

OBSTRUENT PROCESS IN CHILDREN WITH MENTAL RETARDATION

M. SASIPRIYA*
DR. R. LALITHA RAJA**

*Research Scholar, CAS in Linguistics, Annamalai University, Tamil Nadu, India

**Assistant Professor, CAS in Linguistics, Annamalai University, Tamil Nadu, India

ABSTRACT

Mental retardation refers to substantial limitations in habitual functioning. It is characterized by significantly sub - average functioning, existing concurrently with related limitations in two or more of the adaptive skill areas; it's like communication skill, self – care, home living, social skills, community use, self – direction, health safety, functional academics, leisure, and work. Mental retardation manifests before age 18. Mild, moderate, severe and profound are the types of mental retardation that is classified by the psychiatrist. They have low mental cognitive skills and have difficulty in expressive languages. They have difficulty in even pronouncing a single or two syllables lexicon. The obstruent sounds play a very important role in the word formation of the Tamil language. Tamil language has the obstruents combination of stop sounds and fricatives. The aim of the study is to identify the phonological problem in obstruent of children with mental retardation in their mother tongue (Tamil). This study analyses the phonological processes in obstruent sounds of 20 children with mental retardation by using the distinctive feature analysis. The study also recommends the sound features that should be concentrated for remedial measures.

KEYWORDS: Mental Retardation, Phonological Problems, Obstruents, Phonological Process Analysis and Distinctive Feature Analysis.

Mental retardation

Mental Deficiency/Retardation is a state of incomplete mental development of such a kind and degree that the individual is incapable of adapting him/herself to the normal environment of his/her fellows in such a way to maintain existence independently of supervision, control or external support (Tredgold, 1937). It is characterized by significantly sub - average functioning, existing concurrently with related limitations in two or more of the adaptive skill areas; it's like communication skill (speech and language), self – care, home living, social skills, community use, self – direction, health, safety, functional academics, leisure, and work. Mental retardation manifests before age 18. These children usually have problems in

the areas of speech and language. The most prevalent process and intervening step for these children in language development is acquisition of phonology.

Obstruent in Tamil Phonology

Tamil phonology is characterized by the presence of consonants, (i.e., Sonorants and non-Sonorants) and vowels. Tamil language phonologically does not differentiate between voiced and unvoiced of consonants; but phonetically, voice is assigned depending on a consonant's position in a word. Tamil phonology permits few consonant clusters, which can never be word initial. But the loan words in Tamil have initial consonant clusters. In Tamil phonemes, obstruents have an important role in framing the words.

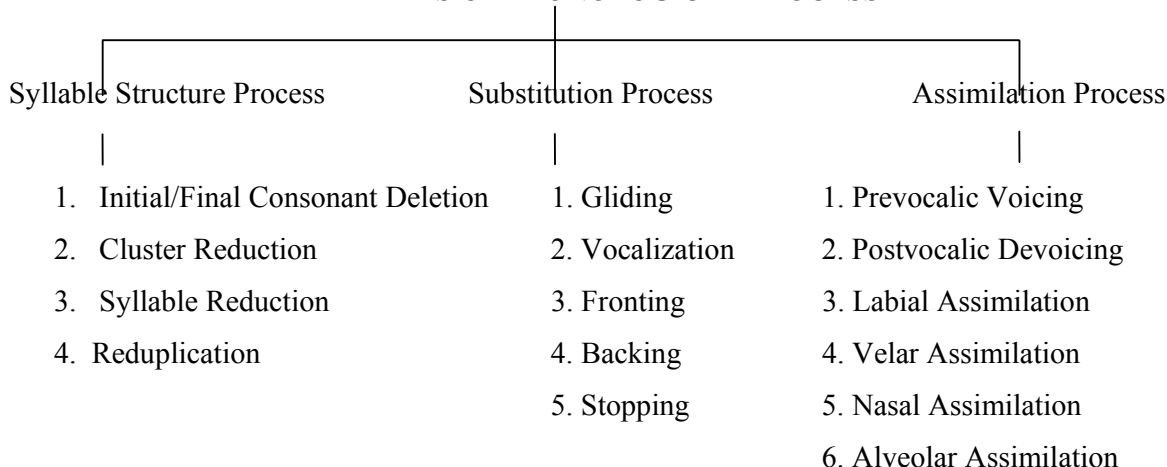
An obstruent is a consonant sound such as [k], or [f] that is formed by obstructing airflow, causing a strong gradient of air pressure in the vocal tract. Obstruents contrast with Sonorants, which have no such obstruction. Obstruents are subdivided into stops and fricatives, stop sounds are [p, t, k, b, d, g, c, t̪], with complete occlusion of the vocal tract, often followed by a release burst; fricatives, sounds are [f, s, ʃ, x, v, z, ʒ, ʝ], with limited closure, not stopping airflow but making it turbulent; and affricates, which begin with complete occlusion but then release into a fricative-like release.

Phonological Process

Phonological processes are the patterns that young children use to simplify adult speech. All children use these processes while their speech and language are developing. For example, very young children (ages 1 to 3) may say “ηη” for “t̪aηη” or “t̪e:val” for “ce:val”. Other children may substitute the medial and final sound in words (for example, “vaηt̪u” for “vaηt̪u” or “mukki” for “muk̪t̪i”). Many times the children do not hear the differences in the words and will say one word to mean three different ones. For example, children who continue to delete the initial consonant from a word may say “t̪t̪i” to mean each of these words: “paηt̪i, kaηt̪i, ciηt̪i”. Up to age 3, these are appropriate productions. As children mature, they stop using these patterns to simplify words. In fact, by age 5, about 90% of children stop using all phonological processes and their speech sounds more like the adults around them. As children stop using phonological processes, their speech becomes more understandable. This allows them to become better communicators.

The phonological process is divided into three major types. They are, substitution processes, syllable structure processes and Assimilation processes. These three major divisions are having some more sub classification in them.

TYPES OF PHONOLOGICAL PROCESS



Normative Data

Table 1 shows the phonological process in typically developing Tamil children that are found only in the age specified in the table.

S.No.	Age	Phonological developmental process	Examples
1	3-5	Backing	[tʌkka:li] for [tʌkka:li]
2	3-6	Fronting	[tʌ:pʀe:n] for [ca:pʀe:n]
3	5-0	Gliding	[co:j] for [co:ɾi]
4	3-0	Stopping	[kʌŋe:ccʌn] for [kʌŋe:sʌn]
5	4-0	Cluster reduction, Syllable reduction	[ku:li] for [sku:li], [ko:ŋsa:mi] for [ko:vintʌsa:mi]
6	3-9	Assimilation	[mottʌppa:] for [mostʌppa:]

Phonological Disorder/ Processing Problem

Phonological disorder is characterized by a child's inability to create speech at a level expected of his or her age group because of an inability to form the necessary sounds. It is also called as phonological processing problem. There are many different levels of severity in phonological disorder. These range from speech that is completely incomprehensible, even to a child's immediate family members, to speech that can be understood by everyone but in which some sounds are slightly mispronounced. This phonological processing problem is commonly found in children with mental retardation.

Aim

The present study aims to find out the phonological process in obstruents among children with mental retardation, who is speaking Tamil as their first language. So the goal of this study is to find out obstruents processing by these children using phonological process and distinctive feature analysis.

Methodology

The data were collected from 20 children with mental retardation who are in the category of mild to moderate level of retardation from Cuddalore district. Data has been collected by showing picture cards, giving repetition words and story charts as stimulus. Among the 20 children 15 were male and 5 were female who fall under the age range of 8-10 years. Convenience sampling method is used for data collection. Before giving the assessment those children's IQ levels were assessed to identify their level of retardation. The data were collected using the recorder. The recorded data were analyzed by using the phonological process and distinctive feature theory.

Phonological Process and Distinctive Feature Analysis

One attempt to describe the set of phonemes in a language is the theory of distinctive feature. A distinctive feature is an articulatory or acoustic parameter whose presence or absence defines a phoneme. Most modern phonologists argue for a binary system of indexing features: a segment either possesses or does not any one particular feature. Clearly, with a binary system of indexing the maximum number of features needed to uniquely classify the sounds of a language. Features are binary (+ or -) values of the phoneme. Each speech sound may be described as a "bundle" of features; each member of every pair of phones is distinguished from the other member by at least one feature value. Features are universal, but a given language may use a subset of features as distinctive feature. This type of analysis prevalently used by the western scholars. Speech language pathology adopted methodologies used by linguist to analyze phonological samples. The child's (mis) pronunciations were no longer viewed as sound by sound deviation from the adults' target. But as systematic, rule-governed productions. Both distinctive feature analyses and phonological process analyses came into clinical use.

Grunwell (1982) lists five criteria that the analysis of a speech sample should satisfy. It should (a) describe the patterns used by which these patterns used by speaker, (b) identify the

ways in which these patterns differ from those used by normal speakers. (c) Determine the implications of these disordered patterns for effective communication, (d) provide the necessary information for developing treatment goals and guidelines, and (e) provide a basis for assessing changes during treatment.

**Data's analyzed by using Phonological Process and Distinctive feature analysis
 Substitution Processes**

Stopping

Substituting a stop phoneme for other phonemes is called as stopping.

- (i) Voiceless alveolar fricative [s] is changed as voiceless dental stop [t̪]

Feature	[s]	[t̪]
High	-	+
Continuant	+	-

Ex.

[t̪evʌppi] for [sevʌppi] 'red'
 [t̪i:ppi] for [si:ppi] 'comb'

- (ii) Voiceless alveolar fricative[s] is changed as voiceless bilabial stop[p]

Feature	[s]	[p]
Coronal	+	-
Continuant	+	-

Ex.

[vikne:pʌŋi] for [vikne:sʌŋi] 'name of the person'

On the basis of distinctive feature analysis the recommended sounds for remediation are ***High, coronal, Continuant and voiced.***

Fronting

- (i) Voiceless palatal stop [c] is changed as voiceless bilabial stop[p]

Feature	[c]	[p]
Anterior	-	+
High	+	-

Ex.

[pʌt̪tai] for [cʌt̪tə] 'shirt'
 [pʌŋgi] for [cʌŋgi] 'conch'

- (ii) Voiceless palatal stop [c] is changed as voiceless dental stop [t̪]

Feature	[c]	[t̪]
Coronal	+	-
Anterior	+	-
High	-	+

Ex.

[t̪i:ppi] for [ci:ppi] 'red'
 [t̪e:vʌl] for [ce:vʌl] 'cock'

- (iii) Voiced retroflex flap [ɽ] is changed as voiced alveolar fricative [ð]

Feature	[ɽ]	[ð]
Anterior	-	+
High	+	-

Ex.

[uʈʌði] for [uʈʌʈi] and [oʈʌʈi] ‘lips’
 [kʌʈʌði] for [kʌʈʌʈ] ‘bear’

On the basis of distinctive feature analysis the recommended sounds for remediation are **Anterior, High, Coronal, and Back.**

Backing

(i) Voiceless dental stop [ʈ] is changed as voiceless retroflex stop [ʈ]

Feature	[ʈ]	[ʈ]
High	+	-
Ex.		

[ʈʌkka:li] for [ʈʌkka:li] ‘tomato’
 [ʈʌʈʈə] for [ʈʌʈʈə] ‘snail’

(ii) Voiceless retroflex stop [ʈ] is changed as voiceless velar stop[k]

Feature	[ʈ]	[k]
Coronal	+	-
Back	-	+
Ex.		

[kʌmʌʈ] for [ʈʌmʌʈ] ‘tumbler’
 [kʌppa:] for [ʈʌppa:] ‘container’

(iii) Voiceless bilabial stop [p] is changed as voiceless velar stop[k]

Feature	[p]	[k]
Anterior	+	-
High	-	+
Back	-	+
Ex.		

[ʈuʈkʌm] for [ʈuʈpʌm] ‘subtlety’
 [ka:j] for [pa:j] ‘mat’

(iv) Voiceless dental stop [ʈ] is changed as voiceless velar stop[k]

Feature	[ʈ]	[k]
Coronal	+	-
Anterior	-	+
High	+	-
Back	-	+
Ex.		

[koppɪ] for [ʈoppɪ] ‘cap’
 [ʌski] for [ʈʈi] ‘ash obtained by cremation’

(v) Voiceless alveolar fricative[s] is changed as voiceless velar stop [k]

Feature	[s]	[k]
Coronal	+	-
Anterior	+	-
High	-	+
Back	-	+
Ex.		

[ku:lʌm] for [su:lʌ] ‘trident’
 [kʌʈʌʈai] for [sʌʈʌʈai] and [sʌʈʌʈə] ‘fine sieve’

On the basis of distinctive feature analysis the recommended sounds for remediation are **Anterior, High, Coronal, Back and Voiced.**

Syllable Structure Process

Initial Consonant Deletion

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|----|------------------------|------------------|-------------------|
| 1. | [rɔt̪i] for [srɔt̪i] | ‘name of person’ | |
| | [va:sam] for [sva:sam] | ‘breath’ | Deleted Consonant |
| | “(ஸ்)ச” | | |
| 2. | [vʌni] for [tvʌni] | ‘sound’ | |
| | [ja:nō] for [tja:nō] | ‘meditation’ | Deleted Consonant |
| | “(த்)ட” | | |

On the basis of analysis the recommended sounds for remediation are **initial consonants ‘s’ and ‘t’**

Medial Consonant Deletion

Delete the medial syllable from the word.

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|----|-----------------------|------------------|-------------------|
| 1. | [vija:] for [vit̪ja:] | ‘name of person’ | |
| | [cʌja:] for [cʌt̪ja:] | ‘name of person’ | Deleted Consonant |
| | “(த்)ட” | | |
| 2. | [masō] for [maccam] | ‘mole’ | |
| | [t̪ʌsə] for [t̪accə] | ‘carpenter’ | Deleted consonant |
| | “(த்)ச” | | |

On the basis of analysis the recommended sounds for remediation are geminated clusters ‘tt’ and ‘cc’.

Medial Syllable reduction

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|----|---------------------------|------------|--------------------------|
| 1. | [sa:ram] for [sa:st̪iram] | ‘treatise’ | |
| | [ʌrō] for [ʌst̪irō] | ‘weapon’ | Deleted Syllable “ஸ்திர” |

On the basis of analysis the recommended sounds for remediation are cluster combination of alveolar fricative with dental stop in medial position.

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|----|-------------------------|----------------|--------------------------|
| 2. | [u:rʃim] for [u:rʃit̪ō] | ‘suspicion’ | |
| | [ka:ɳi] for [ka:t̪ʌɳi] | ‘ear ornament’ | Deleted Syllable “(த்)ட” |

On the basis of analysis the recommended sounds for remediation are dental stop cluster in medial position

Assimilation process

Bilabial Assimilation

Voiceless alveolar fricative [s] is changed as voiceless bilabial stop [p]

Feature	[s]	[p]
Coronal	+	-
Continuant	+	-

Ex.

[ʌppʌrʌs]	for [ʌpsʌrʌsi]	‘Angel’
[pʌppō]	for [pʌspō]	‘calcined powder’

On the basis of distinctive feature analysis the recommended sounds for remediation are **Coronal and Continuant**.

Dental Assimilation

Voiceless velar stop sound [k] is changed as voiceless dental stop [t̪]

Feature	[k]	[t̪]
Coronal	-	+
Anterior	-	+
High	+	-
Back	+	-

