consonant “pā” changes into bilabial stop voiceless short consonant “pa” in a word.

Table - III Vowel Consonants Shortening

Vowel-Consonants	Boys (5)						Girls(7)					
	Age (9- 10)			Age (10-11)			Age (9-10)			Age (10-11)		
	ini	medi	fin	ini	medi	fin	ini	med	fin	ini	medi	fin
kā>ka	4	-	-	-	-	-	2	-	-	-	-	-
tā>ta	3	-	-	-	-	-	1	-	-	-	-	-
mā>ma	4	-	-	-	-	-	3	-	-	-	-	-
pā>pa	3	-	-	-	-	-	1	-	-	-	-	-

In the Table III Shows, the age group of 9-10, 4 boys and 2girls respondents incorrectly wrote the vowel-consonant sound (kā>ka) lengthening initially.

In the age group of 9-10, 3 boys and 1 girl respondents wrote incorrectly the vowel sound (tā>ta) and lengthened initially.

In the age group of 9-10, 4 boys and 3girls respondents incorrectly wrote the vowel-consonant sound (mā>ma) lengthening initially.

In the age group of 9-10, 3 boys and 1girl respondents incorrectly wrote the vowel-consonant sound (pā>pa) lengthening initially.

12. Syllable structure processes

These processes affect syllable and word shapes.

12.1 Initial syllable deletion

Sample 1

Written word: pa_lam (Fruit)

Spoken word: pa_lam

Data: _lam

Here the initial syllable “pa” is deleted in a word.

Sample 2

Written word: tāmarai (Lotus)

Spoken word: tāmarai

Data: marai

Here the initial syllable “tā” is deleted in a word.

Table – IV Initial Syllable deletion

Syllable process	Boys (5)						Girls(7)					
	Age (9- 10)			Age (10-11)			Age (9-10)			Age (10-11)		
	ini	medi	fin	ini	medi	fin	ini	med	fin	ini	medi	fin
Initial Syllable deletion												
pa	1	-	-	-	-	-	-	-	-	-	-	-
ta	-	-	-	1	-	-	-	-	-	-	-	-

In the Table – IV Explained, the age group of 9-10, 1 boy respondent deleted (pa) syllable initially.

In the age group of 10-11, 1 boy respondent deleted (ta) syllable initially.

12.2 Medial syllable deletion

Sample 1

Written word: oṭṭakam (Camel)

Spoken word: oṭṭakam

Data: oṭkam

Here the medial syllable “ṭa” is deleted in a word.

Written word: tirāṭcai (Grape)

Spoken word: tirāṭcai

Data: tiṭcai

Here the medial syllable “rā” is deleted in a word.

Table - V Medial Syllable deletion

Syllable process	Boys (5)						Girls(7)					
	Age (9- 10)			Age (10-11)			Age (9-10)			Age (10-11)		
	ini	medi	fin	ini	medi	fin	ini	med	fin	ini	medi	fin
Medial Syllable deletion												
ṭa	-	2	-	-	-	-	-	1	-	-	1	-
r ā	-	3	-	-	-	-	-	2	-	-	-	-

In Table – V shows that, the age group of 9-10, 2 boys and 1 girl respondent deleted (ṭa) syllable in medially. In the age group of 10-11, 1 girl respondent deleted (ṭa) syllable in medially.

In the age group of 9-10, 3 boys and 2 girls’ respondents deleted (rā) syllables medially.

12.3 Final syllable deletion

Sample 1

Written word: urulai (Potato)

Spoken word: urulai

Data: uru

Here the final syllable “lai” is deleted in a word.

Sample 2

Written word: tāmarai (Lotus)

Spoken word: tāmarai

Data: tāma

Here the final syllable “rai” is deleted in a word.

Sample 3

Written word: unavu (Food)

Spoken word: unavu

Data: una

Here the final syllable “vu” is deleted in a word.

Table - VI Final Syllable deletion

Syllable process	Boys (5)						Girls(7)					
	Age (9- 10)			Age (10-11)			Age (9-10)			Age (10-11)		
	ini	medi	fin	ini	medi	fin	ini	med	fin	ini	medi	fin
Final Syllable deletion												
lai	-	-	2	-	-	-	-	-	2	-	-	1
-rai	-	-	2	-	-	1	-	-	1	-	-	-
vu	-	-	3	-	-	1	-	-	1	-	-	-

In Table – VI shows that in the age group of 9-10, 2 boys and 2 girl respondents deleted (lai) syllables in the final position. In the age group of 10-11, 1 girl respondent deleted (lai) syllable in the final position.

In the age group of 9-10, 2 boys and 1 girl respondent deleted (rai) syllables in the final position. In the age group of 10-11, 1 boy respondent deleted (rai) syllable in the final position.

In the age group of 9-10, 3 boys and 1 girl respondent deleted (vu) syllables in the final position. In the age group of 10-11, 1 boy respondent deleted (vu) syllable in finally.

12.4 Final consonant deletion

It is a simple process that describes the omission of final consonants.

Sample 1

Written word: paḷam (Fruit)

Spoken word: paḷam

Data: paḷa

Sample 2

Written word: oṭṭakam (Camel)

Spoken word: oṭṭakam

Data: oṭṭaka

Here sample 1 & 2 the bilabial nasal voiced sound “m” is deleted in a word.

Sample 3

Written word: kāraṭ (Carrot)

Spoken word: kāraṭ

Data: kāra

Here the retroflex stops voiceless sound “ṭ” is deleted in a word.

Sample 4

Written word: nel (Rice)

Spoken word: nel

Data: ne

Here the alveolar lateral voiceless sound “l” is deleted in a word.

Table – VII Final Consonant Deletion

Syllable process	Boys (5)						Girls(7)					
	Age (9- 10)			Age (10-11)			Age (9-10)			Age (10-11)		
	ini	medi	fin	ini	medi	fin	ini	med	fin	ini	medi	fin
Final Consonant Deletion												
m	-	-	1	-	-	1	-	-	1	-	-	-
ʈ	-	-	4	-	-	-	-	-	2	-	-	-
l		-	-	-	-	3	-	-	1	-	-	-

In Table – VII shows that, the age group of 9-10, 1 boy and 1 girl respondent deleted (m) syllable in finally. In the age group of 10-11, 1 boy respondent deleted (m) syllable in the final position.

In the age group of 9-10, 4 boys 2 girls respondent deleted (ʈ) syllable in finally.

In the age group of 9-10, 1 girl deleted (l) syllable in finally. In the age group of 10-11, 3 boys respondents deleted (l) syllables in the final position.

12.5 Reduplication

It refers to the repetition of the syllable.

Sample 1

Written word: puttakam (Book)

Spoken word: puttakam

Data: puttakakam

Here the velar stops with a voiceless short consonant “ka” is a repeated syllable in a word.

Sample 2

Written word: pencil (Pencil)

Spoken word: pencil

Data: penpen

Here the bilabial stops voiceless short consonant “pe” and alveolar nasal voiced sound “n” are repeated in a word.

Table – VIII Reduplication

Reduplication	Boys (5)						Girls(7)					
	Age (9- 10)			Age (10-11)			Age (9-10)			Age (10-11)		
	ini	medi	fin	ini	medi	fin	ini	med	fin	ini	medi	fin
ka	-	1	-	-	-	-	-	-	-	-	-	-
pen	1	-	-	-	-	-	-	-	-	-	-	-

Table – VIII shows that the age group of 9-10, 1 boy respondent repeated (ka) syllable medially.

In the age group of 9-10, 1 boy respondent repeated (pen) initially.

Findings

- a) Compared with initial and final syllable deletion, mostly medial syllable deletion was found in children
- b) Compared with initial, medial and final syllable deletion, the final consonant deletion mistakes were made by the children.
- c) Some children could not write the words but they were able to say the words, which results in the lack of skill in their writing.

Remediation

- a) Syllables have been given.
- b) Letters with maximum difference with focus sound.
- c) Letters with selecting sounds at word level.
- d) Words with focus sound at sentence level.
- e) Remediation was continued till the focus sounds achieved in children.
- f) Children’s written samples were tested every month and feedback was given to their parents.

Conclusion

- a) Teaching or training the special children becomes a difficult task for the teachers and parents.
- b) Practice with drill helps the children to remember letters, words and to communicate with others.
- c) It helps the teachers to promote classroom involvement to address the specific need of the phonological process.
- d) We can help the children to develop their writing ability through this method.

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