

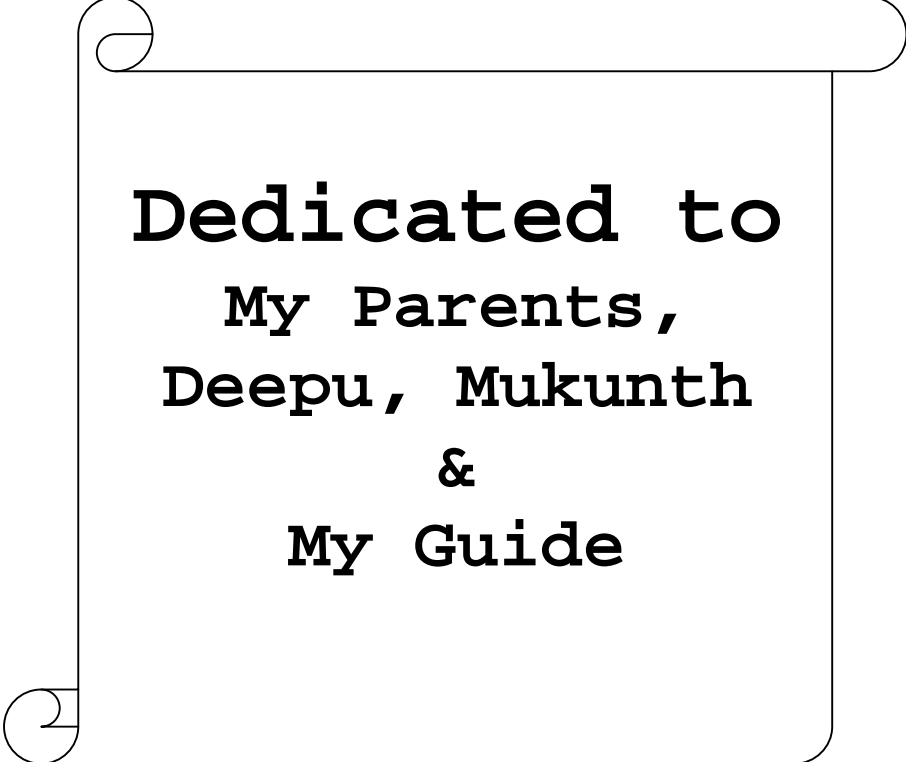
**MANUAL FOR CORRECTION OF
INTONATION IN KANNADA SPEAKING
CHILDREN WITH SPEECH AND
LANGUAGE DISORDERS**

REGISTER NO. L0380004

**A Dissertation Submitted in Part Fulfillment of
Final Year MSc (Speech Language Pathology)
University of Mysore
Mysore**

**ALL INDIA INSTITUTE OF SPEECH AND HEARING
NAIMISHAM CAMPUS, MANASAGANGOTHRI
MYSORE – 570 006**

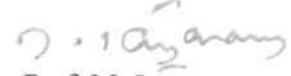
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**Dedicated to
My Parents,
Deepu, Mukunth
&
My Guide**

Certificate

This is to certify that the dissertation entitled "**Manual for correction of intonation in Kannada speaking children with speech and language disorders**" is a bonafide work done in part fulfillment for the degree of Master Science (Speech Language Pathology) of the student with Register No. L0380004. This has been carried out under the guidance of a faculty of this Institute and has not been submitted earlier to any other University for the award of any other Diploma or Degree.


Prof. M. Jayaram

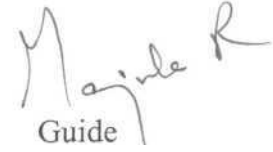
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All India Institute of Speech and Hearing
Naimisham Campus
Manasagangothri
Mysore-570 006.

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This is to certify that this dissertation entitled "**Manual for correction of intonation in Kannada speaking children with speech and language disorders**" has been prepared under my supervision and guidance. It is also certified that this has not been submitted earlier in any other University for the award of any diploma or degree.



Guide

Dr. R. Manjula,

Reader and Head,

Dept. of Speech Language Pathology,
All India Institute of Speech and Hearing,
Mysore-5 70006

Mysore,
May, 2005.

Declaration

This dissertation entitled “**Manual for correction of intonation in Kannada speaking children with speech and language disorders**” is the result of my own study under the guidance of Dr. R. Manjula, Reader and Head, Dept. of Speech-Language Pathology, All India Institute of Speech and Hearing, Mysore and not been submitted in any other University for the award of any degree or diploma.

Mysore,
May, 2005

Reg. No. L0380004

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LIST OF TABLES

Tables	Title	Page No.
A	Overview of the manual	46
F ₁	Flow chart to show the recommended steps in the manual (F ₁)	6
1	Stimuli for training phase IA	M10
2.	Stimuli for testing Phase IA – Part I	M13
3.	Stimuli for testing Phase IA – Part II	M14
4.	Stimuli for testing Phase IA – Part III	M15
5.	Stimuli for Training Phase IB	M17
6.	Stimuli for Testing Phase IB	M19
7.	Stimuli for Training Phase IC	M21
8.	Stimuli for Testing Phase IC	M24
9.	Stimuli for Training Phase ID	M27
10.	Stimuli for Testing Phase ID-Part I	M30
11.	Stimuli for Testing Phase ID- Part II	M31
12.	Stimuli for Training Phase IIA	M35
13.	Stimuli for Testing Phase IIA	M42
14.	Stimuli for Training Phase IIB	M45
15.	Stimuli for Testing Phase IIB	M51
16.	Stimuli for Training Phase IIC	M56
17.	Stimuli for Testing Phase IIC	M61
18.	Stimuli for Training Phase IID	M66
19.	Stimuli for Testing Phase IID - Part I	M74
20.	Stimuli for Testing Phase IID – Part II	M78
21.	Stimuli for Training Phase IIIA	M85
22.	Stimuli for Testing Phase IIIA – Part I	M90
23.	Stimuli for Testing Phase IIIA – Part II	M92
24.	Stimuli for Training Phase IIIB	M95
25.	Stimuli for Testing Phase IIIB	M100
26.	Stimuli for Training Phase IIIC	M104
27.	Stimuli for Testing Phase IIIC	M108
28.	Stimuli for Training Phase IIID	M112
29.	Stimuli for Testing Phase IIID – Part I	M117

30.	Stimuli for Testing Phase IIID – Part II	M121
31.	Stimuli for Training Phase IVA	M127
32.	Stimuli for Testing Phase IVA	M134
33.	Stimuli for Training Phase IVB	M137
34.	Stimuli for Testing Phase IVB	M141
35.	Stimuli for Training Phase IVC	M144
36.	Stimuli for testing Phase IVC	M149
37.	Stimuli for Training Phase IVD	M153
38.	Stimuli for Testing Phase IVD-Part I	M158
39.	Stimuli for Testing Phase IVD – Part II	M161
40.	Stimuli for Training Phase VA (Neutral emotion)	M167
41.	Stimuli for Training Phase VA (Happy emotion)	M172
42.	Stimuli for Training Phase VA (Grief emotion)	M178
43.	Stimuli for Training Phase VA (Anger emotion)	M184
44.	Stimuli for Training Phase VA (Fear emotion)	M190
45.	Stimuli for Training Phase VA (Surprise emotion)	M196
46.	Description of the context in which the utterance are made with reference to the diagrams which are used to represent various emotions	M202
47(a)	Stimuli for Testing Phase VA	M206
47 (b)	Stimuli for Testing Phase VA	M 208
47 (c)	Stimuli for Testing Phase VA	M211
47 (d)	Stimuli for Testing Phase VA	M214
47 (e)	Stimuli for Testing Phase VA	M216
47 (f)	Stimuli for Testing Phase VA	M218
48.	Stimuli for Training Phase VB	M221
49.	Stimuli for Testing Phase VB	M227
50.	Stimuli for Training Phase VC	M232
51.	Stimuli for Testing Phase VC	M237
52.	Stimuli for Training Phase VD	M242
53.	Stimuli for Testing Phase VD – Part I	M246
54.	Stimuli for Testing Phase VD-Part II	M249

TABLE OF CONTENTS

Sl.No.	Contents	Page No.
1.	INTRODUCTION	1-12
2.	REVIEW OF LITERATURE	13-42
3.	METHOD	43- 47
4.	MANUAL FOR CORRECTION OF INTONATION IN KANNADA SPEAKING CHILDREN WITH SPEECH AND LANGUAGE DISORDERS	
	(A) General Instructions	M1-M6
	(B) Manual	M7-M251
5.	SUMMARY	48-51
6.	BIBLIOGRAPHY	

CHAPTER - 1

INTRODUCTION

Speech production is a human activity, which is highly complex and variable. The variation is fundamentally due to the pattern of execution and the intention behind the speech act. The syntactic and semantic contents of an utterance are made transparent to a listener by the feature of “Prosody”. Prosody, otherwise termed “Suprasegmental features”, is considered as one of the most important, but highly evasive properties of spoken language (Price, Ostendorf, Shattuck-Hufnagel & Fong, 1991). Prosodic features extend over varying linguistic domains such as one syllable or one morpheme or one word, or may extend over relatively longer stretches of utterances like one phrase, one clause or one sentence.

Prosodic features are the results of vocal effects, which cause variations in parameters of pitch, loudness and duration in connected speech. Crystal (1969) classified prosodic features into systems on the basis of shared dominant phonetic parameters, each system covering a particular kind of variability. Prosody includes Intonation, Stress, Tempo and Rhythm (Heuvel, Rietveld & Crannen, 1994). Among these, the phenomenon displaying maximal linguistic contrastivity within the whole range of vocal effect has been labeled as “Intonation”.

Intonation is defined as the variation of speech pitch or fundamental frequency (F0) as a function of time (Collier, 1991). Crystal (1969) views intonation not as a single system of pitch levels, pitch contours etc., but as a complex feature of different prosodic systems, the most central (of which) are tone, pitch range, and loudness, with

rhythm and tempo closely related. Intonation is not only thought of a grammatical signal of completeness and incompleteness, but also as emotional gauges of tension and relaxation (Bolinger, 1972).

According to Cruttenden (1986), languages can be divided into Tone languages, 'Intonation languages', 'Stress accent' languages and 'Pitch accent' languages. In Intonation languages, intonation involves the occurrence of recurring pitch patterns, each of which are used with a set of relatively consistent meanings, either on single words or on groups of words of varying length. Grammatical constituents of any level, upto the level of a sentence may be treated as separate intonation groups having their own meaningful tune. Intonation groups or intonational phrases generally correspond to constituents of sentences, in a somewhat loose way. Kannada language, which is one of the major Dravidian languages, is classified as an intonation language.

Features of Intonation

Variations in pitch of voice are universal to all languages. Pitch variations form a pattern in spoken language in the dimension of time. They convey information specific to human emotion/ attitude. Every language has discrete and well defined pitch patterns/ intonation contours and they are significant and systematic in signifying the functional (eg., attitudinal, grammatical etc) aspect in that language. Some intonation contours are not specific in their meaning. They give the general and causal meaning, and do not show the ideas/ implications of speaker's attitude/ feeling. Pike (1945) calls this as 'colourless'/ neutral/ normal intonation, which serves as a baseline against which all other contours are contrastable. They simply convey

meaning without any implied sense of speaker. On the other hand, some intonation contours are characterized by emotion/ attitude of speakers as expensed 'by him/her' at the moment of speech act. That is, they give the intended meaning / notion the speaker likes to convey while conversing.

Words and sentences of language have their basic and intrinsic meaning, i.e., their lexical/grammatical meanings which are well defined in nature. The intonational meanings are added to this/ superimposed on this to give subjective and idiosyncratic feelings of the speaker. This change of meaning is caused by intonation/ extrinsic pitch contour. The intonation contour / pitch contour are transitory in nature and they are temporary additions to basic form and meaning of the segmental units of language (Pike, 1945).

The intonational meanings are also explicit in nature, i.e., when an intonation pattern is superimposed on basic pitch sequence (in its colourless form) a more explicit implied meaning is derived, or a change in pitch patterns adds an extra information to basic meaning of that utterance, contributing to total shades of meaning of it. Thus, keeping meaning unaffected, the emotion/ attitude and any other intended meaning which the speaker chooses to convey, are made explicit by intonation.

For eg: ||he|| (declarative – Intonation – unmarked) type

||he?|| (Interrogative – Intonation – unmarked) type

||he?!|| (Interrogative- Intonation – Surprise) type

Therefore Intonation pattern/contour is the only device to discriminate utterances having same structure but with different implied meanings.

Many studies have indicated that the intonation of the languages, can be distinguished based on some typical pitch characteristics that is based on the movement of F0 such as: (a) rise or a fall in F0 (b) extent of movement (over one or more syllables) (c) relation of the intonation contours/ pitch curves with the temporal factors and (d) size of excursion (Cooper and Sorenson, 1977; Currie, 1979; O' Shaughnessy, 1979; Byrd, 1992; Hermes & Rump, 1994). Cruttenden (1986), described three main constituents of intonation in English. They are – Intonation groups, Nucleus, and Nuclear tone.

- (a) Intonation groups : Otherwise called sense groups, tone groups, breath groups, tone units, phonological phrases, phonological clauses or intonational phrases divides a connected speech into different intonation group boundaries. Judgement of intonation-groups will be based either on “external criteria” (pause, final syllable lengthening, anacrusis, pitch of unaccented syllable) or an “Internal criteria” (Presence of atleast one stressed syllable and pitch movement to or from atleast one accented syllable).
- (b) Nucleus: (Alias “tonic”, alias “Primary stress”), is used to describe the pitch accent, which stands out as the most prominent syllable in an intonation group.
- (c) Nuclear tones: The pitch contour, which begin on the nucleus and cover the stretch of utterances up to the end of an intonation group. A nuclear tone involves major part of the meaning contributed by the pitch pattern of intonation group.

According to Bolinger (1972), description of intonation in a language can be divided into 2 groups : (1) Atomistic (2) Global. The atomistic view describes the

relationship between subunits of language and intonation. In the atomistic aspect of intonation, the linguistic features are determined by factors like the fundamental frequency, intensity and duration (Pike, 1945; Denes, 1959; Bolinger, 1972). The atomistic approaches are also called the “level” approach, wherein each level corresponding to a phonemic unit (Bolinger, 1972) is described. The global view describes the entire F0 contour, giving their grammatical or attitudinal meanings. This approach is also called the “tune” approach (Bolinger, 1972).

The intonation features in Indian languages have been addressed by very few studies. Manjula (1979); Nataraja (1981) found that in Kannada language, sentences are expressed with a final fall except few sentences with emotion like ‘fear’ and ‘anger’ where a final rise is noticed. Further, Nandini (1981), reported a final fall in intonation in sentences carrying neutral, jealousy, hesitation, request and answers and a rise pattern in questions, anger, frustration, accusation, a fall/ rise pattern in surprise and some anger statements. In the analytical and descriptive approach, Manjula (1997) studied the features of intonation and stress in question word (WH) and Y-N interrogatives in spoken form of standard dialect of Kannada. A general rise in fundamental frequency for Y-N interrogatives, and fall for WH questions was reported. Differentiated patterns of declination and inclination were observed for Y-N and WH questions.

Along with ‘Intonation’, ‘Stress’ is also considered, because many studies report correlatory changes in these two prosodic elements. Identification of stress on a syllable is considered important in determining the type of changes that follow or precede the “nucleus” in the F0 or intonation contour (Buning and Schooneveld,

1961; Chapaliaz, 1964; O'Shaughnessy, 1979; Pierrehumbert, 1980; Ladd, 1983; Copper, Soaresm, Ham and Damon 1983; O'Shaughnessy and Allen, 1983; Hermes and Rump, 1994). Some investigators are of the opinion that the intonation of a sentence is largely determined by the position of the prominently stressed syllables (nucleus/ focus) in an utterance (Pike, 1945; Bolinger, 1957; Ladd, 1978: Mc, clure 1980; Thorsen, 1980; Cruttenden, 1986). Though, there is an overlap and /or diffusion in the definition of the prosodic entities of "accent", "stress", "prominence" and "emphasis", they signify a very important/ prominent element in an utterance. "Stressed syllable" is defined as a syllable which characterizes any one or the combination of the following:

- a) Rise/ lowering of pitch of a syllable
- b) Rise in loudness of a syllable
- c) Increased/ decreased duration of a syllable
- d) Pauses
- e) Semantic load of a syllable
- f) Syntactic boundary markers and/or phrase boundary
- g) Any other features/ combination of the above which is perceived as 'stressed' by the judge.

Any study of the meaning of the pitch contour requires first some decisions on the nature of stress, for the very taxonomy of intonation depends on how independent pitch and prominence are considered to be (Ladd, 1983). In the typical American analysis, sentence stress is considered to be at another 'level'. The perceived sentence stress is said to coincide with the greatest pitch prominence of the intonation contour. In the British tradition, sentence stress is commonly called the 'nucleus'. The nucleus

is considered an intonational phenomenon which occurs on one of the fully stressed syllables of the sentence. The acoustic attributes of stress are the fundamental frequency, duration, intensity and phonetic quality of the syllables (Brown and Mc Glone, 1974).

A central aspect of the description of British English Intonation is that of the 'Nucleus'. The nucleus is described over a range of levels. They include, auditory ('prominence' by Halliday, 1967), acoustic ('largest pitch movement' by Kindgon, 1958), rhythmic ('stressed syllable' by Schmerling, 1976). In summary, the 'Nucleus' indicates that there is a region of intonation contour that focuses attention on a stretch of utterance (ranging from syllable to breath group).

The length, loudness, and pitch are measurable attributes and their linguistic function is often complex. These three features contribute to give prominence to some syllables when compared with other syllables. According to Cruttenden (1986), prominences are linguistically important. They may be involved in distinguishing different lexical meanings, or different grammatical classes, or they may be involved in making certain syllables stand out in sentences and hence make the word containing those syllables more important. Not only are the prominences produced by some combination of length, loudness and pitch themselves linguistically important, they are also important because sequences of prominent and non prominent syllables form the framework of connected speech. In many languages, such patterns of prominent and non prominent syllables produce a particular rhythmic effect. Apart from that, these patterns form the backbone of intonation. "Intonation", thus can be summarized as a attribute that concerns with which syllables are prominent, how they

are made prominent and to what extent they are made prominent. It also concerns how the movement from one prominent syllable to the next is accomplished.

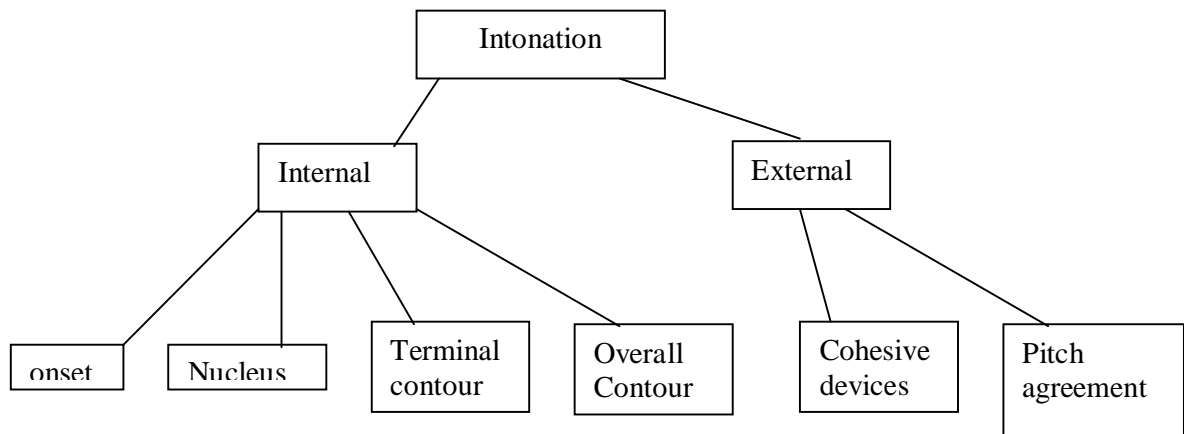
Dysprosody or prosody incorporating deviation or complete absence in patterns of intonation is often exhibited in various communication disorders such as hearing impaired (Parkhurst & Levitt, 1978; Monsen, 1979; Sussman and Hernandez, 1979; Formby and Monsen, 1982; Rubin-Spitz and Mc Garr, 1990; Murphy, MC Garr & Bell –Berti, 1990), developmental apraxia of speech (Rosenbek & Wertz, 1972; Tallman & Crary, 1985), cerebellar dysarthrias and hypokinetic dysarthrias (Darley Aronson and Brown, 1969b; Kent & Rosenbek, 1982; Scott, Caird, & Williams, 1984)

Prosodic deficits are common in dysarthric speech. Darley, Aronson & Brown (1969) in their perceptual study ranked monopitch and monoloudness as the tenth most deviant speech dimension among the 38 deviant speech dimension for all the disordered group. Majority of the studies have found reduced prosodic values in dysarthrics and attributed it to impairment in speech production mechanism. Scott, Caird, & Williams, (1984) found deficits in the ability to recognize and produce anger and interrogation in parkinsonism patients. They also have difficulty in discriminating affective and grammatical function prosody and matching speech with facial expression. There are atleast 6 prosodic deficits noticed ataxic type of dysarthria (Darley, Aronson & Brown 1969a, 1969b).

Although there are extensive attempts made to describe the nature and features of intonation deficits in disordered population, there are very few treatment

suggestions available for such individuals with impaired intonation. Even those that are proposed are for the Western languages and most of the treatment programs tend to adopt a problem oriented approach rather than a holistic approach and they often focus on individual cases.

In this direction the program suggested by Hargrove and Mc Garr (1994) enjoys a pragmatic outlook since it propounds a programmed approach in correcting intonation in English. The outline of the program for correction of intonation is as follows:



The advantage of this program is that it can serve as a steer in guiding similar programs in intonation languages wherein the basic structure of the language and the intonation framework matches with that of English to a large extent. In the absence of any single source or reference in the available literature on intonation in any of the Indian languages, one may consider the program of Hargrove and Mc Garr (1994) as a model in devising treatment paradigms for correction of intonation in disordered population. Further, there is still no treatment package which comprehensively represents the various components, that individual clinician considers as factors constituting an intonation therapy program in any Indian languages. Hence an attempt

is made to develop a manual for correction of intonation in Kannada speaking children with various speech language disorders, exhibiting dysprosody.

Aims

- To develop a manual in Kannada language for treatment of intonation in children with speech and language disorders above three years of expressive language age, using a “contour” approach.

Purpose of the manual : The proposed manual is applicable for those Kannada speaking children (dialect restricted to Mysore-Bangalore region) who are above three years of expressive language age and having impaired/defective intonation. The manual can be administered soon after the identification of defective/impaired intonation in them. This manual provides step-by-step activities for the speech language pathologists. It is structured to improve the perception of pitch contours and its associated characteristics and also facilitates the production of utterances with appropriate intonation curves/contours.

Structure of the manual

The manual is developed based on the general principles of treatment for intonation, as given in the literature. There are two components of this manual:

- Text of the manual
- Pre-recorded audio cassette with target speech elements uttered with appropriate intonation as per requirement, which is modeled by a female speaker.

The manual is divided into 5 sections.

1. Pitch Height
2. Pitch Variation
3. Pitch Contour
4. Nucleus in a pitch contour
5. Emotive Intonation

Each section has 2 subsections, namely the perception of intonation and production of intonation. The subsection perception of intonation constitutes 3 modules.

Module A: Detection of Intonation

Module B: Discrimination of Intonation

Module C: Identification of Intonation

The subsection production of intonation constitutes 1 Module

Module D: Production of Intonation Parameter

Each of the modules within the subsection incorporates training and a testing phase. Clear instructions are given for each activity in the training and testing phases. The criterion level to proceed with training to next module during training phase and the success criteria in testing phase of each module is also specified.

The manual was administered on three children with Delayed Speech and

Language. Suitable modification in terms of the instructions and activities were made and is thus item validated. The manual is presented as a bound volume with ready to use material for the correction of intonation for Kannada speaking children with Speech and Language disorders.

Limitations

- The manual should further be tested and standardized on more number of clients with Speech and Language disorders.
- The material is limited only to sentences.
- The manual has incorporated standard Mysore and Bangalore dialect.
- The manual has been proposed for the use of children and not adults

CHAPTER - 2

REVIEW OF LITERATURE

Prosody refers to the melody of speech. Prosodic features of speech may signal linguistic or emotional information. The three prosodic features, that is, rhythm, stress and intonation are the result of the interaction of suprasegmental factors such as pitch, loudness, articulation time and pause time (Rosenbek & LaPointe, 1978). Disruptions of the suprasegmental and prosodic features of speech may result in affected speech intelligibility and hence, prosodic features should receive equal attention in the management of any communication disorder. It is often the case, however, that prosodic intervention is initiated in the final stages of therapy or not at all. Amongst the prosodic features, correction of intonation, which is defined as the “perception of changes in the fundamental frequency of vocal fold vibration during speech production” is often considered to be the most challenging and evasive in nature.

Rosenbek & LaPointe (1978), suggested that the treatment of rhythm and stress can be achieved using a common method. This is because stress is a result of changes in pitch, loudness, articulation time and pause time and rhythm is considered the timing of speech, which also results, in part, from changes in pause time. On the other hand, they suggest that "Intonation" requires a different variety of intervention strategies incorporating both direct/ indirect treatment programs. These are used to correct intonation in the speech of individuals who display a variety of disorders including aphasia, developmental apraxia of speech, stuttering, phonological or

articulation impairment, specific language impairment, abnormal voice, hearing impairment, learning disability, or developmental delay.

A number of factors must be taken into consideration when a critical review of treatment literature in intonation is undertaken. Some of them include:

- The lack of empirical support for effectiveness of intonation treatment approaches and non availability of efficacy reports
- Reports of few case studies involving only one or two subjects and use of poor case study models in the single case studies.
- Influence of intrinsic subject variables such as age, disorder and the severity of the disorder etc on the correction of intonation.
- Adaptation of problem solving approach rather than a holistic approach to suit the individuals needs by majority of the intonation correction paradigms suggested so far.
- Too much focus on correction of intonation at the sentence level or connected speech.
- Very few available reports on treatment of intonation in children without hearing impairment.
- Limited availability of treatment packages, which have the potential for the direct treatment of intonation and limited availability of intonation treatment packages which are specifically designed for children.

The need for intervention to correct dysprosody in the speech of the communicatively disabled is well recognized. However, there are very few reports/packages proposed as guidelines for correction of prosody in any of the languages. A few are proposed as a set of general guidelines to aid a clinician in the correction of dysprosody. These are as follows:

I. Prosodic treatment model by Hargrove and Mc Garr (1994)

This approach suggests a series of exercises in a hierarchical manner for correction of prosody. The guidelines offered in the program to aid in the choice of goals, candidate and the task are ordered under various categories as follows:

A. Guidelines for Clinical Decision Making in treatment of dysprosody

This is provided to assist clinicians in developing the content and form of therapy.

It includes the following steps:

- The clinician determines the direct (improve prosody) or indirect (use prosody to improve another aspect of communication) purpose for working with prosody.
- If the purpose of treatment is indirect, the clinician identifies which prosodic feature or prosodic component has an impact on the targeted (nonprosodic) terminal behavior.
- If the purpose of treatment is direct, the clinician identifies the prosodic feature or prosodic component in need of change and then determines the specific category to be treated.
- When the focus of treatment is a category (ie subdivision) of one of the four prosodic components, the clinician also determines if the client has sufficient control of prosodic features to produce the component acceptably.
 - The clinician identifies specific treatment objective.
 - The clinician identifies potential treatment techniques
 - For additional treatment ideas, the clinician identifies treatment approaches used for clients with similar disorders.
 - When there are a variety of ways that a client may produce a target behavior, the clinician identifies the means by which the client will produce that targeted behavior.

- If the client has control of the typical productive mechanisms for a given prosodic behavior, it is recommended that the prosodic feature or component be produced in that manner. However, if a client's productive control is lacking, the clinician has two options:
 - teach the client to produce the correct productive behavior(s) or
 - encourage the client to use an alternate strategy. This decision should be tempered by consideration of time/ effort constraints and naturalness/ normalcy issues.

B. Guidelines for Ordering Decisions in treatment of dysprosody

This provides some guidelines for selecting initial features or components for treatment. It is based on the premise that some control of prosodic features is necessary before initiating treatment on prosodic components. It is assumed that the clients need not use an "idealized" pattern of prosodic features to produce a particular meaning. If control of "typical" prosodic feature(s) is beyond their capabilities, clients may use only one of the several prosodic features usually used to produce a particular prosodic component, or they may develop compensatory patterns to produce the targeted prosodic component. The following factors are to be kept in mind while prioritizing the goals:

- Prosodic categories that have a positive impact on intelligibility should be given highest priority for treatment.
- Because prosody of speakers varies and because the current level of knowledge about prosody is limited when compared to any other aspect of language and speech, the influence of the different prosodic categories on intelligibility must be determined on an individual basis. Thus, for one subject,

phrasing (part of tempo) may be the first focus of treatment, and for another subject, stress sequencing (part of rhythm) may be the first treatment focus.

- Prosodic categories that have high communicative value have high priority for treatment. Clinicians need to include their client's views on the utility of treatment targets as well as considering their own academic and clinical experience when determining which behavior have high communicative value.
- If the client produces a certain prosodic category correctly approximately 50% of the time, he/she may be a candidate for early treatment focus, because one can provide a successful treatment experience and a sense of accomplishment.
- Clinicians should pay attention to the prosodic and non-prosodic changes that co-occur with changes in the targeted aspect of prosody. Targets that result in positive co-occurring changes should have priority over those that have negative or no co-occurring changes.
- Changes that increase speech naturalness should have priority over those that disrupt it unless the purpose of treating prosody is to improve another aspect of communication, for example, intelligibility.
- When using prosody indirectly (as an intermediate objective, as a facilitator or as a constrainer) clinicians should give priority to aspects of prosody that cause change in the targeted dimension of communication before treatment begins. For example, when treating dysfluencies, clinicians should determine if, for the specific client, changes in rate, rhythm, and/or loudness affect the frequency of dysfluencies. Prosodic features or prosodic components that result in change should be given preference over those that do not.

C. Guidelines for treating Disorders of Prosodic Perception

Problems associated with the perception of prosody must be addressed before or concurrently with attempts to remediate production deficits.

- The clinician should begin treatment by using different aspects of prosody to facilitate discrimination of the various cues. Visual cues, such as pictures of faces portraying different emotions, should be used and then gradually faded. It is important to introduce the patient to perceptual protocols involving utterances spoken by a variety of different individuals in different ways.
- The use of a device such as the Visi-Pitch should be used to provide knowledge of results for the patient and the clinicians. For example, rather than rely on the auditory feedback alone, the F0 contour of the utterance can be displayed on the Visi pitch. Eventually the visual cue should be faded as the patient responds to the auditory feedback alone.
- Contrasting two different prosodic cues also can be useful for remediation of prosodic comprehension. For example, the clinician can pair different types of stimuli (question versus statement or stress location differences) with visual cues to assess the patient's ability to understand these differences, and then gradually fade the visual cues.
- As research in the area of prosodic comprehension proceeds, it may be found that assessment of pitch and duration perception is essential for estimating the level of impairment (low level perception versus high level comprehension) and for planning treatment. If a patient has difficulty discriminating differences in absolute pitch, the clinician may opt to treat this problem in understanding prosody and confine to one of the acoustic dimension in treating this feature.

D. Guidelines for treatment of Prosodic Production Deficits

- Treatment of prosodic production disturbances may involve the use of two contrastive intonation types.
- Visual and auditory stimuli can be paired.
- A graphic representation of F0 contour associated with a particular sentence type can be presented.
- A device that displays frequency, intensity, and timing information such as the Visi-pitch) may be useful in facilitating prosodic change. For example, treatment may proceed in the following way: First, the clinician models the prosodic contour using a graphic (visual) as well as an auditory cue. Next, the clinician and patient repeat the intonation type together. When an accepted level of accuracy is achieved, the patient is instructed to alter stress or prosodic patterns using self-monitoring skills.
- In the absence of a feedback device, the contrastive stress procedures outlined by Rosenbek and La Pointe (1985) may be useful in treating prosodic disturbances. According to this program, the stimuli should be selected to meet the needs of individual patients. The complexity, length and phonetic composition of the utterance must be considered. Initially the patient imitates the clinician. Treatment then moves to the question and answer format. Rosenbek and LaPointe (1985) suggested that once stress patterning is accurate in the contrastive stress drills, clinicians should move to a “preplanning activity” which is the first stage of carryover. Here a conversation is instigated in which the questions and responses of the clinician elicit varying stress and other prosodic patterns. Finally, real dialogues are used in which the patient is asked to maintain stress patterns. Also, it is important also to provide homework composed of contrastive stress drills.

- As part of the treatment process, clinician must be able to monitor behavioral changes objectively. Evaluation of prosody using acoustic measures may be useful in monitoring small changes over time. The evaluation may be conducted during the acute phase (1-3 weeks post onset) at 3 months post onset, and at 1-year post onset. Of course the number of reevaluations will depend on the needs of the individual patient. Thus, subtle changes in frequency or durational cues that are not yet apparent to the ear may be detected by acoustic measures.

The general guidelines offered by Hargrove and Mc Garr (1994) also address the feature of intonation in prosody. However, there are specific recommendations made for correction of intonation in an individual. A review regarding the treatment of various components of intonation is described in the following order:

- Treatment program for Pitch height
- Treatment program for Pitch variation
- Treatment program for Pitch direction and terminal contour
- Treatment program for Nucleus
- Treatment program for overall contour

Specifics for correction of intonation

A. Program for treatment of Pitch Height in intonation

Individuals with hearing impairment, motor speech disorders, and voice disorders benefit from the direct treatment of pitch height. Pitch height can also be corrected in normal speakers who wish to improve their voice or overall speaking skills. Cooper (1973) developed a program for direct treatment of pitch height, in voice disorders. The objectives of the program were:

- To identify optimum pitch height and
- To establish habitual production of optimum pitch height.

The procedure adapted is as follows :

1. a. The client says “Uhhuh” with closed lips and a rising terminal contour while attempting to sound spontaneous.
b. The client vocalizes while placing a finger of one hand lightly on the bridge and sides of his or her nose.
c. Alternative techniques suggested for identifying optimum pitch height include:
 - Saying “Hello” with a rising terminal contour
 - Producing natural, spontaneous laughter, and
 - Employing supraoptimal pitch height for those who use “too low” pitch height.
2. a. The clinician employs a tape recorder or a Language Master during treatment activities to provide the client with feedback. The clinician notes that some transitory symptoms may occur while the pitch height is being habituated. These transitory symptoms may include tension under the mandible, in the soft palate, in the sternocleidomastoid muscle, or in the oronasopharyngeal region. The clinician explains that these symptoms are not negative, that they should not persist, and that the client should resist reverting to the old, comfortable pitch heights.
b. The clinician directs the client to form a mental picture of himself or herself using the appropriate pitch height and encourages the client to imagine that he or she is producing the pitch at a high point in his or her

head. The client then attempts to produce the targeted pitch with the clinician providing verbal feedback. Additionally, the clinician may use posturing to help the client identify the means by which the targeted pitch height may be produced.

- c. The client practices using the optimum pitch height in “key word plus number” contexts. This involves producing a key word, such as “meme” or “nim-nim” and a one digit number. The client uses the optimum pitch height on the “key word” and on the number.
- d. The client produces the optimum pitch height in phrases and in short sentences using the following hierarchy :
 - o The client combines a “key word” and a number with a short phrase such as “Me-me, one, how are you?”
 - o The client pairs a “key word” with a short phrase, for example, “Me-me, I feel fine”
 - o The client repeats the above pattern but alters the “key word”.
- e. The client reads sentences aloud from using one “key word” for the first set of sentences and a different “key word” for a second set of sentences.
- f. The client spontaneously talks in sentences but produces a “key word” before, during or after each sentence.
- g. The client reads aloud selected passages from a magazine. The clinician provides verbal feedback regarding pitch height.
- h. The client and the clinician converse. The clinician verbally provides feedback regarding the appropriateness of pitch height.

Treatment program proposed by Wilson (1972)

Wilson (1972) described a program for teaching different pitch height in children with voice problems. According to him, changes in modal pitch level can be achieved by administering a thorough program of listening training and then teaching correct pitch level and pitch variability. The listening training sharpens pitch discrimination ability and prepares the child for specific control of pitch. Awareness of differences in pitch in the speech pathologists voice and gross discrimination on two levels can be covered quickly. The speech pathologist can then concentrate on fine discrimination of three levels-high, middle, and low. These three pitch levels are based upon the child's pitch range and modal pitch level. If the child's pitch is too high, the speech pathologist selects a high level near the top of the range, which often coincides, with the too high modal level. The middle pitch is carefully selected as the level to be established as the new modal level. The third level is a low level only slightly above his lowest pitch. The child is told the significance of each level: the high level is the old way to be avoided, the middle is the desired new way, and the low pitch is too low to use most of the time. He recommended the use of pictures for pitch practice, which can be placed in the notebook. For example, the speech pathologist can use a picture of three children standing at different heights on rocks. These can be labeled "I can talk low", "I can talk in the middle" and "I can talk high". The speech pathologist demonstrates the three levels with words, phrases, and sentences for discrimination training with the child pointing to the appropriate figure.

Practice by the child himself follows listening training when he has developed good pitch discrimination. The roles of the child and the speech pathologist are reversed with the child becoming the performer and the speech pathologist the listener

and judge. The child knows from his listening training the significance and meaning of the three levels of pitch and can therefore strive to produce each pitch levels. Other useful devices for identifying and establishing proper use of pitch level involve simple skits in which the child is encouraged to use the three pitch levels in impersonating characters. Puppets can be used as the basis for these skits.

Wilson (1972) described a method for treating pitch height for voice problem of children with Hearing Impairment. He emphasizes the application of basic listening training program to pitch. This should follow the pattern of learning to identify the undesirable pitch in others, and then proceeding to gross discrimination and fine discrimination of pitch differences in others. For example a tape recorder can be used to establish better pitch discrimination. The clinician first records his own voice using a high pitch and then a very low pitch asking the child to make gross discriminations. The clinician then uses three different levels, high, middle and low, with the middle tone at the child's normal speaking level. The child makes fine discriminations between these three levels. The pitch differences between the tones can be reduced for discriminating extremely small differences. Then the clinician uses recordings of the child to teach awareness of undesirable pitch in his own voice. The child listens to his recordings to identify undesirable pitch as well as the desired pitch level. This is first carried out through gross discrimination of two widely different levels of pitch such as very high and normal. The training proceeds to the final step of listening training, fine discrimination of three or more levels of pitch, very high, high, normal and low. The singing voice can be used in a similar manner (Presto, 1943). The speech clinician should check with the classroom and music

teachers to coordinate training in pitch discrimination with other discrimination training the child is receiving.

Some hard of hearing children may be able to proceed through the stages of listening training with only slightly more practice than children with normal hearing. For others special methods of developing pitch discrimination may be needed. If the child initially is unable to distinguish pitch differences in the clinician's voice, a piano, musical instrument, toy horn, or toy xylophone may be used to present widely different tones for discrimination. The clinician then proceeds to discrimination of voice. The training can be made more interesting by varying the child's responses as well as the stimuli. The child is asked to lift his hands above his head for a high tone, touch his shoulders for a medium tone, and stoop toward the floor for a low tone (Streng, Fitch, Hedgecock, Phillips, & Carrell, 1958). The head, waist or knees could be touched for other intermediate tones. If stair steps are available in the therapy room, the child can climb to the top step when he hears a high tone and return to lower steps and the floor for intermediate and low tones. As the child improves in pitch discrimination the clinician can read or tell stories, using a variety of pitch for different characters.

Visual aids can be helpful in developing pitch discrimination. Lights of different colors can be flashed when different pitches are presented. When working with young children appropriate mechanical toys can be activated when various pitch levels are presented, for example, a bird for high pitch, a clown or medium pitch and a dancing bear for low pitch. An older child can view an oscilloscope or the VU meter of a pitch meter to aid him in identifying various pitches produced by the clinician.

Treatment program proposed by Minskoff (1980)

Minskoff (1980), developed a teaching approach for teaching indirect pitch height in children with Learning Disability. Objectives of the program were:

1. To discriminate pairs of prosodic stimuli
2. To associate attitude with selected aspects of prosody
3. To produce utterances using prosody to signal different attitudes or emotions
4. To produce prosodic patterns that is appropriate for the context.

Techniques such as Minimal pairs; feedback (verbal, visual); discrimination; imitation; metalinguistics, modeling were used to achieve the objectives.

PROCEDURE

1. The clinician presents pairs of speech stimuli that may vary in one aspect of prosody. Although the client's task is to judge the pairs as same or different, the client is also encouraged to imitate the pairs. The clinician provides verbal and visual feedback (eg. a pitch meter) to the client, as needed. The complexity of the task gradually increases using the following hierarchy:
 - live stimuli produced by clinician and
 - audio taped stimuli produced by the clinician and others.
2. a. The clinician models utterances with various prosodic patterns to depict a range of emotions or attitudes and describes situations in which they would be used appropriately.
- b. The client judges the appropriateness of particular prosodic patterns for designated meaning (For example, the clinician says sadly, "It's Monday" , and asks, "Did I sound happy"?)

3. a. The client attempts to convey selected emotional meanings of neutral statements, such as “that’s my homework”, using different prosodic patterns.
 - b. The client names the emotion conveyed by prosodic patterns paired with neutral statements.
 4. a. While observing role-playing or a movie, the client identifies communication breakdowns caused by inappropriate prosody by noting the misuse or misinterpretation of prosody. For example, the client views a scene involving a teacher and a student in which the teacher repeats “Now” at increasingly high pitch heights, but the students is not responsive to the message.
 - b. The clinician presents examples of sarcasm and teasing which are conveyed by prosody. She or he explains that the client should rely on the information conveyed by prosody when the prosody and the message do not match.
- Virtually any aspect of prosody can be used indirectly in this approach. Minskoff’s approach also includes other nonverbal communication skills

B. Program for treatment of direct Pitch Variation

Pitch variations have been targeted directly in persons with dysarthria, hearing impairment and voice disorders. Wilson (1972), developed a program for direct treatment for pitch variation in individuals with hearing impairment. The objectives of the program include:

1. To discriminate among pitch heights
2. To produce speech using an acceptable variety of pitch heights.

The use of techniques such as discrimination, modeling, singing, musical instruments, physical gestures, narratives, imitation, feedback (Auditory, tactile/kinesthetic, verbal, visual); negative practice, dramatics, metalinguistics, cues,

unison reading and self monitoring were recommended to achieve the objectives.

The procedure is listed as follows:

1. a. The clinician presents two prerecorded pitches of differing heights. One pitch represents an acceptable pitch height for the client; the other represents an unacceptable pitch height. The client discriminates between the two pitches. In this and in subsequent steps, the clinician provides verbal feedback to the client.
- b. The clinician prerecords high and very low pitch heights and directs the client to discriminate between the two.
- c. The clinician presents three pitch heights (high, middle, low) to the client (the middle pitch height, represents the client's habitual level). The client discriminates among the three pitch heights.
- d. The clinician continues to present three pitches for the client to discriminate; the differences among the pitch heights gradually decrease
- e. The clinician presents two samples of the client's voice for the client to discriminate- one sample is acceptable and the other is unacceptable. The comparisons between the examples gradually move from gross to fine and from two (high, low) to four variants (very high, high, normal, low)
- f. If necessary, the clinician employs singing and musical instruments to facilitate discrimination. (However, the discrimination of vocal pitch is the ultimate objective)
- g. Other variations include
 - o lights may flash for certain pitch heights
 - o different toys may be activated by designated pitch heights and
 - o discrimination of pitch heights may be required in natural contexts, such as in story telling activities.

2. a. The client imitates the clinician as he or she hums the scale upward and downward.
- b. The clinician hums middle C, B or B flat while directing the client to place his or her hand on the clinician's face or throat. The client attempts to imitate the clinician's humming.
- c. The clinician produces specific notes, and the client imitates. Tactile and/or kinesthetic cues may be used.
- d. The clinician hums /m/ at the client's optimum pitch. The client attempts to produce the following pairs of sounds at the same pitch.

/m/ - /a/ ; /m/ - /a/ ; /ma/

/m/-/o/; /m/-/o/; /mo/

/m/ - /i/; /m/-/i/ ; /mi/

- e. The client repeats step 2d increasing the pitch height one octave.
- f. The client utters short sentences at optimum pitch and attempts to keep pitch height constant (ie a monotone)
- g. The client produces the same sentences as in step 2f but varies acceptable pitch (pitch variation)
- h. The client tells stories and engages in dramatic play using his optimum pitch and with pitch variation
- i. If necessary the clinician and the client read aloud in unison. The clinician may provide the client with a binaural trainer and gradually increase the loudness level until the client cannot hear his or her own voice. The clinician models appropriate pitch variation, pitch height, and rhythm.
- j. If necessary, the clinician uses a pitch meter to provide visual feedback for the client. The clinician also encourages the client to attend to the tactile/ kinesthetic differences among pitch heights.

The clinician provides the client with a speech chart that has metalinguistics objectives, such as “I know the rule about the pitch height of my voice”, and production objectives, such as “I can use the correct pitch height all the time.

Boone (1971) describes 4 steps, which attempts to improve the pitch inflections and these are as follows:

1. Listen, with the patient, to recorded samples of the patients voice, contrasting these perhaps with samples of a few voices with excellent pitch variation, and follow this listening with direct comment on the problem. The patient must be made aware of his lack of pitch variation.
2. Begin working on downward and upward inflectional shifts of the same word, exaggerating in the beginning the extent of pitch change. Using the same source material, have the patient practice introducing pitch shifts with in specific words.
3. Record the patient’s oral reading and conversation from time to time, critically analyzing these productions with regard to his pitch variability.

Melodic Intonation Therapy: Melodic Intonation Therapy (MIT), a method that focuses on prosody has frequently been used in treating individuals with apraxia of speech (Sparks and Deck 1994; Sparks, Helm and Albert, 1974). This method has also been proposed for use with children with developmental apraxia of speech (Helfrich-Miller 1994). In this adaptation for children, stimuli progress from simple two to three word phrases to more grammatically and phonetically complex utterances.

In this method the intonation or melodic pattern of a phrase is emphasized. For adults, the clinician models by intoning the phrase while tapping out the rhythm. The method uses a structured sequence of tasks, beginning with imitation of rhythmic tapping patterns and working toward imitation utterances that are practiced in response to an intoned stimulus. Although the intoning or melody is based on patterns of natural speech, pitch and durational aspects of the utterances are exaggerated. Gradually, the clinician's tapping and intoning of cues are faded, while the client continues to produce the utterance. When the method is used for children, Helfrich-Miller (1994) suggests the use of symbols of signed English as the method of keeping time (in contrast to tapping out the rhythm, as is used for adults). The prosodic aspects of this method seem to facilitate motor planning and programming to improve speech production.

C. Program for treatment of Pitch direction in intonation

Moncur and Brackett (1974), described a program for direct treatment of pitch direction for clients with voice disorders. The objectives of the program is to produce the following pitch directions using selected pitch heights: falling (\), rising (/) and rising-falling (/ \). The different techniques that were suggested to achieve the objectives were Drills, Contrastive sets, reading aloud, modeling, exaggeration and visual cues. The procedure described is as follows :

- 1 The client reads aloud a list of words with a falling pitch direction (\) (loudness level also decreased). The client then reads other words lists in which the (\) is produced using progressively greater pitch variation. This continues until the client produces a one-octave drop over a single word.

- 2 Step 1 is repeated, but a rising (/) pitch direction is used with the loudness level decreasing during the reading task
- 3 Step 1 is repeated using a rising-falling (/\) pitch direction. The clinician may have to simplify the task for the production of /\
- 4 The clinician creates sentences with visual cues using the words from step 1 and, then, directs the client to read aloud each sentence three times first using / then, \ and finally /\ pitch

Directions on target words, for example

- Bryan is happy \
 - Bryan is happy /
 - Bryan is happy /\
- 5 The clinician presents a set of sentences without visual cues for the client to read aloud. The client is directed to use one of the three pitch directions (\ / /\) on the specified word, but the pitch direction is not specified.

Approaches that focus directly on Terminal contour

Treatment approaches for terminal contour are available for individuals with developmental delay, hearing impairment, motor speech disorders, specific language impairment and voice problems.

Friedman (1985), designed a speech-training program that incorporates a systematic sequence of training steps as well as sensory aids to provide visual or tactile feedback of contour production. For children with Hearing impairment the program utilizes a hierarchical curriculum with either a tactile or a visual display of

fundamental frequency for the remediation of incorrectly produced intonation contours.

The objectives of the program are

1. To discriminate falling terminal contours on speech segments of varying complexity
2. To imitate falling terminal contours on speech segments of varying complexity
3. To produce falling terminal contours on speech segments of varying complexity

For the most part, these procedures are administered hierarchically. However, at the clinician's direction, some of the procedures may be administered concurrently:

1. The client discriminates the presence or absence of the falling terminal contours in either the client's or the clinician's speech using stimuli, that are progressively more complex. For this step, clients are permitted to wear their hearing aids. The hierarchy of stimuli includes
 - a. Vowels in isolation
 - b. CV syllables and/ or disyllable CV stimuli in which the falling terminal contour is on the first or the second syllable
 - c. Three CV syllable of long-long-long duration
 - d. Three CV syllables of long-short-long duration
 - e. Three CV syllables of short-short-short duration
 - f. Three syllable phrases (real words)
 - g. Two syllable phrases (real words)
 - h. One syllable phrases (real words)

2. The client imitates a falling terminal contour using the hierarchy of stimuli in
 1. The clinician can use (a) vibrotactile feedback and cues, (b) the visipitch and (c) additional sensory cues such as facial cues to guide imitation. As the client progresses the clinician fades the cues.
3. On demand, the client produces falling terminal contours using the hierarchy of stimuli outlined in step 1. As in step 2, the clinician uses cues and feedback to prompt an acceptable production but fades them as soon as possible.

Rosenbek and LaPointe (1978), listed few steps, which can be used for the modification of terminal contour. Because the contour is primarily related to laryngeal activity and secondarily to subglottal breath pressure, ie, to respiratory forces, the first step is to get the optimum postural adjustment for the larynx and for respiration. The second is to increase the background of effort. The third step is to provide contrastive intonational drills. For eg “I want to go”, “I want to go”?. The stimuli should be created for each patient depending on his/her symptoms and needs.

Moncur and Brackett (1974), developed a program to improve the production of Nucleus and the terminal contour, for voice disorder. The main objective was to use falling pitch directions on nuclei (phrasally stressed words) and falling pitch directions on terminal contours. They used techniques such as reading aloud, metalinguistics and visual cues to train the clients. The procedure is as follows:

1. The clinician explains the following about intonation to the client.
 - a. There are four general pitch heights: low, middle, high, very high (rare used only in extreme contexts)
 - b. Speakers initiate contours at “pitch points” (onsets)

- c. Pauses and/or “special pitch directions” terminate contours
 - d. The “special pitch directions” are falling, rising and level
 - e. Falling pitch direction can be used to
 - o Signal finality
 - o Signal a positive statement
 - o Demark utterance termination and
 - o Demark nucleus/ phrasal stress
2. The client reads aloud sentences that are marked with symbols depicting pitch changes for finality or a positive statement. That is, he or she uses a falling terminal contour
 3. The client repeats Step 2, but uses only phrases (eg “came to a stop”)
 4. The client cued by symbols, reads aloud sentences or phrases in which the nucleus is signaled by extending the length (ie slope) of the falling pitch (eg “Positively not”)
 5. The client reads aloud sentences in which he moves from a high general level to a lower general level within the utterance.

This approach indirectly uses pauses, pitch (slope), intonation (onset), and tempo (phrasing) and directly used intonation (terminal contour).

D. PROGRAM FOR TREATMENT OF NUCLEUS IN A PITCH

CONTOUR

Contrastive stress also uses prosodic cues and stress patterns as a major facilitator to improve both speech production and prosody. This method has been used for speakers with dysarthria (Rosenbek and La Pointe 1985) and with apraxia

(Wertz, LaPointe and Rosenbek 1984). This method is found to be most effective for those individuals with mild to moderate apraxia who need to improve speech naturalness through the use of stress patterning and intonational contour in sentence production or conversational speech. The method involves having the client produce an utterance with primary or emphatic stress on a particular word. Often the stressed word contains phonetic elements that are targeted for the individual. For example, if the clinician wanted to provide opportunities for an adult with acquired apraxia to produce the word “tomorrow” in a sentence context, he or she would elicit the utterance with a question such as “Are you going out today”?. The client would then respond. “I am going out *tomorrow*”. A number of elicitation using different phrases may be used, focusing on the targeted phonetic string in the same and in different word contexts. This method is appropriate only after articulatory skill has been demonstrated for the targeted phonetic string. This task helps habituate and stabilize the articulatory production, with appropriate stress patterning and prosody.

The method is also effective for those speakers with apraxia needing improvement in the prosodic aspects of connected speech. The clinician would choose a number of sentences, all of which change meaning when word stress is varied. For eg clinician would present a picture showing a boy hitting a ball. The clinician would ask the child with apraxia “Is the girl hitting the ball”?. The child would then respond , “No, the *boy* is hitting the ball”. The next question might be, “Is the boy throwing a ball”?. The child’s response would be, “No , the boy is *hitting* the ball”. Again , it is important that the speaker is able to produce each phonetic element of the sentences, and that the length of the elicited sentences be appropriate for the speaker’s linguistic and motor capabilities

Hargrove, Roetzel, and Hoodin (1989), designed a program for direct treatment of emphatic stress in specific language impairment. The objective of the program is to use appropriate falling terminal contours and stress to signal contradictory information in response to questions. The techniques, which can be used to achieve the objectives, are contrastive stress drill, imitation, cues (visual), metalinguistics, feedback (verbal), self-monitoring and motor movements. The procedure is as follows:

1. The clinician enacts a scene depicting a subject, verb, and object (eg; he/she makes a boy doll, named Bill, hold a pen)
2. The clinician asks the client a question in which one of the nouns/the verb is incorrect (eg: “Is **kate** holding the pencil”?)
3. The client responds to the question in step #2 using a specified syntactic structure (eg: SUBJECT + [IS] + VERB+ING+THE+SUBJECT) emphatic stress on the item to be contradicted, and a falling terminal intonation contour (eg **BILL** (is) holding the pen)
4. The clinician reinforces the client for correct responses. For incorrect responses, the clinician at his/her discretion provides a variety of cues (eg imitation, hand cues or gestures, explanation, self monitoring tasks to elicit the target response).

E. Program for treatment of Overall Intonation Contour

Berry (1980) designed an approach for use with groups of children with specific language impairment. The main objectives of the program are :

1. To establish rhythmic motor movements
2. To produce rhythmic speech

3. To produce acceptable prosodic patterns that serve as the “envelope” into which the other aspects of language are produced and perceived.

The other recommended techniques are use of Choral speech, metalinguistics, motor movement, modeling, pantomiming, singing, self –monitoring and dramatic to achieve the objectives. The procedure is as follows:

1. a. The clients practice movement patterns that involve posture, motion, balance, locomotion, and action sequences (eg walking, jumping rope, marching, dancing to the beat of a drum, pantomiming)
- b. The clients practice directional movements, for example, “turn right, turn left, now turn around”. The clinician pairs clients who are weak on this task with clients who are strong.
- c. The clients practice pantomime sequences depicting activities of daily living such as throwing a ball or pouring a drink. As the clients progress, the clinician increases the affective message in the sequence.
2. a. The clinician teaches clients to pair motor movements with simple finger plays, chants, and verses. As the clients progress, the complexity of the motor movements increases. Verbalization during this activity should be encouraged but not required.
- b. The clients pair the use of specified melodies (overall contours) and gestures while performing group recitations such as minidramas, storytelling, role-playing, puppet plays, and the production of verse.

3. a. The clinician presents situations which are designed to evoke overall intonation contours associated with
 - emotional responses
 - directives,
 - announcements of skills and achievements and
 - social exchange or routines
- b. The clinician and the clients discuss the appropriateness and inappropriateness of certain behaviours and generates suggestions for change.

Program for indirect treatment of overall Intonation Contour

Schomburg, Lippert, Johnson, Muss, Tittnich (1989), suggested few activities which can be used to improve overall communication skills of children with specific language impairment, with in the age range of 0-2 years. The main objective of the program is to stimulate language by engaging in interactive activities. The procedure which involves the prosodic features, in the program are as follows :

Procedure

1. Time for Talking :

During regularly scheduled interaction periods, the clinician models an overall contour that apparently matches the client's internal state.

2. Language games :

The clinician plays "Peek-a-Boo" or a variation of it. During the "finding" part of the game, the clinician changes his or her intonation to reflect questions or excitement (eg "Where's ____?" or "I seeeee you. I see_____")

3. Knee Bounce Game :

The clinician bounces the client on his or her lap, sings a song or tells a story or nursery rhyme, and slowly lowers the client onto his her knees. Upon reaching a designated spot, the clinician simultaneously changes his or her overall contour. The clinician continues this until the client begins to anticipate the designated point at which the overall contour is changed.

4. Watch Me

The clinician vocalizes and makes a “butterfly” by hooking together his or her thumbs. The clinician then encourages the client to track the “flight” of the “butterfly” which changes when the clinician raises his or her pitch. (The “butterfly” moves up when the pitch height increases and moves down when the pitch height decreases).

5. Slide and Climb :

The clinician sings and talks while the client is on a slide. The clinician modifies his or her overall intonation contour to match the child’s actions (eg climbing up, sliding down, catching etc).

6. What you can see, I can Tell, or Watch the Bird.

When the client is attentive, the clinician carries him/her around the room and comments on objects and/or actions that appear to be of interest. The clinician pauses frequently during the vocalization . This approach also indirectly uses pause and pitch direction.

Programmed approaches for teaching several aspects of Intonation

Dworkin (1991), provided a treatment guide, for patients with Motor Speech disorders. The main objective of the program is to read aloud sentences that

Further, the dialects within the language, also necessitates differential approach in devising a training schedule for the needy population. This manual is developed based on the available knowledge about the structure of intonation in Kannada (Mysore-Bangalore dialect), as evidenced by the studies of Manjula (1979), Nataraja (1981), Nandini (1981) & Manjula (1997).

CHAPTER - 3

METHOD

Manual for Correction of Intonation in Kannada Speaking Children with speech and language disorders is applicable for those Kannada speaking children who are above three years of expressive language age, having impaired/defective intonation due to any speech and language/communication disorder. However, when used with the hearing impaired children, it is essential that the child should have an amplification device and should have undergone auditory training for a minimum of 6 months duration apart from the requirement to be met in terms of expressive language age. The manual is prepared for the dialect in Kannada which is spoken in and around Mysore and Bangalore districts of Karnataka. The manual can be administered soon after the identification of defective/impaired intonation in them. The sections within the manual are arranged in a hierarchical manner. Training can however, be commenced from any section, depending upon the baseline speech output level of the client. Clear instructions are given for various activities in different sections, and this manual can be used by speech-language pathologists (undergraduates, post graduates and practicing professionals).

The manual is developed based on the general principles of treatment for intonation, given in the literature. It follows a sequential pattern through hierarchies of task difficulties as described below.

- Gradation of exercises from sound level to syllables, to words and then to sentences.
- Simple to complex sentences.
- The utterances selected for the manual have been represented using transcription method advocated by Schiffman (1979). The same system is used throughout the manual.
- The tasks and the test stimuli are recorded in audio cassettes. The audio cassettes consist of the voice/speech samples of a model speaker (female) who is selected for this task. The targeted activities/goals in each section and subsection are recorded by a model speaker. The clinician should guide the child to imitate or model the speech utterances of the model speaker with appropriate pitch control/intonation contour as required in the task.
- Activities are made as meaningful and interesting as possible.
- In order to motivate the child and to provide more realistic contexts, the activities in various sections and subsections are supplemented by appropriate pictures.
- The clinician should use intensive systematic drill as instructed under various sections and subsections.
- The clinician should ensure accuracy of the responses of the child and try to generalize the learnt behavior in appropriate realistic contexts.
- Repetition of each exercise/activity has been stressed.
- Use of multiple modalities during therapy has to be incorporated.

DEVELOPMENT OF THE MANUAL

The manual is divided into 5 sections.

6. Pitch Height
7. Pitch Variation
8. Pitch Contour
9. Nucleus in a pitch contour
10. Emotional sentences

Each section has 2 subsections, namely the perception of intonation and production of intonation. The subsection perception of intonation constitutes 3 modules.

Module A: Detection of Intonation

Module B: Discrimination of Intonation

Module C: Identification of Intonation

The subsection production of intonation constitutes 1 Module

Module D: Production of Intonation Parameter

Repeat the exercises/activities in the training phase until a set criterion of 80% accuracy is reached. In testing phase, each correct response should be scored 1 and every incorrect or no response should be scored as 0. Similar to the training phase, in the testing phase, a set criterion of 80% correct responses should be achieved, before proceeding to the next subsection or the section.

The manual contains a set of general instructions and specific instructions for tasks in each section, along with pictures and audiocassettes, so as to improve the applicability of the material for clients with impaired/defective intonation.

Overview of the Manual

<i>Sections</i>	<i>Sub sections</i>	<i>Module</i>	Phases		Audio Reference		Graphic Reference	
			Training Phase	Testing Phase	Training Phase	Testing Phase	Training phase	Testing Phase
I Pitch Height	I Perception of Pitch Height	IA: Detection	Table 1	Table 2,3 & 4	1A-1 to 1A-3	1A-4 to 1A-18	1A-1 to 1A-3	-
		IB: Discrimination	Table 5	Table 6	1B-1 to 1B-6	1B-7 to 1B-11	1B1 to 1B4	-
		IC: Identification	Table 7	Table 8	1C-1 to 1C-3	1C-4 to 1C-8	1C-1 to 1C-3	1C-4 to 1C-6
	II Production of Pitch height	ID: Production	Table 9	Table 10 and 11	1D-1 to 1D-3	1D-4 to 1D-13	1D-1 to 1D-8	1 D-4 to 1 D-8
II Pitch Variation	I Perception of Pitch Variation	II A Detection	Table 12	Table 13	2A-1 to 2A-10	2A-11 to 2A-20	2A-1 to 2A-9	-
		II B: Discrimination	Table 14	Table 15	2B-1 to 2B-10	2B-11 to 2B-20	2B-1 to 2B-4	-
		II C: Identification	Table 16	Table 17	2C-1 to 2C-10	2C-11 to 2C-20	2C-1 to 2C 8	2C 9 to 2C 16
	II Production of Pitch Variation	II D: Production	Table 18	Table 19, 20	2D-1 to 2D-10	2D-11 to 2D-30	2D-1 2D-10	2D-11 to 2D-18
III Pitch Contour	I Perception of Pitch Contour	III A: Detection	Table 21	Table 22, 23	3A-1 to 3A-10	3A-11 to 3A-30	3A-1 to 3A-3	-
		III B: Discrimination	Table 24	Table 25	3B-1 to 3B-10	3B-11 to 3B-20	3B-1 to 3B-4	-
		III C: Identification	Table 26	Table 27	3C-1 to 3C-120	3C-1 and 3C-2	3C-11 to 3C-20	3C-3 & 3C-4
	II Production of Pitch Contour	III D: Production	Table 28	Table 29 & 30	3D-1 to 3D-10	3D-11 to 3D-30	3D-1 to 3D-10	3D-11 to 3D-20
IV Nuclues	I Perception of Nucleus	IV A: Detection	Table 31	Table 32	4A-1 to 4A-5	4A-6 to 4A-10	4A 1 to 4A5	-
		IV B: Discrimination	Table 33	Table 34	4 B1 to 4 B5	4 B-6 to 4B-10	4 B-1 to 4B-5	-
		IV C: Identification	Table 35	Table 36	4C-1 to 4C-5	4C-6 to 4C-10	4C-1 to 4C-5	4C-6 to 4C-8
	II: Production of Nucleus	IV D: Production of Nucleus	Table 37	Table 38 & 39	4D-1 to 4D-5	4D-6 to 4D-1	4D-1 to 4D-5	4D-6 to 4D-8
V Emotional Sentences	I Perception	V A: Detection	Table 40 to 45	Table 47(a – f)	5A-N1 to 5a-N5 51-H1 to 5A-H5 5A-G1 to 5A-G5 5A-A1 to 5A-A5 5A-F1 to 5A-F5 5A-Sa to 5A-S5	5A-H6 to 5A-H10 5A-N6 to 5A-N10 5A-G6 to 5A-G10 5A-S6 to 5A-S10 5A-A6 to 5A-A10 5A-F6 to 5A-F10	5A-N1 to 5a-N5 51-H1 to 5A-H5 5A-G1 to 5A-G5 5A-A1 to 5A-A5 5A-F1 to 5A-F5 5A-Sa to 5A-S5	
		VB: Discrimination	Table 48	Table 49	5B1 to 5B10	5B-11 to 5B-20	5B-1 to 5B-5	
		V C: Identification	Table 50	Table 51	5C-1 to 5C-10	5C-11 to 5C-20	5C1 to 5C6	5C7 to 5C12
	II Production	VD: Production	Table 52	Table 53 and 54	5D-1 to 5D-10	5D-11 to 5D-30	5D-1 to 5D-10	5D-11 to 5D-20

Goals of each of the sections are as follows

SECTION I: PITCH HEIGHT

This section is meant for those clients with impaired intonation who present difficulty in producing the three different pitch levels, namely high, low and mid pitch, which acts as a precursor to produce appropriate variation in pitch of the voice. This in turn will help to improve the speaking skills.

SECTION II: PITCH VARIATION

This section is meant for those clients with impaired intonation who demonstrate difficulty in varying the pitch height appropriately, which is very essential for excellent speaking skills.

SECTION III: PITCH CONTOUR/INTONATION CONTOUR

This section is meant for those clients demonstrate difficulty in changing the pitch contour on the terminal syllable of the utterance.

SECTION IV: NUCLEUS IN PITCH CONTOUR

This section deals with teaching the appropriate placement of nucleus in a pitch contour of an utterance, depending upon the intension or the attitude of the speaker.

SECTION D: EMOTIONAL SENTENCES

This section concentrates on the overall intonation contour of the utterances associated with different emotions. This is considered the final stage of treatment as it incorporates all the parameters of intonation and help to develop excellent speaking skills for those individuals with impaired intonation.

The general pattern of treatment as described in this manual should be followed and more number of activities depending upon the child's abilities and interests and the clinicians imagination and creativity can be included.

**MANUAL FOR CORRECTION
OF INTONATION IN
KANNADA SPEAKING CHILDREN
WITH SPEECH AND
LANGUAGE DISORDERS**

**MANUAL FOR THE CORRECTION OF INTONATION IN KANNADA
SPEAKING CHILDREN WITH SPEECH AND LANGUAGE DISORDERS
(MCI-K)**

Introduction:

MCI-K is a simple and easy-to-use manual for the speech - language pathologists MCI-K is a manual targeting the correction of intonation in Kannada speaking children with speech and language/communication disorders. This manual provides step-by-step activities for the speech language pathologists. It is structured to improve the perception of pitch contours and its associated characteristics and also facilitate the production of utterances with appropriate intonation curves/contours.

Structure of the manual:

The manual is developed based on the general principles of treatment for intonation, given in the literature. There are two components of this manual:

- Text of the manual
- Pre-recorded audio cassette with target speech elements uttered with appropriate intonation as per requirement, which is modeled by a female speaker.

It follows a sequential pattern through hierarchies of tasks, as follows:

- Gradation of exercises from sound level to syllables, to words and then to sentences.
- Use of simple to complex sentences.

The manual is divided into five main sections, and each of these sections are further divided into subsections to improve upon and train the child in *detection*, *discrimination* and *identification* of specific aspects of intonation that are addressed in the main sections. The five main sections include:

- Section I : Pitch height
- Section II : Pitch variation
- Section III : Pitch contour/Intonation contour
- Section IV : Nucleus in a pitch contour
- Section V : Emotional Sentences

Each of the sections has 2 subsections

- Subsection I : Perception of the selected feature of Intonation
- Subsection II : Production of selected feature of Intonation

Subsection I in each of the sections generally consists of 3 modules, namely,

- Module A : Detection of the selected feature of Intonation
- Module B : Discrimination of the selected feature of Intonation
- Module C : Identification of the selected feature of Intonation

Subsection II in each of the sections generally consists of only 1 module, namely

- Module D : Production of Intonation

Each of the modules within the subsection incorporates:

- Training phase: during which the child is guided to perceive and produce the specific feature of an intonation contour. The training phase is followed by a testing phase.

- Testing phase: during which the child's ability to perform the skills that are trained is tested.

Clear instructions are given for each activity in the training and testing phases. The criterion level to proceed with training to next module during training phase and the success criteria in testing phase of each module is also specified. The manual consists of picture stimuli to aid in the perception and production of appropriate intonation contours during the training and testing phases within the various sections. The tasks and the test stimuli are recorded in audio cassettes. The audio cassettes consist of the voice/speech samples of a model speaker (female) who is selected for this task. The targeted activities/goals in each section and subsection are recorded by a model speaker. The clinician should guide the child to imitate or model the speech utterances of the model speaker with appropriate pitch control/intonation contour as required in the task.

General instructions for administration of the manual:

- Read the instructions completely and familiarize with the text and materials available with the manual before using the manual with a child
- The expressive language ability of the child should be 3 years and above, as the manual incorporates phrases and sentences in most of the sections.
- Subjective assessment of the child's intonation pattern by the speech - language pathologist can be considered as the baseline.
- The sections are arranged in a hierarchy. But training can start with any of the sections, depending upon the severity of the problem and the child's baseline performance.

- Within a section and a subsection, follow the order of the activities as suggested in the manual.
- It is necessary to carry out language training activities simultaneously with the suggested activities in the manual.
- Only few exercises are provided in the manual for a particular target. As a clinician, you need to plan and work on similar exercises and activities based on your creativity and the child's interests and abilities in order to generalize and strengthen the skill that is acquired.
- Try to make all the activities as meaningful and interesting as possible.
- Encourage the child at every step of the activity and provide adequate reinforcement after each activity.
- Multiple sensory modalities should be used to encourage the child to perceive and produce various aspects of intonation that are proposed in various sections of the manual.
- Activities are made as meaningful and interesting as possible.
- In order to motivate the child and to provide more realistic contexts, the activities in various sections and subsections are supplemented by appropriate pictures.
- The clinician should use intensive systematic drill as instructed under various sections and subsections.
- The clinician should ensure accuracy of the responses of the child and try to generalize the learnt behavior in appropriate realistic contexts.
- Repetition of each exercise/activity has been stressed.
- Use of multiple modalities during therapy has to be incorporated.

- In the training phase, the activities can be repeated until the child performs the task with 80% accuracy. Similarly in the testing phase, if the child achieves 4/5 or 80% correct responses, the clinician can proceed to the next phase/module.
- If, the child is not able to perform the task with 80% accuracy, the clinician should select and train the child thoroughly in the previous/lower level activity.
- An overview of the hierarchy of steps mentioned in the manual is represented in the form of a flowchart (F1).

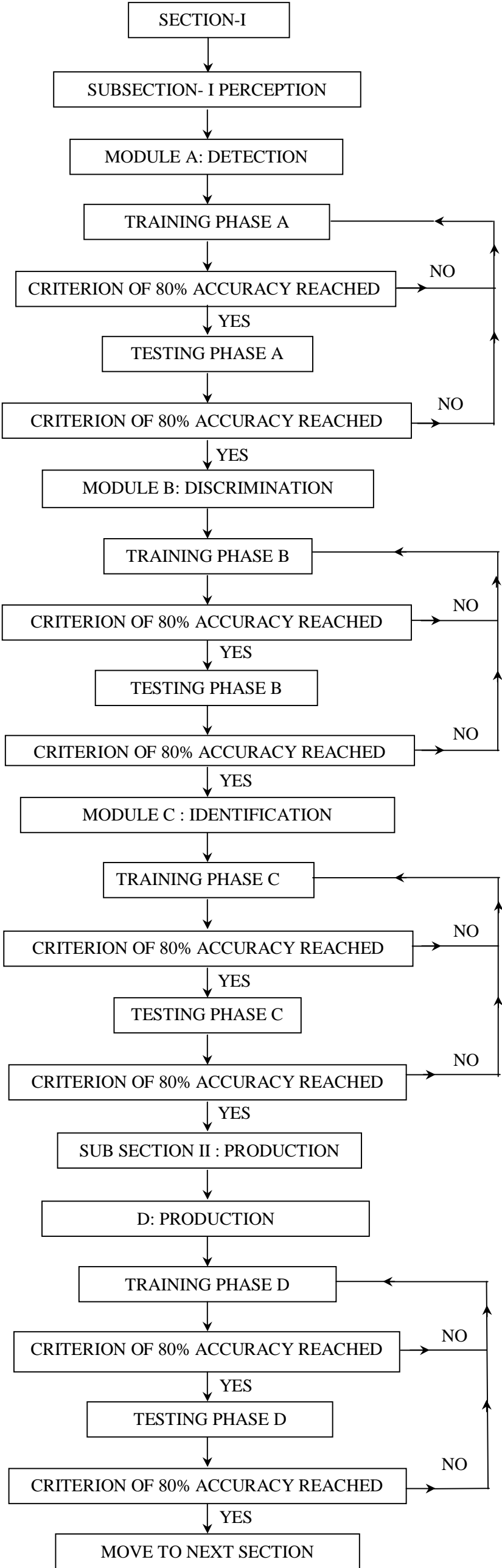
Summary:

Manual for the correction of intonation in Kannada speaking children with speech and language disorders (MCI-K) is applicable to:

- Kannada speaking children with speech and language disorders
- Children who are above three years of expressive language age (as assessed on any standard language test battery or based on the clinicians observation)
- Children who have impaired/defective intonation.

The manual can be administered soon after the identification of defective/impaired intonation in them. The manual consists of 5 sections, which are arranged in a hierarchical manner. But it can be started from any section, depending upon the severity of the problem and the child's baseline performances.

FLOWCHART TO SHOW THE RECOMMENDED STEPS IN THE MANUAL



SECTION I
PITCH HEIGHT

Pitch height is the average height or level of voice pitch in a subject. This can be varied to a lower or higher level. They are described subjectively as “low”, “mid” and “high” pitch. Normal speakers produce appropriate variation in pitch of the voice and this in turn will improve the speaking skills. In clients with speech disorders, there are deviations observed in the use of appropriate pitch. This section describes the way in which pitch height can be taught in an individual with disordered ability to vary pitch height.

The section consists of two subsections.

SUBSECTION I. Perception of Pitch Height

SUBSECTION II. Production of Pitch Height

Sets of pictures along with audiocassettes are provided for training the child in this section. The audio **Cassette No: I** contains the voice of a model speaker, in which the vowel /a/ is phonated at three different pitch levels. The clinician should encourage the child to listen to the cassette, and train the child to perceive and then produce different pitch levels appropriately. To achieve this goal, follow the suggested activities in a hierarchy.

SUBSECTION I

PERCEPTION OF PITCH HEIGHT

The goal of this section is to train the child to listen and perceive the pitch height in the voice of model speaker, which is audio recorded in **Cassette. No. I.**

There are 3 modules, in this section:

Module IA Detection of Pitch Height

Module IB Discrimination of Pitch Height

Module IC Identification of Pitch Height

MODULE 1 A: Detection of Pitch Height

Aim : To train the child to detect pitch height in the voice of the model speaker, which is audio recorded in cassette No: 1A. There are three steps in this module. Each of the steps incorporates training and testing phase.

Training Phase: IA

The purpose of this training phase is to train the child to detect three different levels of pitch present in the voice of the model speaker.

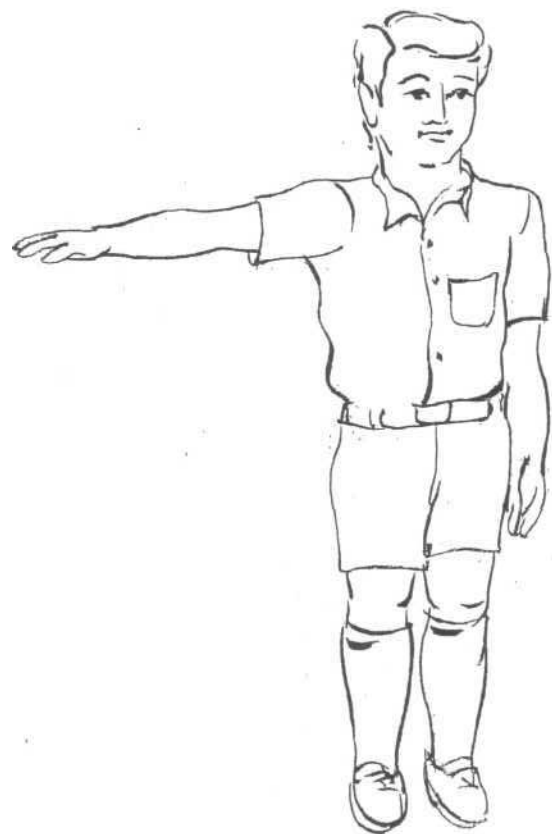
Instruction: Play the audiocassette No: 1A (1A1 to1A3). Encourage the child to listen to the voice of the model speaker in which the vowel /a/ is phonated at three different pitch levels. Train to perform the tasks as instructed in Table 1.

[*Note:* Low pitch is denoted by "1", Midpitch is denoted by "2" and High pitch is denoted by "3"].

Table 1: Stimuli for Training phase IA

Sl No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained
1	Phonation of /a/ at level 2 pitch	/ಅ/ ಎಂದು ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-1	Picture 1A-1	Point to picture 1A-1
2	Phonation of /a/ at level 3 pitch	/ಅ/ ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-2	Picture 1A-2	Point to picture 1A-2
3	Phonation of /a/ at level 1 pitch	/ಅ/ ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-3	Picture 1A-3	Point to picture 1A-3

Note: Randomize and repeat the steps until child performs with 80% accuracy and then move to the next phase.



1A-1



1A-2



1A-3

Testing Phase : IA

The purpose of this testing phase is to test the child's ability to detect three different levels of pitch present in the voice of the model speaker. This testing phase has three parts.

Instruction: Play the audiocassette No: 1A (1A4 to 1A8). Encourage the child to listen to the voice of the model speaker in which the vowel /a/ is phonated at different pitch levels. Ask the child to perform the tasks as indicated in Table 2, 3 and 4

Table 2: Stimuli for Testing phase IA- PART I

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (The child has to say yes / keep the hand horizontally away from his body when he hears level 2 pitch)	Score 1= correct response 0= no / incorrect response
1	Phonation of /a/ at level 2 pitch	/ಅ/ ಎಂದು ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-4	Child has to perform the task mentioned	
2	Phonation of /a/ at level 1 pitch	/ಅ/ ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-5	Child should not respond	
3	Phonation of /a/ at level 3 pitch	/ಅ/ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-6	Child should not respond	
4	Phonation of /a/ at level 2 pitch	/ಅ/ ಎಂದು ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-7	Child has to perform the task mentioned	
5	Phonation of /a/ at level 2 pitch	/ಅ/ ಎಂದು ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-8	Child has to perform the task mentioned	
Total Score					

Note: 80%(4/5) correct response is the criterion level to move to next module. Repeat this testing phase until criterion level is successfully reached.

Table 3: Stimuli for Testing phase IA-Part II

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (The child has to say yes / keep the hand horizontally away from his body when he hears level 3 pitch)	Score 1= correct response 0= no / incorrect response
1	Phonation of /a/ at level 3 pitch	/ಅ/ ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-9	Child has to perform the task mentioned	
2	Phonation of /a/ at level 2 pitch	/ಅ/ ಎಂದು ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-10	Child should not respond	
3	Phonation of /a/ at level 3 pitch	/ಅ/ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-11	Child has to perform the task mentioned	
4	Phonation of /a/ at level 3 pitch	/ಅ/ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-12	Child has to perform the task mentioned	
5	Phonation of /a/ at level 1 pitch	/ಅ/ ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-13	Child should not respond	
Total Score					

Note: 80%(4/5) correct response is the criterion level to move to next module. Repeat this testing phase until criterion level is successfully reached.

Table 4 : Stimuli for Testing phase IA-Part III

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (The child has to say yes / keep the hand horizontally away from his body when he hears level 1 pitch)	Score 1= correct response 0= no / incorrect response
1	Phonation of /a/ at level 1 pitch	/ಅ/ ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-14	Child has to perform the task mentioned	
2	Phonation of /a/ at level 3 pitch	/ಅ/ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-15	Child should not respond	
3	Phonation of /a/ at level 2pitch	/ಅ/ ಎಂದು ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-16	Child should not respond	
4	Phonation of /a/ at level 1 pitch	/ಅ/ ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-17	Child has to perform the task mentioned	
5	Phonation of /a/ at level 1 pitch	/ಅ/ ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1A-18	Child has to perform the task mentioned	
Total Score					

Note: 80% (4/5) correct response is the criterion level to move to next module. Repeat this testing phase until criterion level is successfully reached.

MODULE IB: DISCRIMINATION OF PITCH HEIGHT

Aim : To train the child to discriminate between the three levels of pitch, i.e. low, mid (habitual) and high pitch levels in the voice of the model speaker, which is audio recorded in cassette No: 1B. There are six steps in this module. Each of the steps incorporates training and testing phase.

Training Phase: 1B

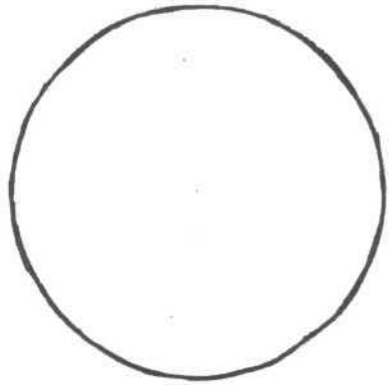
The purpose of this training phase is to train the child to discriminate three different levels of pitch present in the voice of the model speaker.

Instruction: Play the audiocassette No: IB (I B1 to I B6). Encourage the child to listen to the voice of the model speaker in which the vowel /a/ is phonated at three different pitch levels one after the other in various combinations. Train the child to perform the tasks as instructed in the Table 5.

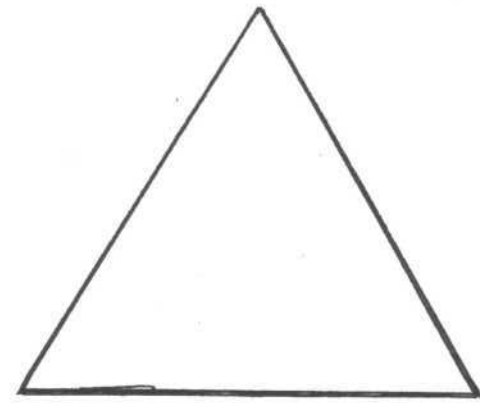
Table 5: Stimuli for training phase I B

Sl No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained (Train to point to 2 similar pictures for same pitch levels & 2 dissimilar pictures for different pitch levels)
1	/a/—2; /a/—1	/C/__2;/C/__ 1	1B-1	Picture 1B-1 and 1B-2	Point to pictures 1B-1 & 1B-2
2	/a/—3; /a/—3	/C/__3;/C/__ 3	1B-2	Picture 1B-3 and 1B-4	Point to pictures 1B-3 & 1B-4
3	/a/—1; /a/—3	/C/__1; /C/__ 3	1B-3	Picture 1B-1 and 1B-2	Point to pictures 1B-1 & 1B-2
4	/a/—1; /a/—1	/C/__1; /C/__ 1	1B-4	Picture 1B-3 and 1B-4	Point to pictures 1B-3 & 1B-4
5	/a/—2; /a/—2	/C/__2;/C/__ 2	1B-5	Picture 1B-3 and 1B-4	Point to pictures 1B-3 & 1B-4
6	/a/—3; /a/—1	/C/__3; /C/__ 1	1B-6	Picture 1B-1 and 1B-2	Point to pictures 1B-1 & 1B-2

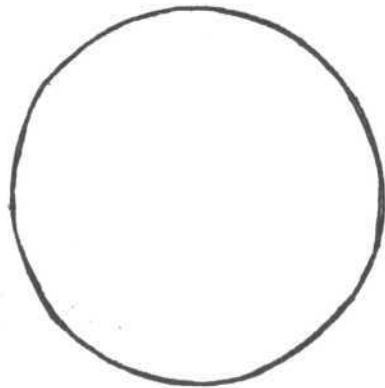
Note: Randomize and repeat the steps until child performs the activity with 80% accuracy and then move to the next phase.



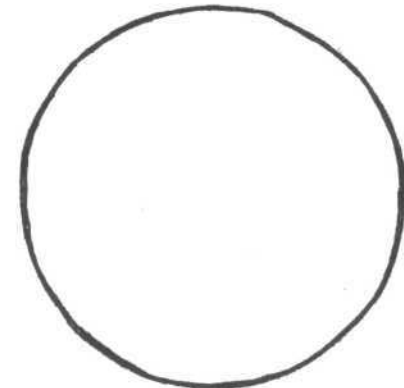
1B-1



1B-2



1B-3



1B-4

Testing Phase: 1B

The purpose of this testing phase is to test the child's ability to discriminate three different levels of pitch present in the voice of the model speaker.

Instruction: Play the audiocassette No: IB (I B7 to I B11). Encourage the child to listen to the voice of the model speaker in which the vowel /a/ is phonated at different pitch levels. Ask the child to perform the tasks as indicated in Table 6.

Table 6: Stimuli for Testing phase IB

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Response (Mark as “√” if pitch levels are same & “X” if pitch levels are different)	Score 1= correct response 0=no / incorrect response
1	/a—2; /a—2	/C/__ 2 ;/C/__ 2	1B-7		
2	/a—3; /a—2	/C/__ 3 ;/C/__ 2	1B-8		
3	/a—1; /a—3	/C/__ 1; /C/__ 3	1B-9		
4	/a—1; /a—1	/C/__ 1; /C/__ 1	1B-10		
5	/a—2; /a—1	/C/__ 2; /C/__ 1	1B-11		
Total Score					

Note: 80%(4/5) correct response is the criterion level to move to next module. Repeat this training phase until criterion level is successfully reached.

MODULE IC: IDENTIFICATION OF PITCH HEIGHT

Aim : To train the child to identify the three levels of pitch, i.e. low, mid (habitual) and high pitch levels in the voice of the model speaker, which is audio recorded in cassette No: I C. There are three steps in this module. Each of the steps incorporates training and testing phase.

Training Phase: 1C

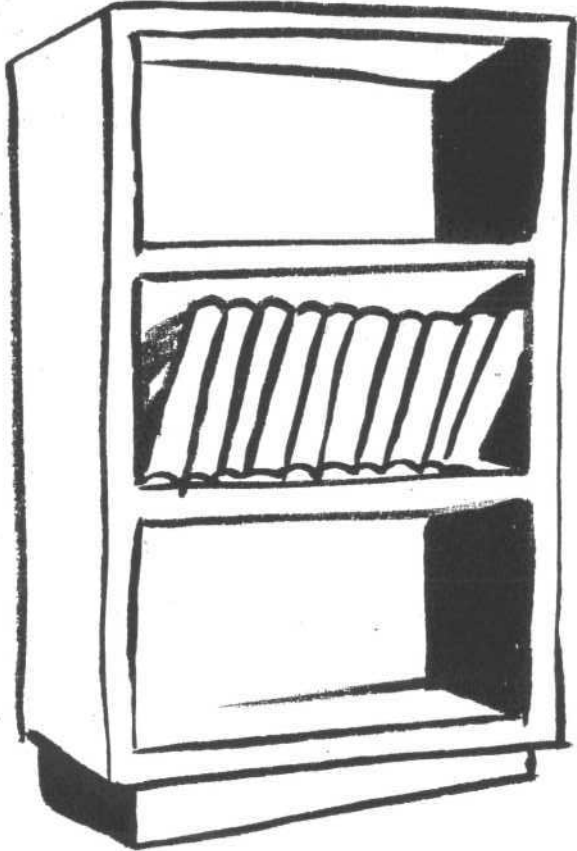
The purpose of this training phase is to train the child to identify three different levels of pitch present in the voice of the model speaker.

Instruction: Play the audiocassette No: IC (I C1 to I C3). Encourage the child to listen to the voice of the model speaker in which the vowel /a/ is phonated at three different pitch levels. Train the child to perform the tasks as instructed in the Table 7.

Table 7: Stimuli for training phase I C

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained
1	Phonation of /a/ at level 2 pitch	/ಅ/ಎಂದು ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1C-1	Picture 1C-1, 1C-2, 1C-3	Train to choose picture 1C-1
2	Phonation of /a/ at level 3 pitch	/ಅ/ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1C-2	Picture 1C-1, 1C-2, 1C-3	Train to choose picture 1C-2
3	Phonation of /a/ at level 1 pitch	/ಅ/ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1C-3	Picture 1C-1, 1C-2, 1C-3	Train to choose picture 1C-3

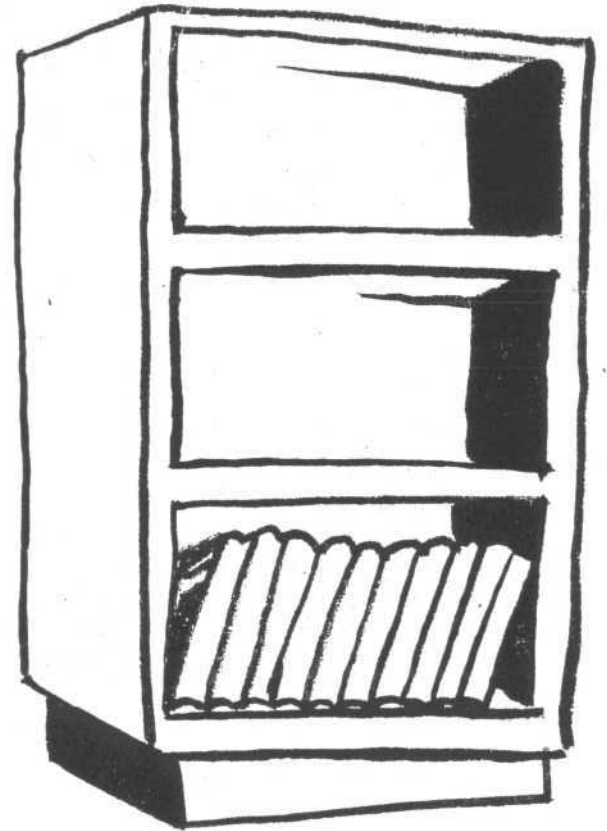
Note: Randomize and repeat the steps until child performs with 80% accuracy and then move to the next phase.



IC-1



IC-2



IC-3

Testing Phase: 1C

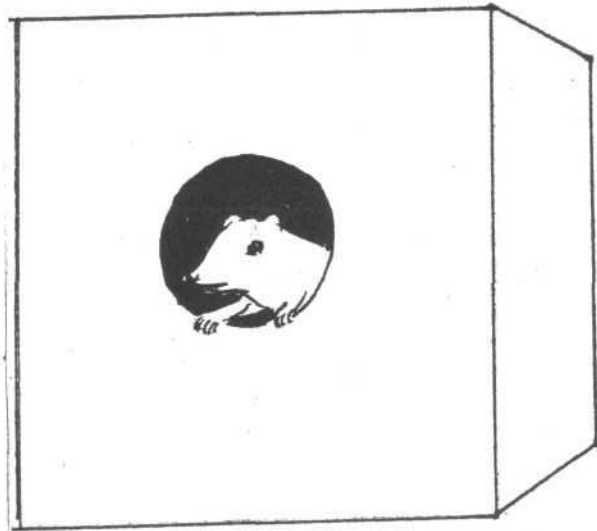
The purpose of this testing phase is to test the child's ability to identify three different levels of pitch present in the voice of the model speaker.

Instruction: Play the audiocassette No: IC (I B4 to I B8). Encourage the child to listen to the voice of the model speaker in which the vowel /a/ is phonated at different pitch levels. Ask the child to perform the tasks as indicated in Table 8.

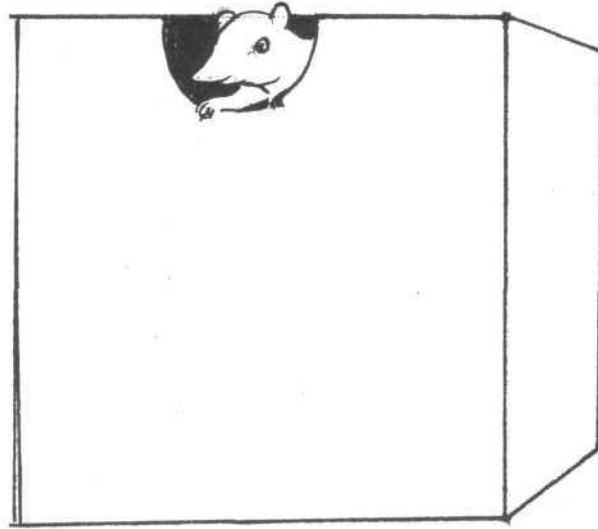
Table 8: Stimuli for Testing phase I C

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Expected response (Choose the appropriate picture)	Score 1=correct response 0= no / incorrect response
1	Phonation of /a/ at level 3 pitch	/ಅ/ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1C-4	Picture 1C-4, 1C-5, 1C-6	Child has to chose picture 1C-5	
2	Phonation of /a/ at level 2 pitch	/ಅ/ಎಂದು ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1C-5	Picture 1C-4, 1C-5, 1C-6	Child has to chose picture 1C-4	
3	Phonation of /a/ at level 1 pitch	/ಅ/ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1C-6	Picture 1C-4, 1C-5, 1C-6	Child has to chose picture 1C-6	
4	Phonation of /a/ at level 1 pitch	/ಅ/ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1C-7	Picture 1C-4, 1C-5, 1C-6	Child has to chose picture 1C-6	
5	Phonation of /a/ at level 3 pitch	/ಅ/ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1C-8	Picture 1C-4, 1C-5, 1C-6	Child has to chose picture 1C-5	
Total Score:						

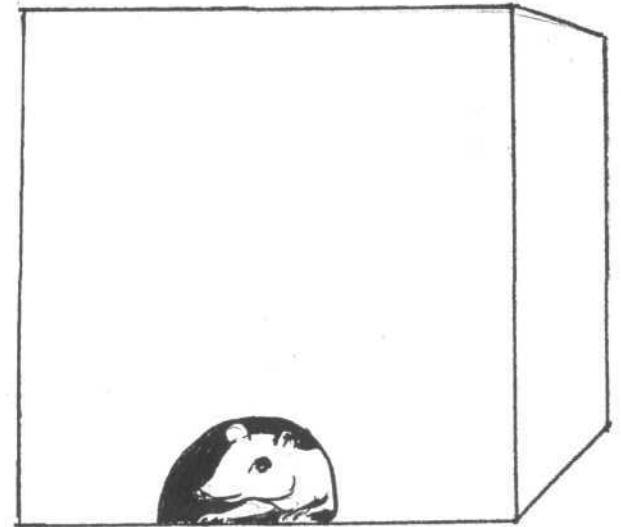
Note: 80%(4/5) correct response is the criterion level to move to next subsection. Repeat this testing phase until criterion level is successfully reached.



1C-4



1C-5



1C-6

SUB SECTION 2: PRODUCTION OF PITCH HEIGHT

The goal of this subsection is to train the child to produce different pitch heights. There is only 1 module, in this subsection.

Module I D: Production of Pitch Height

MODULE 1D: PRODUCTION OF PITCH HEIGHT

Aim : To train the child to produce the three different pitch levels, namely low, mid (habitual) and high pitch levels. There are three steps in this module. There is one training phase and two testing phases in this module.

Training Phase: 1D

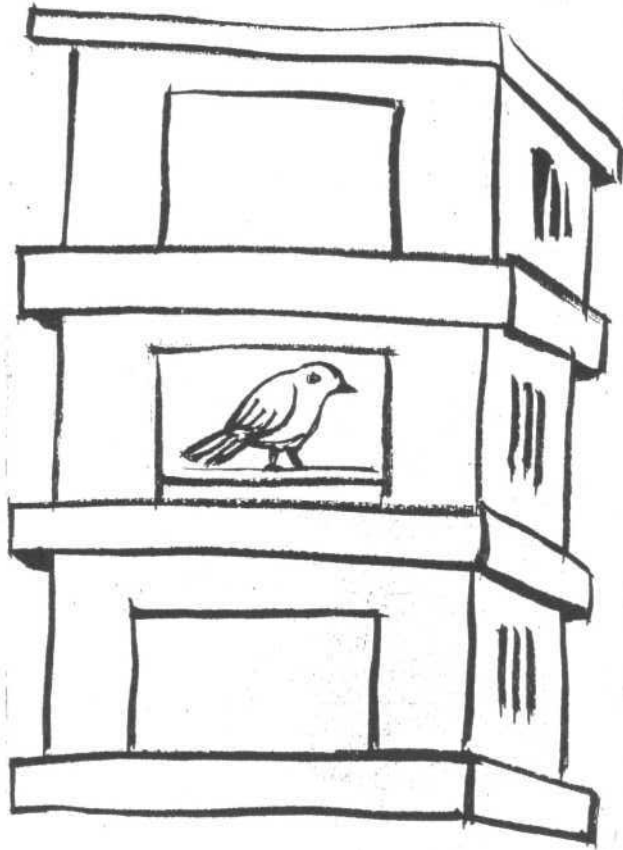
The purpose of this training phase is to train the child to produce three different pitch levels.

Instruction: Play the audiocassette No: I D (I D1 to I D3). Encourage the child to listen to the voice of the model speaker in which the vowel /a/ is phonated at three different pitch levels. Train the child to perform the tasks as instructed in the Table 9.

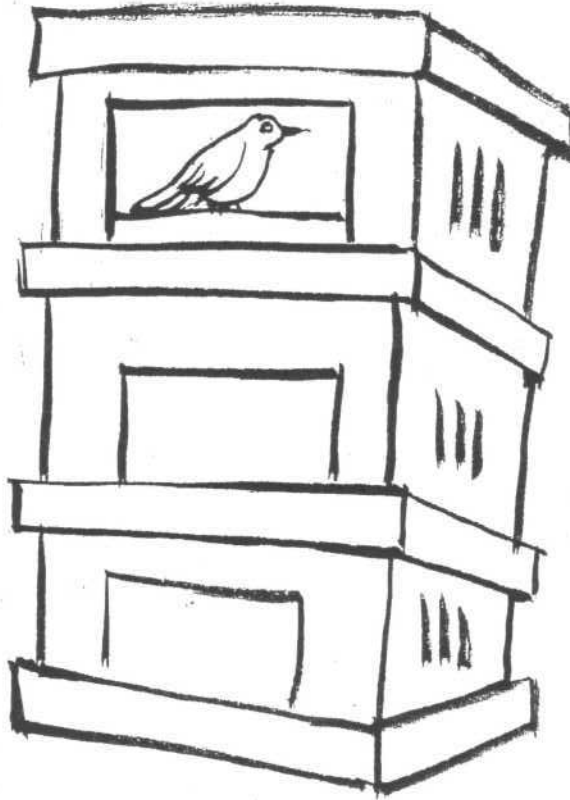
Table 9: Stimuli for training phase I D

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Hand cues to be provided by the clinician to facilitate phonation of appropriate pitch	Task to be trained
1	Phonation of /a/ at level 2 pitch	/ಅ/ಎಂದು ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1D-1	Picture 1D-1	The clinician does not place his/ her hand on the child's thyroid cartilage.	Imitate the model speaker
2	Phonation of /a/ at level 3 pitch	/ಅ/ಎಂದು ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1D-2	Picture 1D-2	The clinician places his/ her hand on the child's thyroid cartilage and elevates it to produce high pitch	Imitate the model speaker
3	Phonation of /a/ at level 1 pitch	/ಅ/ಎಂದು ಒಂದನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1D-3	Picture 1D-3	The clinician places his/ her hand on the child's thyroid cartilage and lowers it to produce low pitch	Imitate the model speaker

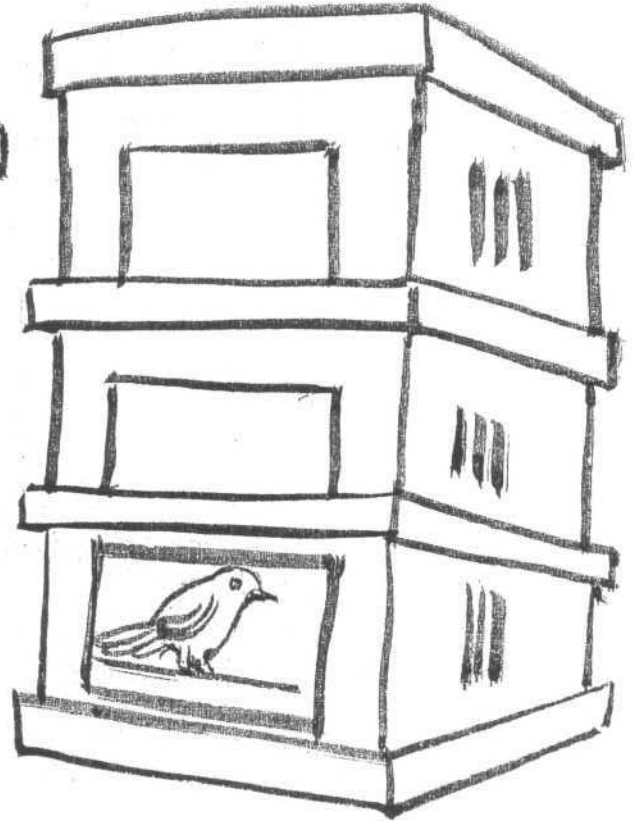
Note: Randomize and repeat the steps until the child performs with 80% accuracy and then move to the next phase.



1D-1



1D-2



1D-3

Testing Phase: 1D

The purpose of this testing phase is to test the child's ability to produce three different levels of pitch. This testing phase consists of 2 parts: Part I and Part II.

PART: I

Instruction: Play the audiocassette No: I D (I D4 to I D8). Encourage the child to listen to the voice of the model speaker in which the vowel /a/ is phonated at different pitch levels. Pictures are provided for better facilitation of the task. Ask the child to imitate the model speaker as indicated in the Table 10.

Table 10: Stimuli for Testing phase ID- PART I

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Expected response (Imitate the model speaker)	Score 1= correct response 0= no / incorrect response
1	Phonation of /a/ at level 3 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1D-4	Picture 1D-5		
2	Phonation of /a/ at level 2 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1D-5	Picture 1D-4		
3	Phonation of /a/ at level 1 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಮೊದಲನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1D-6	Picture 1D-6		
4	Phonation of /a/ at level 3 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1D-7	Picture 1D-5		
5	Phonation of /a/ at level 1 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಮೊದಲನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿದೆ	1D-8	Picture 1D-6		
Total score:						

Note: 80 %(4/5) correct response is the criterion level to move to next module. Repeat this training phase until criterion level is successfully reached.

PART: II

Instruction: Play the audiocassette No: ID (I D9 to I D13). Encourage the child to listen to the instruction given by the model speaker provided in the audiocassette. Ask the child to perform the task as indicated in Table 11

Table 11: Stimuli for Testing phase ID- PART II

Sl. No	Instruction given by the model speaker	Instruction given by the model speaker in Kannada	Cassette reference	Expected Response (To phonate in pitch levels as provided in the instruction)	Score 1= correct response 0= no / incorrect response
1	Phonate /a/ at level 2 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿ	1D-9		
2	Phonate /a/ at level 1 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಮೊದಲನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿ	1D-10		
3	Phonate /a/ at level 3 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿ	1D-11		
4	Phonate /a/ at level 2 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಎರಡನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿ	1D-12		
5	Phonate /a/ at level 3 pitch	/ಅ/ ಎಂದು ಉದ್ದಕ್ಕೆ ಮೂರನೇ ಹಂತದ ಸ್ವರದಲ್ಲಿ ಹೇಳಿ	1D-13		
Total score:					

Note: 80%(4/5) correct response is the criterion level to move to next section. Repeat this testing phase until criterion level is successfully reached.

SECTION II

PITCH VARIATION

Pitch variation refers to the vocal range of an individual from the highest pitch level to the lowest pitch level. The basic constituent of intonation is the variability in pitch. Pitch variation in an intonation contour is influenced by changes in pitch height, pitch direction and pitch slope. Pitch variation that is “narrow” traverses through a small range of pitches, whereas “wide” pitch variation signifies movement through a large range of pitches. The terms "pitch range" and "pitch width" may be used in place of pitch variation.

The section consists of two subsections.

SUBSECTION I : Perception of Pitch Variation

SUBSECTION II: Production of Pitch Variation

Sets of pictures along with audiocassettes are provided for training the child in this section. The Audio **Cassette No: 2** contains the voice of a model speaker, in which the vowel /a/, syllables, words and sentences are uttered with appropriate pitch variation. The clinician should encourage the child to listen to the cassette and train the child to perceive and then produce different types of pitch variation appropriately. To achieve this goal, follow the activities that are suggested in a hierarchy.

SUBSECTION I

PERCEPTION OF PITCH VARIATION

The goal is to train the child to listen and perceive the pitch variation in the voice of model speaker, which is audio recorded in **Cassette. No.2**

There are 3 modules, within this section:

Module IIA: Detection of Pitch variation

Module IIB: Discrimination of Pitch variation

Module IIC: Identification of Pitch variation

MODULE IIA: Detection of Pitch Variation

Aim: To train the child to detect pitch variation in the voice of the model speaker. There are ten steps in this training phase. Each of the steps incorporates training and testing phase.

Training phase IIA

The purpose of this training phase is to train the child to detect pitch variation in the voice of the model speaker.

Instruction: Play the audiocassette No.2A (2A1 to2 A10). Encourage the child to listen to the voice of the model speaker in which vowel /a/, syllables, words and sentences are uttered with appropriate pitch variation. Train the child to perform the task as indicated in Table 12

Note:












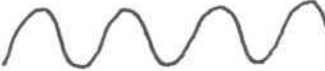




Pitch contour shape	Representation
	Represents monotonous voice or level pitch curve/level intonation curve
	Represents rising falling pattern in pitch curve/intonation curve
	Represents falling rising pattern in pitch curve/intonation curve
	Represents multiple rise-fall pattern in pitch curve/intonation curve

Table 12: Stimuli for Training Phase IIA

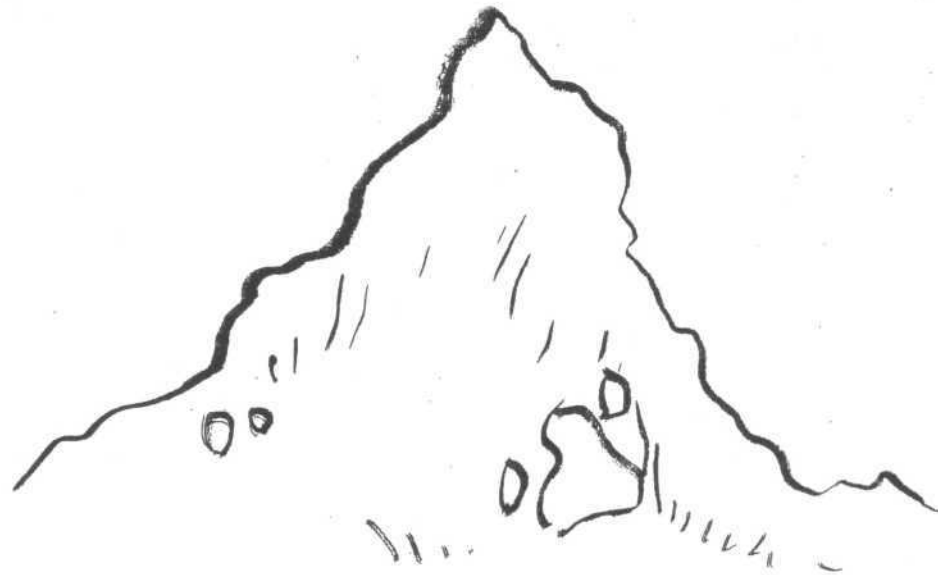
SL No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette Reference	Picture Reference	Task to be Trained
1.	 a	 ಅ	2A-1	2A-1	Point to Picture 2A-1
2.	 a	 ಆ	2A-2	2A-2	Point to Picture 2A-2
3.	 a	 ಌ	2A-3	2A-3	Point to Picture 2A-3
4.	 a	 ಋ	2A-4	2A-4	Point to Picture 2A-4

9.	 avaru skuulige hooguttiddaare	 ಅವರು ಸ್ಕೂಲಿಗೆ ಹೋಗುತ್ತಿದ್ದಾರೆ	2A-9	2A-1	Point to Picture 2A-1
10.	 aavaru skuulige hooguttiddaare	 ಅವರು ಸ್ಕೂಲಿಗೆ ಹೋಗುತ್ತಿದ್ದಾರೆ	2 A-10	2A-7	Point to Picture 2A-7

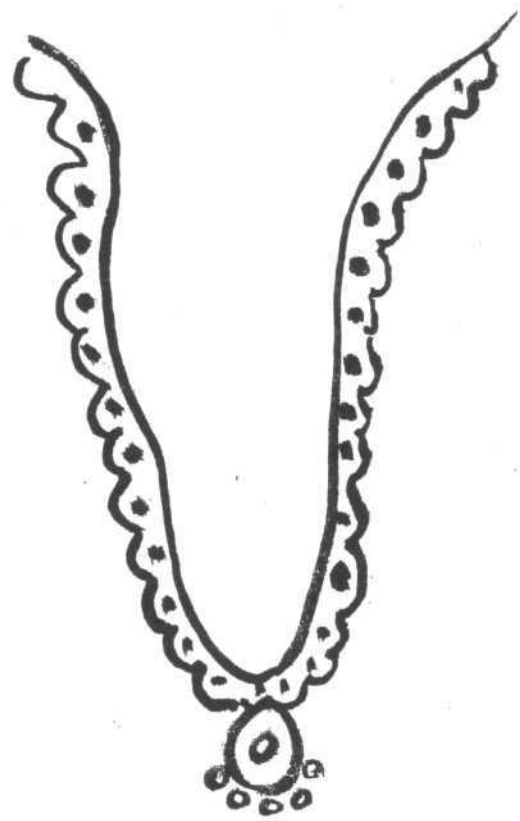
Note: The steps are arranged in a hierarchy. Follow the steps in a hierarchical manner to achieve the goal. Repeat the steps until the child performs the task with 80% accuracy and then proceed to testing phase.



2A-1



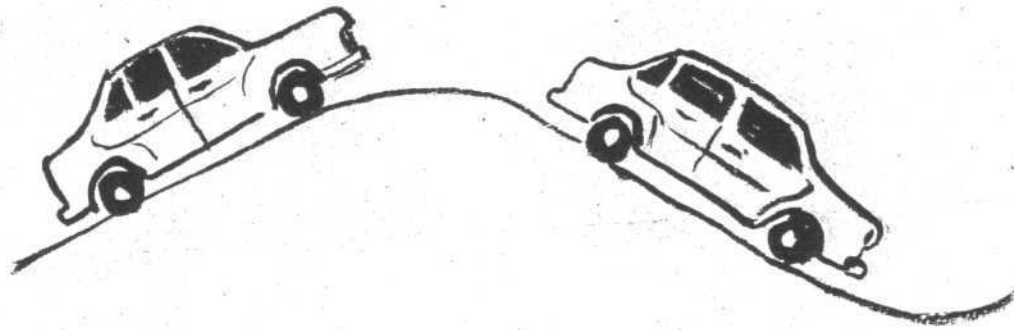
2A-2



2A-3



2A-4



2A-5



2A-6



2A-7

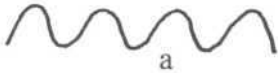











Testing Phase II A




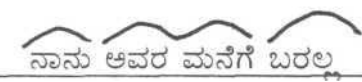






The purpose of this testing phase is to test the child's ability to detect the pitch variation present in the voice of the model speaker.

Instruction:

Play the audio cassette No:2A (2A 10 to 2A20). Encourage the child to listen to the voice of the model speaker in which vowels, syllables, words and sentences are uttered with pitch variation. Ask the client to perform the task, as indicated in Table 13

Table 13: Stimuli for testing phase IIA

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (as suggested in the footnote **)	Score 1=correct response 0= no / incorrect response
1.			2A-11	Should raise the hand or put a tick mark	
2.			2A-12	Should raise the hand or put a tick mark	
3.			2A-13	Should raise the hand or put a tick mark	
4.			2A-14	Should not respond	
5.			2A-15	Should not respond	
6.			2A-16	Should raise the hand or put a tick mark	

7.	 miinu niirinalli ijuttade	 ಮೀನು ನೀರಿನಲ್ಲಿ ಈಜುತ್ತದೆ	2A-17	Should raise the hand or put a tick mark	
8.	 naanu avara manege baralla	 ನಾನು ಅವರ ಮನೆಗೆ ಬರಲ್ಲ	2A-18	Should raise the hand or put a tick mark	
9.	 hakki haaruttade	 ಹಕ್ಕಿ ಹಾರುತ್ತದೆ	2A-19	Should raise the hand or put a tick mark	
10.	 naanu aaTaa aaDooke horage  hoogtiini	 ನಾನು ಆಟ ಆಡೋಕೆ ಹೊರಗೆ  ಹೋಗ್ತೀನಿ	2A-20	Should not respond	
Total score					

[** = Instruct the child to raise the hand or put a tick mark on the paper on hearing pitch variation in the voice of the model speaker.]

Criteria: 80% (8/10) correct responses is the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached.

MODULE II B: Discrimination of Pitch Variation

Aim. To train the child to discriminate between the model voice, which is uttered either in a monotonous voice or with pitch variation.

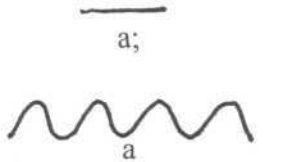
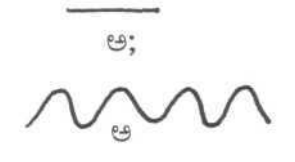
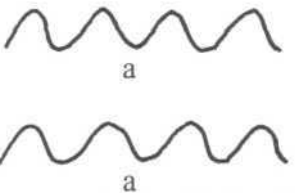
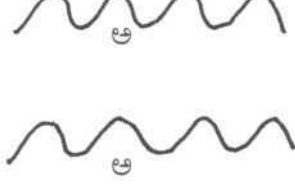
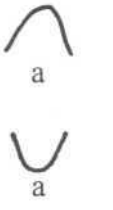
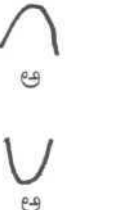
Training Phase: IIB



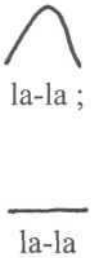

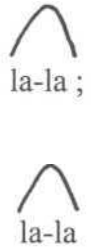

The purpose of this training phase is to train the child to detect pitch variation in the voice of the model.


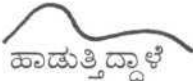







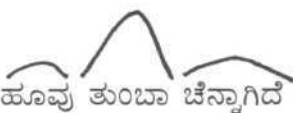

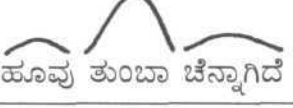
Instruction:

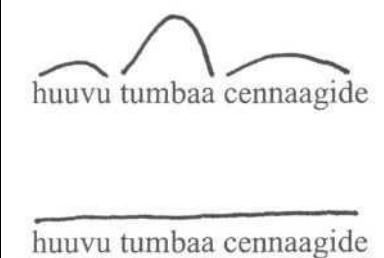
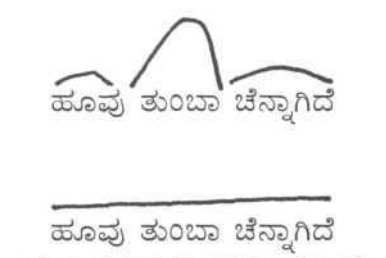
Play the audiocassette No.2B (2B1 to 2B10). Encourage the child to listen to the voice of the model speaker in which vowels, syllables, word and sentences are uttered with and without pitch variation in various combinations. Train the child to perform the task as indicated in the Table 14.

Table 14 : Stimuli for training phase IIB

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained (as suggested in the footnote**)
1.			2B1	2B1&2B2	Point to Picture 2B1 & 2B2
2.			2B2	2B3 & 2B4	Point to Picture 2B3 & 2B4
3.			2B3	2B1&2B2	Point to Picture 2B1&2B2

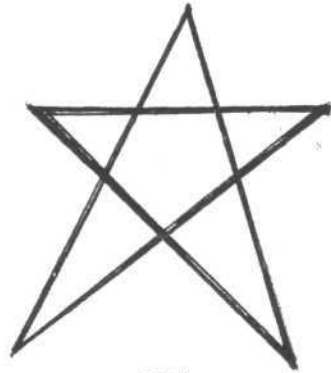
4.			2B4	2B3 & 2B4	Point to Picture 2B3 & 2B4
5.			2B5	2B1&2B2	Point to Picture 2B1 & 2B2
6.			2B6	2B1&2B2	Point to Picture 2B1 & 2B2

7.	 haaDuttiddaaLe	 ಹಾಡುತ್ತಿದ್ದಾಳೆ	2B7	2B1&2B2	Point to Picture 2B1 &2B2
	 haaDuttiddaaLe	 ಹಾಡುತ್ತಿದ್ದಾಳೆ			
8.	 maaDuttiddaane	 ಮಾಡುತ್ತಿದ್ದಾನೆ	2B8	2B3 &2B4	Point to Picture 2B3 &2B4
	 maaDuttiddaane	 ಮಾಡುತ್ತಿದ್ದಾನೆ			
9.	 huuvu tumbaa cennaagide	 ಹೂವು ತುಂಬಾ ಚೆನ್ನಾಗಿದೆ	2B9	2B3 & 2B4	Point to Picture 2B3 & 2B4
	 huuvu tumbaa cennaagide	 ಹೂವು ತುಂಬಾ ಚೆನ್ನಾಗಿದೆ			

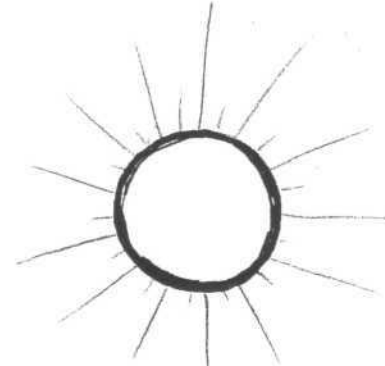
10.			2B10	2B1&2B2	Point to Picture 2B1 & 2B2
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[**= Point to two similar pictures, if the two stimuli are the same and to two dissimilar pictures if they are different]

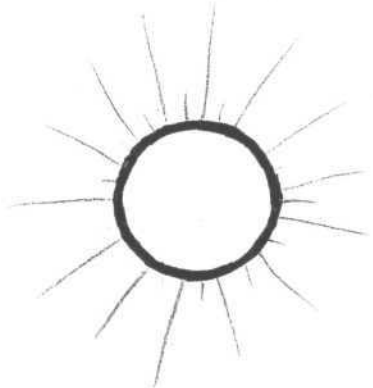
Note: Follow the steps in a hierarchical manner to achieve the goal. Repeat the steps until the client performs the task with 80% accuracy and proceed to testing phase



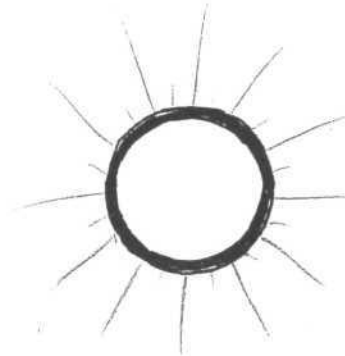
2B1



2B2



2B3



2B4

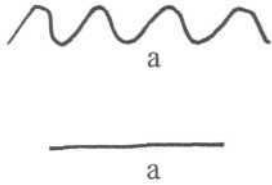
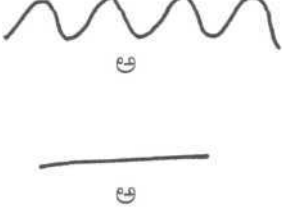
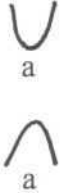

Testing Phase II B











The purpose of this testing phase is to test the child's ability to discriminate between monotonous voice from a voice with pitch variation of the model speaker.



Instruction:





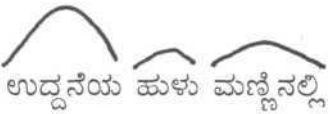

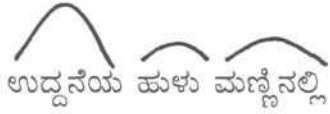

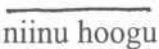
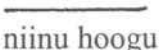
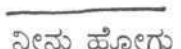
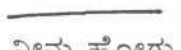
Play the audiocassette No: 2B (2B 11 to 2B20). Encourage the child to listen to the voice of the model speaker in which vowels, syllables, words and sentences are uttered with and without pitch variation in various combinations. Ask the child to perform the task, as indicated in Table 15.

Table 15: Stimuli for Testing phase II B

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected Response (put a "" if the intonation contours are same and put "X" if they are different)	Score 1= correct response 0= no / incorrect response
1.			2B11		
2.			2B12		

3.			2B 13		
4.			2B 14		
					
5.			2B15		
					

6.	 niiru hariyuttide <hr/> niiru hariyuttide	 ನೀರು ಹರಿಯುತ್ತಿದೆ <hr/> ನೀರು ಹರಿಯುತ್ತಿದೆ	2B16		
7.	<hr/> kaaru hooguttide <hr/> kaaru hooguttide	<hr/> ಕಾರು ಹೋಗುತ್ತಿದೆ <hr/> ಕಾರು ಹೋಗುತ್ತಿದೆ	2B17		
8.	<hr/> avanu naDeyuttiddaane <hr/> avanu naDeyuttiddaane	<hr/> ಅವನು ನಡೆಯುತ್ತಿದ್ದಾನೆ <hr/> ಅವನು ನಡೆಯುತ್ತಿದ್ದಾನೆ	2B18		

9.	   	   	2B 19		
10.	 	 	2B20		
Total score					

Criteria: 80% (8/10) correct responses is the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached.

MODULE IIC: Identification of Pitch Variation

Aim: To train the child to identify different types of pitch variation in the voice of the model speaker.

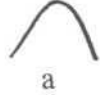



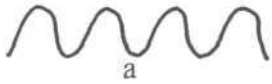

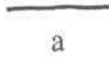

Training Phase: IIC










The purpose of this training phase is to train the child to identify different types of pitch variation in the voice of the model.



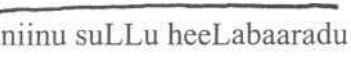
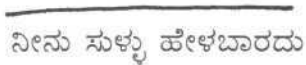
Instruction:

Play the audiocassette No.2C (2C1 to 2C10). Encourage the child to listen to the voice of the model speaker in which vowels, syllables, word and sentences are uttered with appropriate pitch variation. Train the child to perform the task as indicated in the Table16

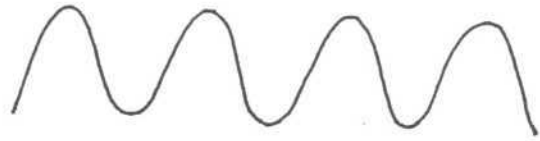
Table 16: Stimuli for Training phase IIC

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained
1.			2C-1	2C1,2C2,2C3, 2C4,2C5,2C6, 2C7,2C8 &2C9	Train to choose picture 2C-3
2.			2C-2	2C1,2C2,2C3, 2C4,2C5,2C6, 2C7,2C8 &2C9	Train to choose picture 2C-5
3.			2C-3	2C1,2C2,2C3, 2C4,2C5,2C6, 2C7,2C8 &2C9	Train to choose picture 2C-1
4.			2C-4	2C1,2C2,2C3, 2C4,2C5,2C6, 2C7,2C8 &2C9	Train to choose picture 2C-7

5.	 <p>ka ka</p>	 <p>ಕಾ ಕಾ</p>	2C-5	2C1,2C2,2C3, 2C4,2C5,2C6, 2C7,2C8 &2C9	Train to choose picture 2C-3
6.	 <p>tinnuttade</p>	 <p>ತಿನ್ನುತ್ತದೆ</p>	2C6	2C1,2C2,2C3, 2C4,2C5,2C6, 2C7,2C8 &2C9	Train to choose picture 2C-2
7.	 <p>aaneya sonDilu</p>	 <p>ಆನೆಯ ಸೊಂಡಿಲು</p>	2C7	2C1,2C2,2C3, 2C4,2C5,2C6, 2C7,2C8 &2C9	Train to choose picture 2C-4
8.	 <p>kaaDinalli tumbaa praaNigaLu</p>  <p>iruttave</p>	 <p>ಕಾಡಿನಲ್ಲಿ ತುಂಬಾ ಪ್ರಾಣಿಗಳು ಇರುತ್ತವೆ</p>	2C8	2C1,2C2,2C3, 2C4,2C5,2C6, 2C7,2C8 &2C9	Train to choose picture 2C-8

9.	 avanu baagilu taTTuttiddaane	 ಅವನು ಬಾಗಿಲು ತಟ್ಟುತ್ತಿದ್ದಾನೆ	2C9	2C1,2C2,2C3, 2C4,2C5,2C6, 2C7,2C8 &2C9	Train to choose picture 2C-6
10	 niinu suLLu heeLabaaradu	 ನೀನು ಸುಳ್ಳು ಹೇಳಬಾರದು	2C 10	2C1,2C2,2C3, 2C4 2C5 2C6 2C7,2C8 &2C9	Train to choose picture 2C-9

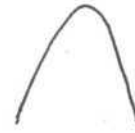
Note: Follow the steps in a hierarchical manner to achieve the goal. Repeat the steps until the client performs the task with 80% accuracy **and** proceed to testing phase.



2C1



2C2



2C3



2C4



2C5



2C6



2C7



2C8



2C9

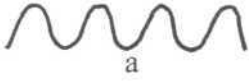
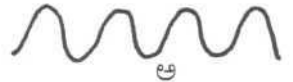
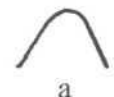



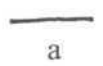

Testing Phase IIC









The purpose of this testing phase is to test the child's ability to identify the different types of pitch variations that are present in the voice of the model speaker.



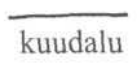
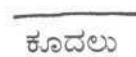
Instruction:

Play the audiocassette No: 2C (2C 11 to 2C20). Encourage the child to listen to the voice of the model speaker in which the vowels, syllables, words and sentences are uttered with appropriate pitch variation. Ask the child to perform the task, as indicated in Table 17.

Table 17: Stimuli for Testing phase IIC

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Expected response(choose an appropriate picture)	Score Incorrect response 0= no / incorrect response
1.			2C11	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C11	
2.			2C12	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C10	
3.			2C13	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C16	
4.			2C 14	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C12	

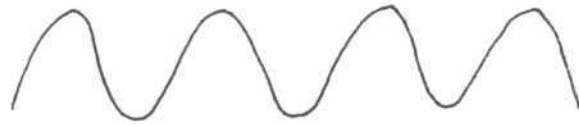
5.	 bow-bow	 ಬೌ ಬೌ	2C15	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C15	
6.	 kaalu noovuttide	 ಕಾಲು ನೋಯುತ್ತಿದೆ	2C16	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C13	
7.	 mew-mew	 ಮ್ಯೂ ಮ್ಯೂ	2C17	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C15	
8.	 naanu allige hoogtiini	 ನಾನು ಅಲ್ಲಿಗೆ ಹೋಗ್ತೀನಿ	2C18	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C14	

9.			2C 19	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C17	
10.			2C 70	2C9,2C10,2C11, 2C12,2C13,2C14, 2C15,2C16&2C17	Should choose picture 2C12	
					Total score	

Criteria: 80% (8/10) correct responses is the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached.



2C 10



2C 11



2C 12



2C 13



2C 14



2C 15



2C 16



2C 17

SUBSECTION II

PRODUCTION OF PITCH VARIATION

The goal of this subsection is to train the child to produce different pitch variation. There is only 1 module, in this subsection.

Module II D: Production of Pitch variation

MODULE II D: PRODUCTION OF PITCH VARIATION





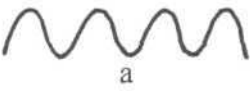
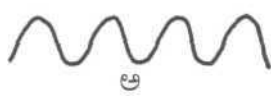
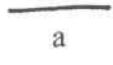

Aim: To train the child to produce different types of pitch variation appropriately. There is a training phase and a testing phase included in this module.










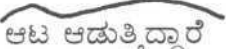
Training Phase: II D


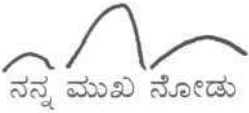


The purpose of this training phase is to train the child to produce pitch variations appropriately. The techniques suggested to train to produce pitch variation, include imitation, use of cues (visual, tactile, auditory) and motor movement.

Instruction: Play the audiocassette No.2D (2D1 to 2D10). Encourage the child to listen to the voice of the model speaker in which vowels, syllables, word and sentences are uttered with appropriate pitch variation. Train the child to perform the task as indicated in the Table 18.

Table 18: Stimuli for training phase II D

SI. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Facilitation of the task to be trained (provide feedback)	Task to be trained
1.			2D1	2D1	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker
2.			2D2	2D2	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker
3.			2D3	2D3	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker
4.			2D4	2D4	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker

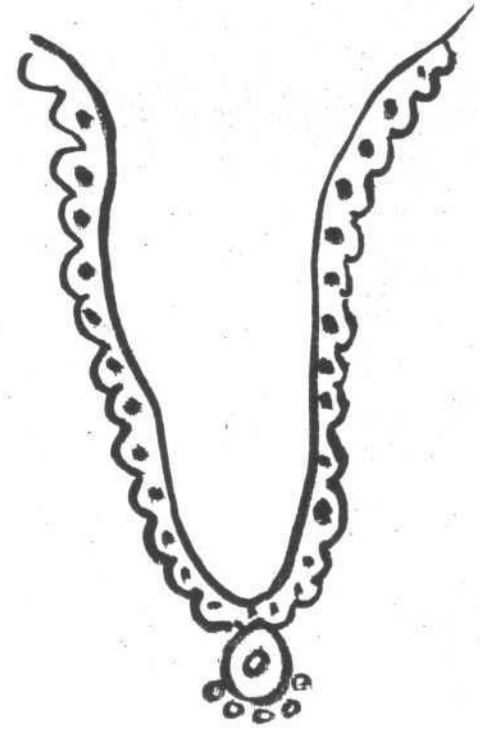
5.	 dum-dum	 ಡಂ ಡಂ	2D5	2D4	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker
6.	 mew-mew	 ಮೈಂ ಮೈಂ	2D6	2D5	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker
7.	 baaLehaNNu	 ಬಾಳೆಹಣ್ಣು	2D7	2D4	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker
8.	 amma paapu jote aaTa  aaDuttiiddaare	 ಅಮ್ಮ ಪಾಪು ಜೊತೆ  ಆಟ ಆಡುತ್ತಿದ್ದಾರೆ	2D8	2D6	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker

9.	 nanna mukha nooDu	 ನನ್ನ ಮುಖ ನೋಡು	2D9	2D7	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker
10.	 haavu hoogttide	 ಹಾವು ಹೋಗುತ್ತಿದೆ	2D10	2D8	Clinician should hold the hand of the child and trace the picture, to give visual feedback regarding the pitch variation in the voice that is produced.	Train to imitate the model speaker

Note. Follow the steps in a hierarchical manner to achieve the goal, Repeat the steps until the client performs the task with 80% accuracy and proceed to testing phase.



2D 1



2D 2



2D 3



2D 4



2D 5



2D 6



2D 7



2D 8

Testing Phase II D

The purpose of this testing phase is to test the child's ability to produce the pitch variation appropriately.

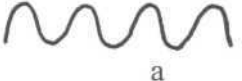

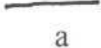





This testing phase consists of 2 parts, Part I and Part II










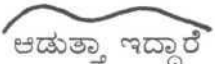
Part I


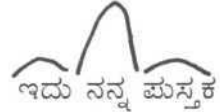


Instruction for part I:

The child has to listen to voice of the model speaker which is recorded in the audiocassette No. 2D (211 to 2D20) and imitate the model speaker as indicated in Table 19. Appropriate line drawings should be given as a cue if necessary.

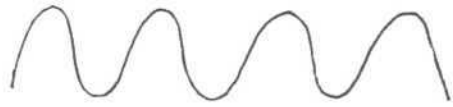
Table 19: Stimulus for Testing phase II D - Part I

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Expected response (imitate the model speakers)	Score=correct response 0= no / incorrect response
1.	 a	 ಅ	2D 11	2D9		
2.	 ā	 ಆ	2D 12	2D 10		
3.	 ā	 ಆ	2D 13	2D 11		
4.	 u	 ಉ	2D 14	2D 12		

5.	 ka-ka	 ಕಾ ಕಾ	2D 15	2D 11		
6.	 haaruttade	 ಹಾರುತ್ತದೆ	2D16	2D10		
7.	 elegaLu biiLuttive	 ಎಲೆಗಳು ಬೀಳುತ್ತಿವೆ	2D17	2D13		
8.	 amma magu jote aaTa  aaDuttiddaare	 ಅಮ್ಮ ಮಗು ಜೊತೆ ಆಟ  ಆಡುತ್ತಾ ಇದ್ದಾರೆ	2D18	2D14		

9.	 idu nanna pustaka	 ಇದು ನನ್ನ ಪುಸ್ತಕ	2D 19	2D 15		
10.	 kaalu nooyuttidde	 ಕಾಲು ನೋಯುತ್ತಿದೆ	2D20	2D16		
Total score						

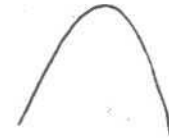
Criteria: 80% (8/10) correct responses is the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached.



2D 9



2D 10



2D 11



2D 12



2D 13



2D 14



2D 15



2D 16

Part II

Instruction for Part II:

The child has to listen to the instruction given by the model speaker, which is recorded in audiocassette No.2D (2D21 to 2D30), and perform the task accordingly as indicated in Table 20.

Table 20: Stimuli for Testing phase II D – Part II

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response Perform the task as instructed	Score 1=correct response 0= no / incorrect response
1.	Intone lal in rising and falling pattern	ಅಲ ಎಂದು ಏರುವ ಹಾಗೂ ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 21		
2.	Intone lal in falling and rising pattern	ಅಲ ಎಂದು ಇಳಿಯುವ ಹಾಗೂ ಏರುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 22		
3.	Intone lal with appropriate pitch variation	ಅಲ ಎಂದು ಏರುವ ಹಾಗೂ ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 23		

4.	Say the syllable “la-la” with rising and falling pitch contour	ಲ ಲ ಎಂದು ಏರುವ ಹಾಗೂ ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 24		
5.	Say the phrase “aaTa aaDuttiddaaLe” with rising and falling pitch contour on the word “aaDuttiddaaLe”	"ಆಟ ಆಡುತ್ತಿದ್ದಾಳೆ" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ "ಆಡುತ್ತಿದ್ದಾಳೆ" ಎಂಬುವ ಪದವನ್ನು ಏರುವ ಹಾಗೂ ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 25		
6.	Say the sentence, “naanu saayankaala manege hogtiini” with rising and falling pitch contour on the word “saayankaala”	"ನಾನು ಸಾಯಂಕಾಲ ಮನೆಗೆ ಹೋಗುತ್ತೇನೆ" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ "ಸಾಯಂಕಾಲ" ಎಂಬುವ ಪದವನ್ನು ಏರುವ ಹಾಗೂ ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 26		
7.	Say the sentence “niinu allige yaake hoogutiya?” with falling and rising pitch contour on the word “hoogutiira.”	"ನೀನು ಅಲ್ಲಿಗೆ ಯಾಕೆ ಹೋಗುತ್ತೀಯೆ?" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ "ಹೋಗುತ್ತೀಯೆ" ಎಂಬುವ ಪದವನ್ನು ಇಳಿಯುವ ಹಾಗೂ ಏರುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 27		

8.	Say the syllable “TaTa” with rising and falling pitch contour	ಟ ಟ ಎಂಬುವುದನ್ನು ಏರುವ ಹಾಗೂ ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 28		
9.	Say the sentence “nanage tumbaa naDeyooke aagalla” with rising and falling pitch contour on the word “naDeyooke”	"ನನಗೆ ತುಂಬಾ ನಡಿಯೋಕೆ ಆಗಲ್ಲ" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ “ನಡಿಯೋಕೆ” ಎಂಬ ಪದವನ್ನು ಏರುವ ಹಾಗೂ ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 29		
10.	Say “hiige maaDbaardu” with rising and falling pitch contour on the word “maaDbaardu”	"ಹೀಗೆ ಮಾಡಬಾರದು" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ “ಮಾಡಬಾರದು” ಎಂಬ ಪದವನ್ನು ಏರುವ ಹಾಗೂ ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	2D 30		
Total score					

Criteria : 80% (8/10) correct responses is the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached.

SECTION III

PITCH CONTOUR

Pitch contour means a change in the pitch of the voice from one level to another. There are 3 major types of pitch contour trained in this section: rising, falling and level. A change in the pitch of the voice can be effected on monosyllabic to multisyllabic (multiword) utterances. In this section, change in pitch contour is demonstrated often on the terminal syllable of the utterance in a lengthy or multisyllabic utterances. Such a change in the terminal syllable of an utterance is called “ terminal contour”. Cruttenden (1986) describes terminal contour as the “Last pitch contour on the last syllable”, of the utterance. Generally, the terminal pitch contours are the falling/ downward pitch contour, rising/ upward pitch contour and a level or sustained pitch contour. This section describes the way in which pitch contours occurring in the terminal as well as non terminal positions of utterances can be taught to a child. Hence, there are stimuli presented in the following sections wherein intonation contours with single contours of rises, falls and level pitches occur in terminal as well as non terminal positions of the utterances. These have been effected by the model speaker on syllables and words which are not in the terminal position of the utterances

The section consists of two subsections:

SUBSECTION I: Perception of Pitch contour

SUBSECTION II: Production of Pitch contour

Sets of pictures along with audiocassettes are provided for training the child in this section. The Audio **Cassette No: 3** contains the voice of a model speaker, in which the vowel /a/, syllables, words and sentences are uttered with different pitch contours. The clinician should encourage the child to listen to the model speaker in the cassette, and train the child to perceive and then produce different pitch contours appropriately. To achieve this goal, follow the suggested activities in a hierarchy.

SUBSECTION I

PERCEPTION OF PITCH CONTOUR

The goal of this section is to train the child to listen and to perceive the pitch contour in the voice of model speaker, which is audio recorded in **Cassette. No.3**

There are 3 modules, in this section:

Module III A: Detection of Pitch contour

Module III B: Discrimination of Pitch contour

Module III C: Identification of Pitch contour

MODULE III A: Detection of Pitch Contour

Aim: To train the child in detecting pitch contour in the voice of the model speaker. There are ten steps in this training phase. Each of the steps incorporate training and testing phase.

Training phase III A

The purpose of this training phase is to train the child to detect pitch contour in the voice of the model speakers.

Instruction:

Play the audiocassette No.3A (3A1 to A9). Encourage the child to listen to the voice of the model speaker in which vowel /a/ is intoned in 3 different intonation patterns, namely rising, falling and level intonation pattern. The syllables, words and sentences are uttered in rising as well as in falling intonation contour. Train the child to perform the task as indicated in the Table 21.

Note:
















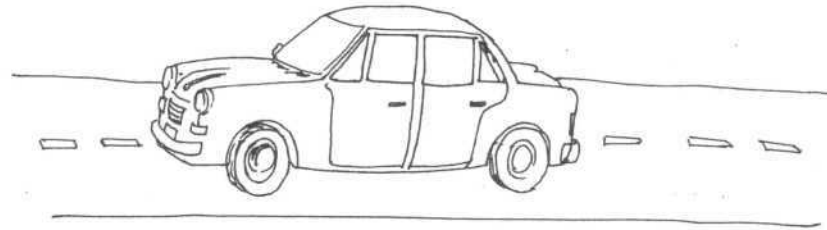
Intonation contour	Representation
	Represents rising intonation contour
	Represents falling intonation contour
	Represents level intonation contour

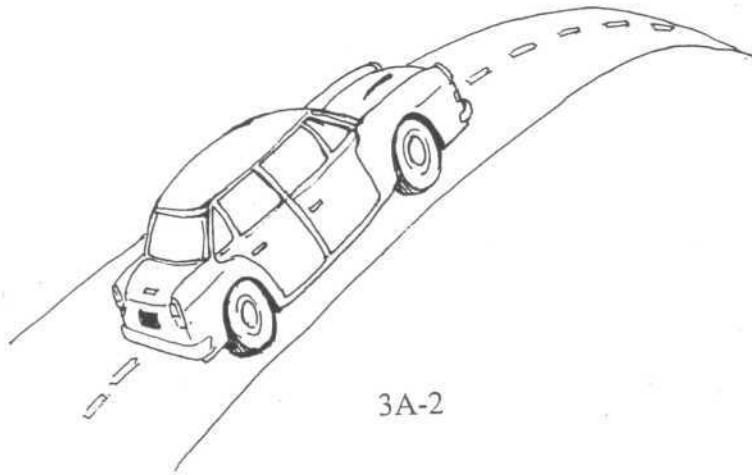
Table 21 : Stimuli for training phase IIIA

SL No	Utterances represented in IPA	Utterances represented in Kannada	Cassette Reference	Picture Reference	Task to be Trained
1	 a	 ಅ	3A-1	3A-1	Point to Picture 3A-1
2	 a	 ಆ	3A-2	3A-2	Point to Picture 3A-2
3	 a	 ಃ	3A-3	3A-3	Point to Picture 3A-3
4	 papa	 ಪಪ	3A-4	3A-4	Point to Picture 3A-4
5	 papa	 ಪಪ	3A-5	3A-5	Point to Picture 3A-5
6	 naanu	 ನಾನು	3A-6	3A-4	Point to Picture 3A-4

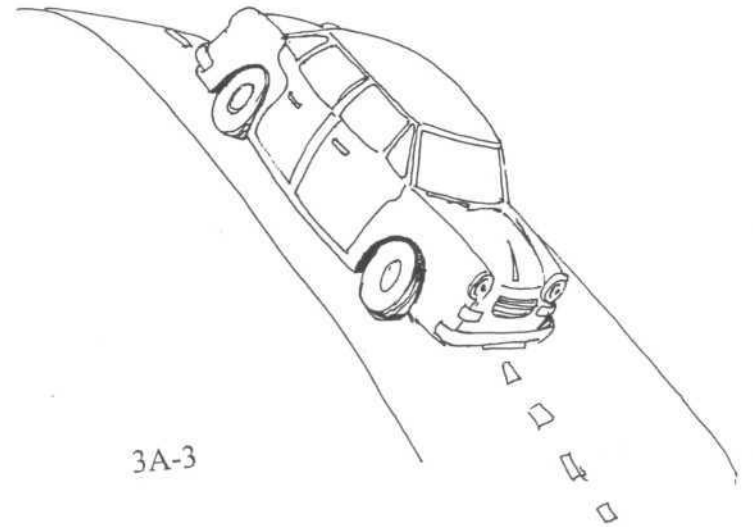
7	naanu	ನಾನು	3A-7	3A-5	Point to Picture 3A-5
8	ii pustaka yaaradu	ಈ ಪುಸ್ತಕ ಯಾರದು	3A-8	3A-6	Point to Picture 3A-6
9	idu nanna pustaka	ಇದು ನನ್ನ ಪುಸ್ತಕ	3A-9	3A-7	Point to Picture 3A-7
10	huuvu tumbaa chennagide	ಹೂವು ತುಂಬಾ ಚೆನ್ನಾಗಿದೆ	3 A-10	3A-8	Point to Picture 3A-8
<p><i>Note:</i> The steps are arranged in a hierarchy, performs the task with 80% accuracy and then</p>		<p>Follow the steps in a hierarchical manner to achieve the goal. Repeat</p>	<p>the steps until the child</p>		<p>the steps until the child</p>



3A-1



3A-2



3A-3



3A-4



3A-5



3A-6



3A-7



3A-8













Testing Phase IIIA

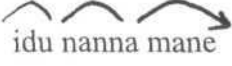
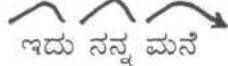







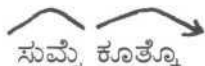
The purpose of this testing phase is to test the child's ability to detect the pitch contour used by the model speaker. The testing phase has 2 parts.

Instruction:

Play the audiocassette No: 3A (3A 10 to 3A30). Encourage the child to listen to the voice of the model speaker in which vowels, syllables, words and sentences are uttered in different pitch contour. Ask the child to perform the task, as indicated in Table 22 and 23.













Table 22: Stimuli for testing phase IIIA -Part I

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (Raise your hand when you hear only a rising intonation pattern)	Score 1= correct response 0=no / incorrect response
1			3 A-11	Should raise the hand	
2			3A-12	Should not respond	
3			3 A-13	Should not respond	
4			3A-14	Should raise the hand	
5			3A-15	Should raise the hand	
6			3A-16	Should not respond	

7	 idu nanna mane	 ಇದು ನನ್ನ ಮನೆ	3A-17	Should not respond	
8	 yaake bande	 ಯಾಕೆ ಬಂದೆ?	3A-18	Should raise the hand	
9	 ninna maneyalli yaaru  yaaru iddaare?	 ನಿನ್ನ ಮನೆಯಲ್ಲಿ ಯಾರು ಯಾರು  ಇದ್ದಾರೆ?	3A-19	Should raise the hand	
10	 sumne kuutko	 ಸುಮ್ಮೆ ಕೂತ್ಕೊ	3A-20	Should not respond	
				Total score	

Criteria: • 80% correct responses are the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached.

Table 23 : Stimuli for Testing phase IIIA -Part II

SL No	Stimulus in IPA	Stimulus in Kannada	Cassette reference	Expected response (Say yes / indicate yes, if you hear only a falling intonation pattern)	Score 1= correct response 0= no / incorrect response
1	a 	ಅ 	3A-21	Should say yes	
2	a 	ಅ 	3A-22	Should say yes	
3	papa 	ಪಪ 	3A-23	Should not respond	
4	papa 	ಪಪ 	3A-24	Should say yes	
5	pustaka 	ಪುಸ್ತಕ 	3A-25	Should not respond	
6	yaaru 	ಯಾರು 	3A-26	Should say yes	

7	eenu beeku	ಏನು ಬೇಕು?	3A-27	Should not respond	
8	idu kempu bassu	ಇದು ಕೆಂಪು ಬಸ್ಸು	3A-28	Should not respond	
9	amma horage hoogiddaare	ಅಮ್ಮ ಹೊರಗೆ ಹೋಗಿದ್ದಾರೆ	3A-29	Should say yes	
10	gombeyannu yaake muritiiya?	ಗೊಂಬೆಯನ್ನು ಯಾಕೆ ಮುರಿತಿಯಾ?	3A-30	Should riot respond	
				Total score	

Criteria: 80% correct responses are the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached.

MODULE III B: Discrimination of Pitch contour

Aim. To train the child, to discriminate between different pitch contours that are represented in the utterances by the model speaker.

Training Phase: III B

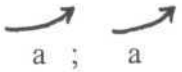
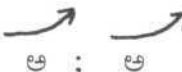

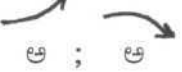
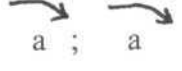
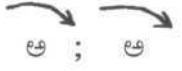




The purpose of this training phase is to train the child to detect the appropriate pitch contour in the voice of the model











Instruction:

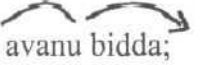

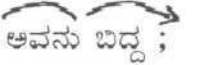
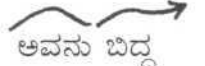


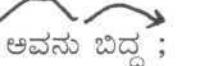
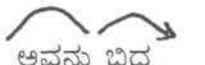
Play the audio cassette No.3B (3B1 to 3B10). Encourage the child to listen to the voice of the model speaker in which vowels, syllables, word and sentences are uttered in different intonation contours in various combinations. Train the child to perform the task as indicated in the Table 24.



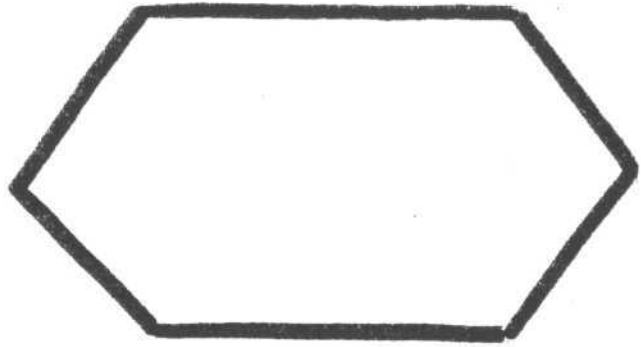
Table 24 : Stimuli for training phase HI B

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be Trained
1	 a ; a	 ಅ ; ಅ	3B1	3B1 & 3B2	Point to Picture 3B1 & 3B2
2	 a ; a	 ಅ ; ಅ	3B2	3B3 & 3B4	Point to Picture 3B3 & 3B4
3	 a ; a	 ಅ ; ಅ	3B3	3B1 & 3B2	Point to Picture 3B1 & 3B2
4	 lala ; lala	 ಲಲ ; ಲಲ	3B4	3B3 & 3B4	Point to Picture 3B3 & 3B4
5	 lala ; lala	 ಲಲ ; ಲಲ	3B5	3B1 & 3B2	Point to Picture 3B1 & 3B2

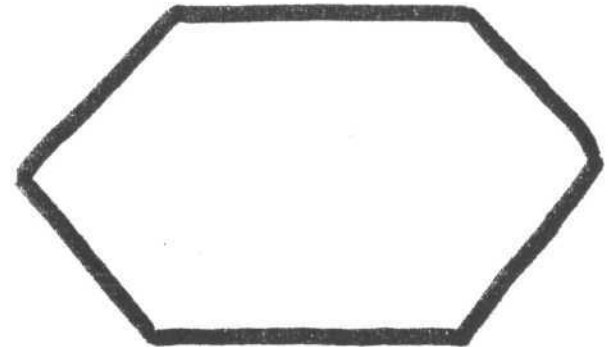
6	 lala ; lala	 ಲಲ ; ಲಲ	3B6	3B1 &3B2	Point to Picture 3B1 &3B2
7	 ooDihooyitu ;  ooDihooyitu	 ಓಡಿ ಹೋಯಿತು,  ಓಡಿ ಹೋಯಿತು	3B7	3B1 &3B2	Point to Picture 3B1 &3B2
8	 ooDihooyitu ;  ooDihooyitu	 ಓಡಿ ಹೋಯಿತು,  ಓಡಿ ಹೋಯಿತು	3B8	3B3 &3B4	Point to Picture 3B3 &3B4

9	 	 	3B9	3B3 & 3B4	Point to Picture 3B3 & 3B4
10	 	 	3B10	3B1&3B2	Point to Picture 3B1&3B2

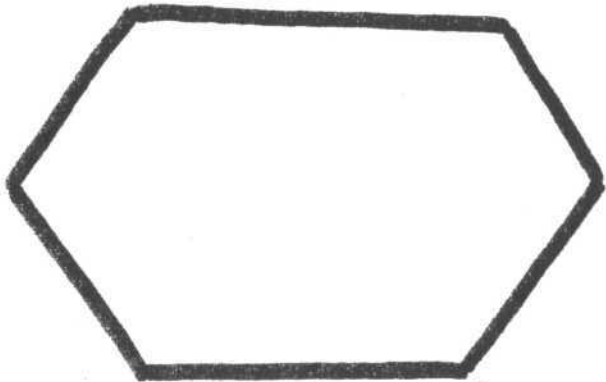
Note: Follow the steps in a hierarchical manner to achieve the goal. Repeat the steps until the child performs the task with 80% accuracy and proceed to testing phase.



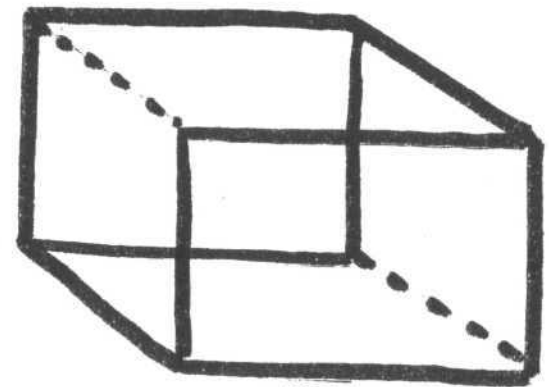
3B1



3B2



3B3



3B4

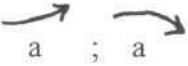
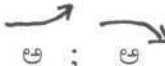
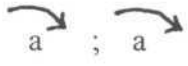
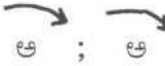
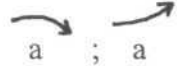
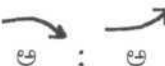
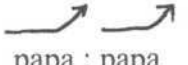
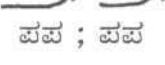
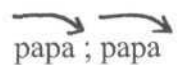
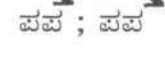
Testing Phase III B

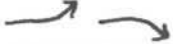









The purpose of this testing phase is to test the child's ability to discriminate different types of pitch contours that are present in the voice of the model speaker.

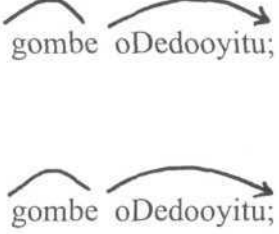

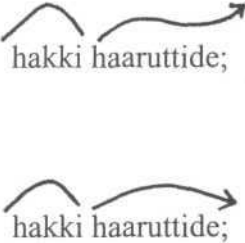

Instruction:

Play the audiocassette No: 3B (3B 11 to 3B20). Encourage the child to listen to the voice of the model speaker in which_vowels, syllables, words and sentences are uttered in different pitch contour. Ask the child to perform the task, as indicated in Table 25.

Table 25: Stimuli for Testing phase HI B

Sl. No.	InIPA	Kannada	reference	Expected Response same and put "X" if different)	Score=correct 0= no / incorrect response
1	 a ; a	 ಅ ; ಅ	3B 11		
2	 a ; a	 ಆ ; ಆ	3B 12		
3	 a ; a	 ಐ ; ಐ	3B 13		
4	 papa ; papa	 ಪಪ ; ಪಪ	3B 14		
5	 papa ; papa	 ಪಪ ; ಪಪ	3B15		

6	 papa ; papa	 ಪಪ ; ಪಪ	3B 16		
7	 haaruttide;  haaruttide	 ಹಾರುತ್ತಿದೆ ;  ಹಾರುತ್ತಿದೆ	3B 17		
8	 baralla;  baralla	 ಬರಲ್ಲ ;  ಬರಲ್ಲ	3B 18		

9			3B 19		
10			3B20		
Total score					

Criteria: 80% correct responses are the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached.

MODULE III C: Identification of Pitch Contour

Aim: To train the child to identify **different** pitch contour in the voice of the model speaker.













Training Phase: IIC









The purpose of this training phase is to train the child to identify different pitch contours in the voice of the model speech.

Instruction:

Play the audiocassette No.3C (3C1 to 3C10). Encourage the child to listen to the voice of the model speaker in which vowels, syllables, word and sentences are uttered in different intonation contours. Train the child to perform the task as indicated in the Table 26.

Table 26: Stimuli for training phase III C

Sl.No.	Utterances represented inIPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained
1	 a	 ಅ	3C 1	3C1 &3C2	Train to choose picture 3C-1
2	 a	 ಆ	3C2	3C1&3C2	Train to choose picture 3C-2
3	 papa	 ಪಪ	3C3	3C1&3C2	Train to choose picture 3C-1
4	 DaDa	 ಡಡ	3C4	3C1&3C2	Train to choose picture 3C-1
5	 huDuga	 ಹುಡುಗ	3C5	3C1&3C2	Train to choose picture 3C-1
6	 bidda	 ಬಿಡ್ಡ	3C6	3C1 &3C2	Train to choose picture 3C-1

7	 yaake	 ಯಾಕೆ	3C7	3C2&3C1	Train to choose picture 3C-2
8	 huDuga bartaa iddaane	 ಹುಡುಗ ಬರ್ರಾ ಇದ್ದಾನೆ	3C8	3C1 &3C2	Train to choose picture 3C-2
9	 nanna mane hattira ide	 ನನ್ನ ಮನೆ ಹತ್ತಿರ ಇದೆ	3C9	3C1 &3C2	Train to choose picture 3C-1
10	 niinu yeenu maaDtaa iddiyaa	 ನೀನು ಏನು ಮಾಡ್ತಾ ಇದ್ದೀಯೆ	3C10	3C1&3C2	Train to choose picture 3C-2

Note: Follow the steps in a hierarchical manner to achieve the goal. Repeat the steps until the child performs the task with 80% accuracy and proceed to testing phase.



3C 1



3C 2

Testing Phase III C


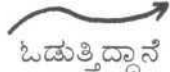





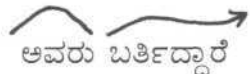


The purpose of this testing phase is to test the child's ability to identify the pitch contour present in the voice of the model speaker.

Instruction'

Play the audiocassette No: 3C (3C 11 to 3C20). Encourage the child to listen to the voice of the model speaker in which the vowels, syllables, words and sentences are uttered in different pitch contour. Ask the child to perform the task, as indicated in Table 27.

Table 27: Stimuli for Testing phase IIIC

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Expected response (choose an appropriate picture)	Score= correct response 0= no/ incorrect response
1.	a	ಅ	3C11	3C3 & 3C4	Should choose picture 3C3	
2.	a	ಅ	3C 12	3C3 & 3C4	Should choose picture 3C4	
3.	ba ba	ಬಾ ಬಾ	3C 13	3C3 & 3C4	Should choose picture 3C3	
4.	ba ba	ಬಾ ಬಾ	3C14	3C3 & 3C4	Should choose picture 3C3	
5.	bartaare	ಬರ್ತಾರೆ	3C15	3C3 & 3C4	Should choose picture 3C3	

6.	 ooDuttiddaane	 ಓಡುತ್ತಿದ್ದಾನೆ	3C 16	3C3 &3C4	Should choose picture 3C4	
7.	 hudugi haaruttiddaaLe	 ಹುಡುಗಿ ಹಾರುತ್ತಿದ್ದಾಳೆ	3C 17	3C3 &3C4	Should choose picture 3C3	
8.	 mara biddide	 ಮರ ಬಿದ್ದಿದೆ	3C 18	3C3 &3C4	Should choose picture 3C3	
9.	 avaru bartiddaare	 ಅವರು ಬರ್ತಿದ್ದಾರೆ	3C 19	3C3 &2C4	Should choose picture 3C4	
10.	 baagilu tegedide	 ಬಾಗಿಲು ತೆಗೆದಿದೆ	3C20	3C3 &3C4	Should choose picture 3C4	
Total score						

Criteria: 80% correct responses are the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached.



3C3



3C4

SUB SECTION II : PRODUCTION OF PITCH CONTOUR

The goal of this subsection is to train the child to produce different pitch contours, namely, rising and falling intonation pattern. There is only 1 module in this subsection.

Module III D: Production of Pitch contour.

MODULE III D: PRODUCTION OF PITCH CONTOUR







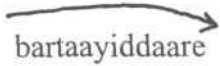
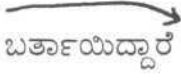

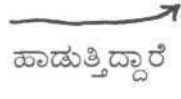
Aim: To train the child to produce different pitch contour appropriately. There is a training phase and a testing phase.










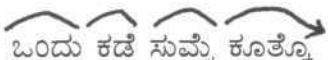
Training Phase: III D

The purpose of this training phase is to train the child to produce pitch contour appropriately. The techniques, which can be used are imitation, use of visual, tactile, and auditory cues and motor movement.

Instruction: Play the audiocassette No.3D (3D1 to 3D10). Encourage the child to listen to the voice of the model speaker in which vowels, syllables, word and sentences are uttered in different intonation contours. Train the child to perform the task as indicated in the Table28.

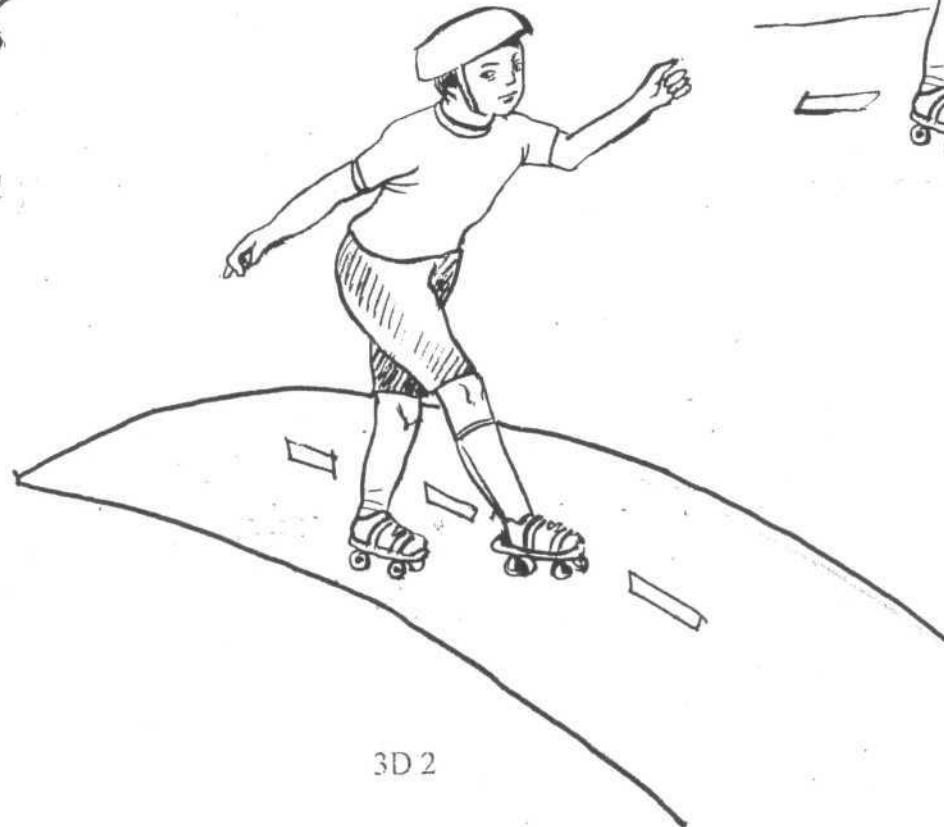
Table 28: Stimuli for training phase III D

• SL No.	Utterances represented inIPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained
1			3D 1	3D 1	Train the child how to react when hurt/scared and encourage to imitate.
2			3D 2	3D 2	Train to react appropriately when bored/trying and also train to imitate
3			3D 3	3D 3	Train to imitate the model speaker
4	 bartaayiddaare	 ಬರ್ತಾಯಿದ್ದಾರೆ	3D 4	3D 4	Train to imitate the model speaker
5	 haaDuttiddaare	 ಹಾಡುತ್ತಿದ್ದಾರೆ	3D 5	3D 5	Train to imitate the model speaker

6	 idu yaaradu	 ಇದು ಯಾರದು?	3D 6	3D 6	Train to imitate the model speaker
7	 nanna tangi paaTa ooduttiddaaLe	 ನನ್ನ ತಂಗಿ ಪಾಠ ಓದುತ್ತಿದ್ದಾಳೆ	3D 7	3D 7	Train to imitate the model speaker
8	 idu kempu bassu	 ಇದು ಕೆಂಪು ಬಸ್ಸು	3D 8	3D 8	Train to imitate the model speaker
9	 yaake sumne kiruchutta iddiya	 ಯಾಕೆ ಸುಮ್ಮೆ ಕಿರುಚುತ್ತಾಯಿದ್ದೀಯೆ	3D 9	3D 9	Train to imitate the model speaker
10	 ondu kaDe sumne kuutko	 ಒಂದು ಕಡೆ ಸುಮ್ಮೆ ಕೂತ್ಕೊ	3D 10	3D 10	Train to imitate the model speaker
<p><i>Note:</i> Follow the steps in a hierarchical manner to achieve the goal. Repeat the steps until the child performs the task with 80% accuracy and proceed to testing phase.</p>					



3D 1



3D 2



3D 3



3D 4



3D 5



3D 6



3D 7



3D 8



3D 9



3D 10










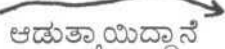
Testing Phase HI D



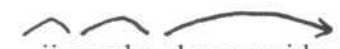


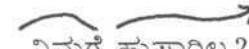




The purpose of this testing phase is to test the child's ability to produce the pitch contour appropriately. This Testing phase consists of 2 parts, Part I and Part II.

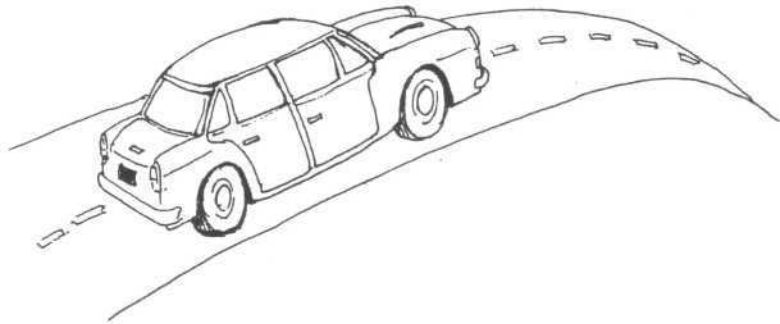
PART I:

Instruction: The child has to listen to voice of model speaker recorded in the audiocassette No.3D (311 to 3D20) and imitate the model speaker as indicated in Table 29. Appropriate line drawing should be given as a cue if necessary as indicated in Table 29.

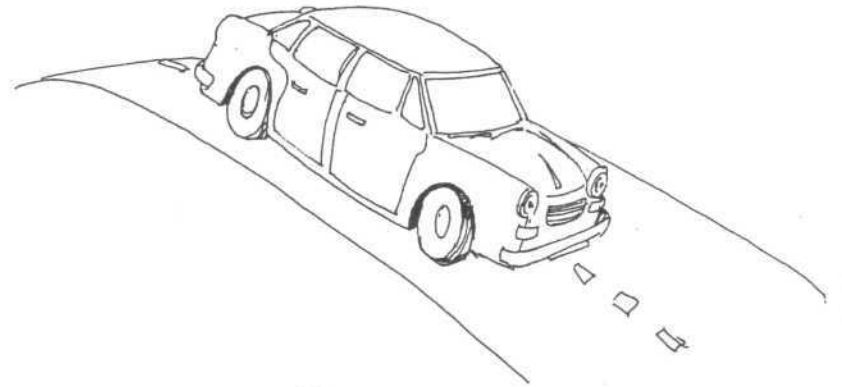
Table 29: Stimuli for Testing phase III D - Part I

SI. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Expected response (imitate the model speakers)	Score 1- correct response 0= no / incorrect response
1	 a	 ಅ	3D 11	3D 11		
2	 a	 ಅ	3D 12	3D 12		
3	 a	 ಅ	3D 13	3D 13		
4	 huuvu	 ಹೂವು	3D 14	3D 14		
5	 aaDutaaiddaane	 ಆಡುತ್ತಾಯಿದ್ದಾನೆ	3D 15	3D 15		

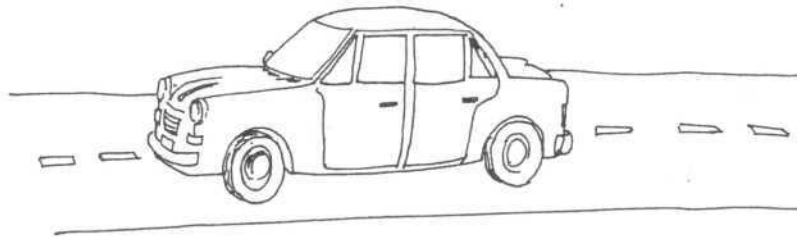
6	 TaTa	 ಟಾಟ	3D 16	3D 16			
7	 ii gombe chennaagide	 ಈ ಗೊಂಬೆ ಚೆನ್ನಾಗಿದೆ	3D 17	3D 17			
8	 nimage hu aarilvaa?	 ನಿಮಗೆ ಹುಷಾರಿಲ್ವಾ?	3D 18	3D 18			
9	 idu haLadi baNNa	 ಇದು ಹಳದಿ ಬಣ್ಣ	3D 19	3D 19			
10	 hoogtiivi	 ಹೋಗ್ತೀವಿ	3D 20	3D 20			
Total score							
Criteria: 80% correct responses is the criterion level to move to next module. Repeat this testing phase/ until the criterion level is successfully reached.							
						M 118	



3D 11



3D 12



3D 13

Part II:

Instruction: The child has to listen to the instruction provided by the model speaker, recorded in audiocassette No.3D (D21 to 2D30), and perform the task accordingly as indicated in Table 30.

Table 30: Stimuli for Testing phase III D - Part II

Sl. No.	Instruction provided by model speaker	Instruction provided by model speaker in Kannada.	Cassette Reference	Expected response (Imitate the model speaker)	Score1= correct response 0= no / incorrect response
1.	Phonate /a/ in rising contour	ಏರುವ ಧ್ವನಿಯಲ್ಲಿ /ಅ/ ಅಂತ ಹೇಳಿ	3D 21		
2.	Phonate /a/ in falling contour	ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ /ಅ/ ಅಂತ ಹೇಳಿ	3D 22		
3.	Say the word "haaDutaayiddaane" in rising contour	"ಹಾಡುತ್ತಾಯಿದ್ಧಾನೆ" ಎಂಬುವುದನ್ನು ಏರುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	3D 23		
4.	Say the word "oodduttiddaaLe" in falling contour	"ಓಡುತ್ತಿದ್ದಾಳೆ" ಎಂಬುವುದನ್ನು ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	3D 24		
5.	Say the sentence "haavu hooguttide" in a falling contour	"ಹಾವು ಹೋಗುತ್ತಿದೆ " ಎಂದು ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	3D 25		

6.	Say the sentence "haavu hooguttide" in a rising contour	"ಹಾಫು ಹೋಗುತ್ತಿದೆ " ಎಂದು ಏರುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	3D 26		
7.	Say the sentence "niinu obbanee yaake aaTa aaDuttiddiyaa" in a rising contour	"ನೀನು ಒಬ್ಬನೇ ಯಾಕೆ ಆಟ ಆಡುತ್ತಿದ್ದೀಯ?" ಈ ವಾಕ್ಯವನ್ನು ಏರುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	3D 27		
8.	Say the sentence "naaLe raja " in a falling contour	"ನಾಳೆ ರಜಾ" ಈ ವಾಕ್ಯವನ್ನು ಇಳಿಯುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	3D 28		
9.	Say the word "hoogooNa" in a rising contour	"ಹೋಗೋಣ" ಈ ಪದವನ್ನು ಏರುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	3D 29		
10.	Say the syllable "TaTa" in a rising contour	"ಟಾಟಾ" ಎಂಬ ಪದವನ್ನು ಏರುವ ಧ್ವನಿಯಲ್ಲಿ ಹೇಳಿ	3D 30		
Total score					

Criteria: 80% correct responses is the criterion level to move to next module. Repeat this testing phase until the criterion level is successfully reached

SECTION IV

NUCLEUS IN PITCH CONTOUR

The “nucleus” in a pitch contour of an utterance is the most prominent syllable/ word of the utterance (Crystal 1969, 1981). Changing the pitch or intensity or duration of the syllable of the utterance can effect the "nucleus" of an intonation contour. When pitch changes are made on the nucleus, the common pitch contours seen on the sentence nuclei include rising pitch contours and complex pitch contours such as falling-rising and rising-falling. The prosodic feature of "Stress" more often coincides with the "nucleus" of the intonation contour. In summary, "nucleus" of an intonation contour shows the prominence of a sound or word in an utterance. Generally, the occurrence or placement of "nucleus" in an utterance, influences the type of intonation curve the person uses. The feature of nucleus is highly dependent on the context in which the utterance is made or evoked. Nucleus can be represented in words or phrases. Phrasal utterances are influenced by the intensions of the speaker and/or the environmental and linguistic context in which speaker uses the utterance.

The section consists of two subsections

SUBSECTION I: Perception of Nucleus in the pitch contour

SUBSECTION II. Production of Nucleus in the pitch contour

Sets of pictures along with audiocassettes are provided for training the child in this section. The **Audio Cassette No: 4** contains the voice of a model speaker, in which words, phrases and sentences are produced by placing the nucleus on the utterances in different ways. The clinician should encourage the child to listen to the utterances spoken by the model speaker in the cassette, and train the child to perceive and then produce these utterances with different nucleus appropriately. To achieve this goal, follow the activities in a hierarchy.

SUBSECTION I

PERCEPTION OF NUCLEUS IN THE PITCH CONTOUR

The goal of this section is to train the child to listen and perceive the “Nucleus” within the utterance in the speech of the model speaker, which is audio recorded in cassette. No.4

There are 3 modules, within this section:

Module IVA Detection of Nucleus in the pitch contour

Module IVB Discrimination of Nucleus in the pitch contour

Module IVC Identification of Nucleus in the pitch contour

Before the actual training phase begins, the child has to go through the preparatory phase, which deals with teaching the child to perceive the occurrence of the nucleus and its placement within the intonation contours. This task is carried out by modeling or imitating the model speaker.

MODULE IVA: Detection of Nucleus in the pitch contour

Aim: To train the child in detecting the nucleus (i.e. phrasal stress) in the speech of the model speaker. There are 2 phases in this module.

A training phase and testing phase.

Training Phase IVA

The purpose of this training phase is to train the child to detect the nucleus (Phrasal stress) in the voice of the model speaker.








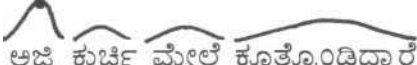


Instruction

Play the audiocassette No.4A (4A1 to 4A4). Encourage the child to listen to the voice of the model speaker in which sentences are uttered by providing appropriate phrasal stress. Train the child to perform the task as indicated in the Table 31

Note:

STRESS/UNSTRESS	REPRESENTATION
●	Represents stress point
-	Represents unstressed point

Table 31: Stimuli for training phase IV A

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained (point to picture depicting the sentence and line drawing depicting the stressed point)
1	 gombe oDedooyitu	 ಗೊಂಬೆ ಒಡೆದೋಯಿತು	4A-1	4A-1	Point to picture and life drawing 4A-1
2	 nanna hattira doDDa baalu ide	 ನನ್ನ ಹತ್ತಿರ ದೊಡ್ಡ ಬಾಲ್ ಇದೆ	4A-2	4A-2	Point to picture and life drawing 4A-2
3	 idu haLe gaaDi	 ಇದು ಹಳೇ ಗಾಡಿ	4A-3	4A-3	Point to picture and life drawing 4A-3
4	 ajji kurchi mele kuutkonDiddaare	 ಅಜ್ಜಿ ಕುರ್ಚಿ ಮೇಲೆ ಕೂತ್ಕೊಂಡಿದ್ದಾರೆ	4A-4	4A-4	Point to picture and life drawing 4A-4
5	 idu pennu	 ಇದು ಪೆನ್ನು	4A-5	4A-5	Point to picture and life drawing 4A-5

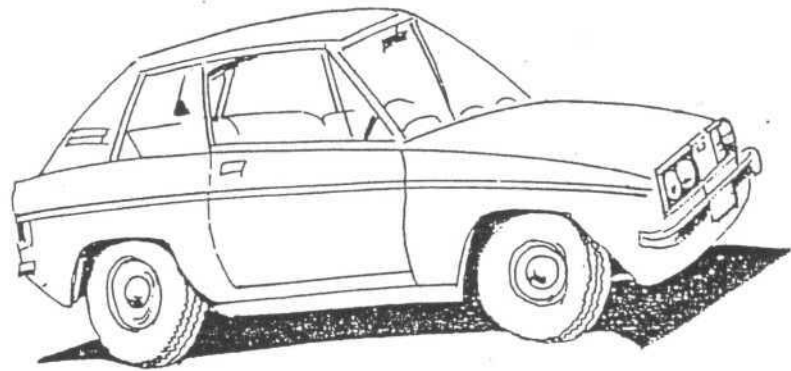
Note: Repeat the steps until the child performs the task with 80% accuracy and proceed to testing phase.



4A 1



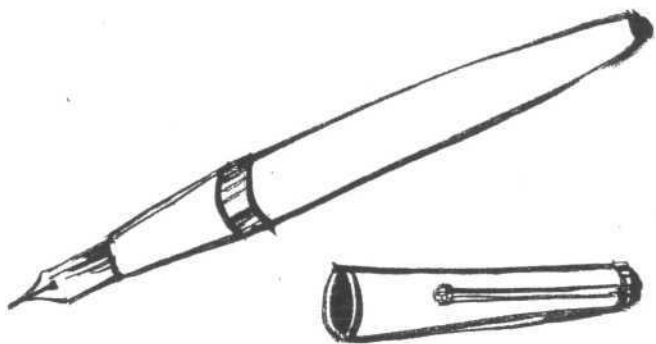
4A 2



4A 3



4A 4



4A 5






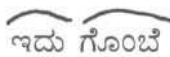
Testing phase IVA

The purpose of this testing phase is to test the child's ability to detect the presence of phrasal stress (nucleus) present in the voice of the model speaker

Instruction:

Play the audiocassette No.4A (4A6 to 4A10). Encourage the child to listen to the voice of the model speaker in which few sentences are uttered with appropriate phrasal stress. Ask the child to perform the task, as indicated in Table 32

Table 32: Stimuli for testing phase IVA

SL No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Expected response(Say yes if nucleus is present in the voice of the model speaker)	Score 1=correct response 0= no / incorrect response
1	 kathe iʃTavaayithu	 ಕಥೆ ಇಷ್ಟವಾಯಿತು	4A-6	4A-6	Should say yes	
2	 naavu angaDiyinda tinDi tarutteeve	 ನಾವು ಅಂಗಡಿಯಿಂದ ತಿಂಡಿ ತರುತ್ತೇವೆ	4A-7	4A-7	Should say yes	
3	 idu gombe	 ಇದು ಗೊಂಬೆ	4A-8	4A-8	Should not respond	

4	naanu allige baralla	ನಾನು ಅಲ್ಲಿಗೆ ಬರಲ್ಲ	4A-9	4A-9	Should say yes	
5	avaru hoodru	ಅವರು ಹೋದರು	4A- 10	4A- 10	Should not respond	
Total score						

Criteria: 80% correct responses is the criterion level to move to the next module. Repeat the testing phase, until the criterion level is successfully reached.

MODULE IV B: Discrimination of Nucleus in the pitch contour

Aim: To train the child to discriminate between the portion of an utterance with nucleus from the portion of an utterance with non-nucleus.

The two phases within this module are training and testing phases.



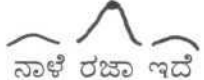
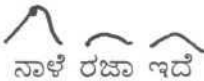




Training Phase IVB

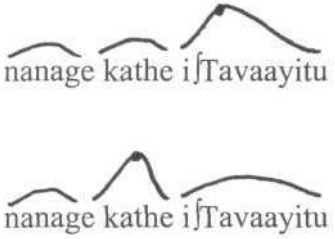
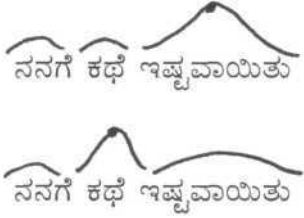
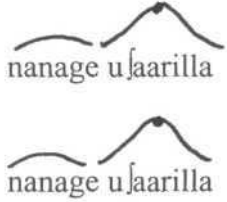
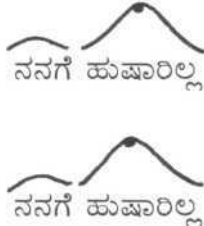


The purpose of the training phase is to train the child to discriminate the differences in the placement of nucleus in an utterance.

Instruction:

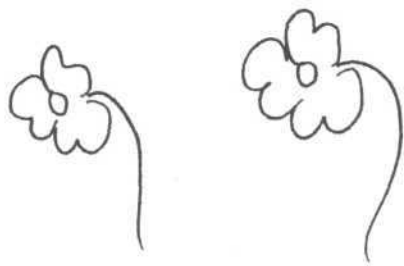
Play the audiocassette No.4B (4B1 to 4B4). Encourage the child to listen to the voice of the model speaker, in which the model speaker stresses particular word/shifts the nucleus in the utterance, depending on his/her intention. Train the child to discriminate the utterances with different nucleus placements in 2 successive utterances, as indicated in Table 33

Table 33: Stimuli for training phase IV B

SI. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture Reference	Task to be trained (train to shade triangle with same colour if nucleus is on same word and shade with different colours if nucleus is on different words)
1	 naaLe rajaa ide  naaLe rajaa ide	 ನಾಳೆ ರಜಾ ಇದೆ  ನಾಳೆ ರಜಾ ಇದೆ	4B-1	4B-1	Shade picture with different colour
2	 miinu niiralli iijuttade  miinu niiralli iijuttade	 ಮೀನು ನೀರಲ್ಲಿ ಈಜುತ್ತದೆ  ಮೀನು ನೀರಲ್ಲಿ ಈಜುತ್ತದೆ	4B-2	4B-2	Shade picture with different colour

3	 <p>nanage kathe iJTavaayitu</p> <p>nanage kathe iJTavaayitu</p>	 <p>ನನಗೆ ಕಥೆ ಇಷ್ಟವಾಯಿತು</p> <p>ನನಗೆ ಕಥೆ ಇಷ್ಟವಾಯಿತು</p>	4B-3	4B-3	Shade picture with different colour
4	 <p>nanage uJaarilla</p> <p>nanage uJaarilla</p>	 <p>ನನಗೆ ಹುಷಾರಿಲ್ಲ</p> <p>ನನಗೆ ಹುಷಾರಿಲ್ಲ</p>	4B-4	4B-4	Shade picture with same colour
5	 <p>niinu hoogu</p> <p>niinu hoogu</p>	 <p>ನೀನು ಹೋಗು</p> <p>ನೀನು ಹೋಗು</p>	4B-5	4B-5	Shade picture with same colour

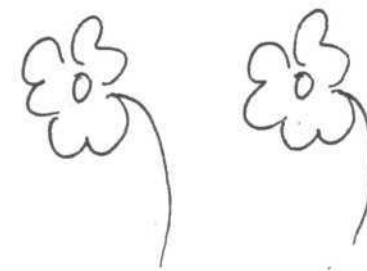
Note: Repeat the steps until the child is able to discriminate the nucleus in the speech of the speaker, with 80% accuracy and then move to the testing phase 4B



4B 1



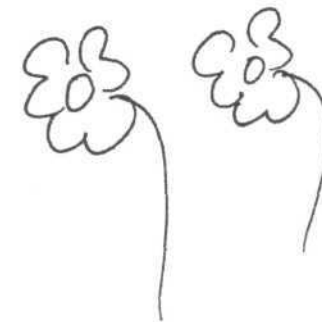
4B 2



4B 3



4B 4



4B 5




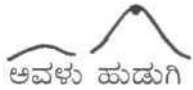



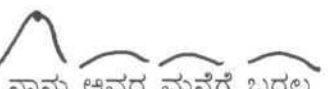
Testing Phase IV B


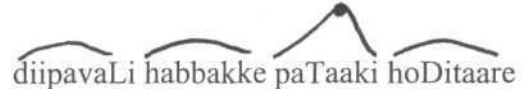
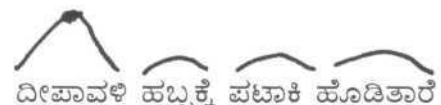
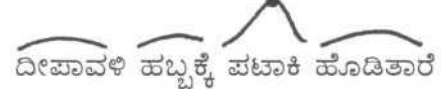


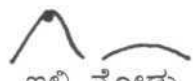
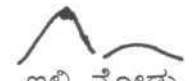




The purpose of the testing phase is to test the child's ability to discriminate different placement of nucleus , in an utterance.

Instruction:

Play the audiocassette No.4B (4B6 to 4B10). Encourage the child to listen to the voice of the model speaker, in which the model speaker places the nucleus on a particular syllable of a word (or stresses a particular word) depending on his/her intention. Train the child to discriminate the placement of nucleus in 2 successive utterances, as indicated in Table 34.

Table 34: Stimuli for testing phase IV B

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (Tell "yes " if same words are stressed and "No" if different words are stressed)	Score 1=correct response 0= no /incorrect response
1	 	 	4B-6		
2	 	 	4B-7		

3	 <p>diipavaLi habbakke paTaaki hoDitaare</p>  <p>diipavaLi habbakke paTaaki hoDitaare</p>	 <p>ದೀಪಾವಳಿ ಹಬ್ಬಕ್ಕೆ ಪಟಾಕಿ ಹೊಡಿತಾರೆ</p>  <p>ದೀಪಾವಳಿ ಹಬ್ಬಕ್ಕೆ ಪಟಾಕಿ ಹೊಡಿತಾರೆ</p>	4B-8		
4	 <p>illi nooDu</p>  <p>illi nooDu</p>	 <p>ಇಲ್ಲಿ ನೋಡು</p>  <p>ಇಲ್ಲಿ ನೋಡು</p>	4B-9		
5	 <p>nanna mane tumbaa duura ide</p>  <p>nanna mane tumbaa duura ide</p>	 <p>ನನ್ನ ಮನೆ ತುಂಬಾ ದೂರ ಇದೆ</p>  <p>ನನ್ನ ಮನೆ ತುಂಬಾ ದೂರ ಇದೆ</p>	4B-10		
Total score					

Criteria: 80% correct responses is the criterion level to move to the next module. Repeat the training phase, until the criterion level is successfully reached.

MODULE IVC: Identification of Nucleus in the pitch contour

Aim: To train the child to identify the nucleus in a phrase (phrasal stress) or an utterance. There are 2 phases in this module namely training phase and testing phase.







Training phase IVC





The purpose of this training phase is to train the child to identify the nucleus in the utterances, as spoken by the model speaker.

Instruction:

Play the audiocassette No.4C (4C1 to 4C4). Encourage the child to listen to the speech of the model speaker in which sentences are uttered with different phrasal stress/ nucleus placement depending upon the intention of the speaker. Train the child to perform the task as indicated in the Table 35.

Table 35: Stimuli for training phase IV C

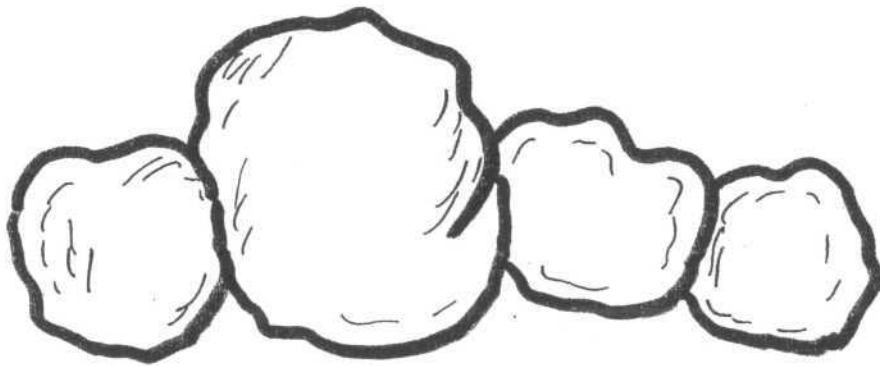
SL No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Explanation of intention of model speaker	Picture reference	Task to be trained
1	 ajji nanage gombe koTTaru	 ಅಜ್ಜಿ ನನಗೆ ಗೊಂಬೆ ಕೊಟ್ಟರು	4C-1	Here the stress is on the word "ajji", as the model speaker wants to express that her grand mother gave her a doll	4C-1	Train to choose picture 4C-1, which depicts stress on 1st word
2	 ajji nanage gombe koTTaru	 ಅಜ್ಜಿ ನನಗೆ ಗೊಂಬೆ ಕೊಟ್ಟರು	4C-2	Here the stress is on the word "nanage", as the model speaker wants to indicate that grand mother gave doll only to her and not to anyone else	4C-2	Train to choose picture 4C-2, which depicts the stress on 2 nd word
3	 ajji nanage gombe koTTaru	 ಅಜ್ಜಿ ನನಗೆ ಗೊಂಬೆ ಕೊಟ್ಟರು	4C-3	Here the stress is on the word "gombe" as the model speaker intends to say that grandmother gave a doll and nothing else	4C-3	Train to choose picture 4C-3, which depicts the stress on 3rd word

4	 nanage uuTa beeku	 ನನಗೆ ಊಟ ಬೇಕು	4C-4	Here the stress is on the word "uuTa" as the model speaker wants to express that she needs food and nothing else	4C-4	Hear in choose picture 4C-4 which depicts the stress on 2nd word
5	 nanage uuTa beeku	 ನನಗೆ ಊಟ ಬೇಕು	4C-5	Hence the stress is on the word "beeku" as the model speaker wants food.	4C-5	Train to choose picture 4C-5, c depicts the stress on 3 rd word

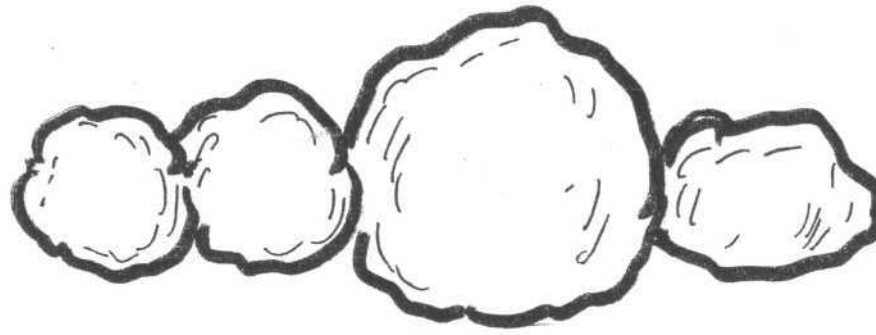
Note: Randomize and repeat the steps until the child performs the task with 80% accuracy and then proceed to testing phase.



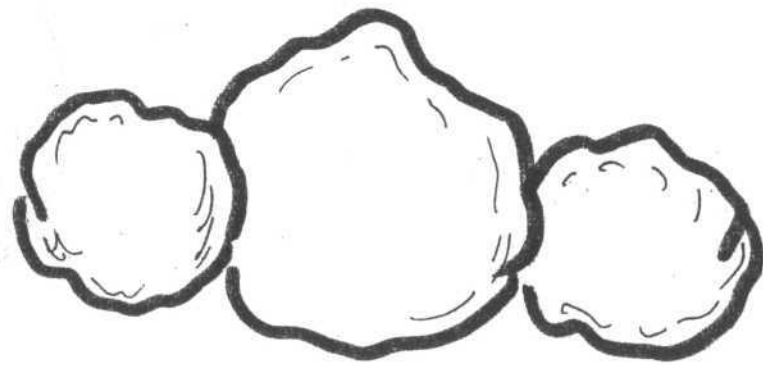
4C 1



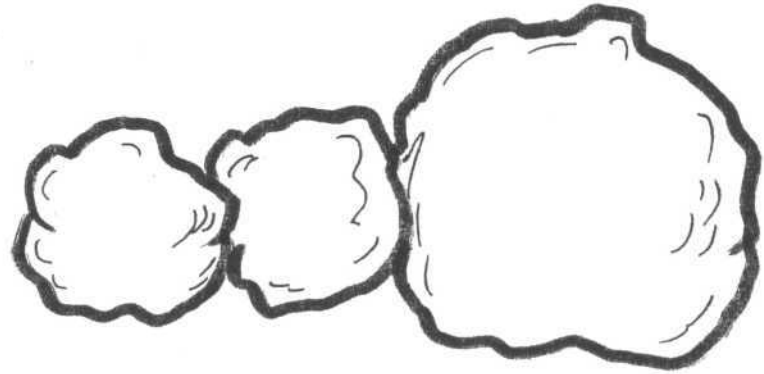
4C 2



4C3



4C4



4C5

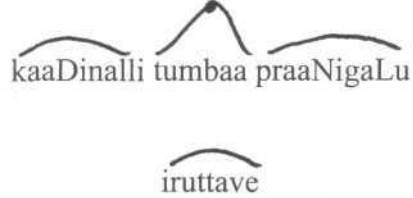

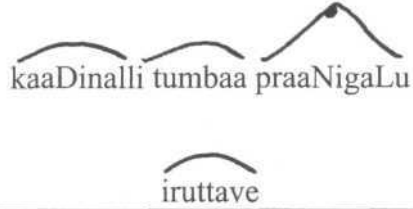
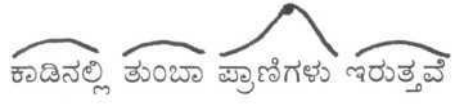
Testing Phase IV C

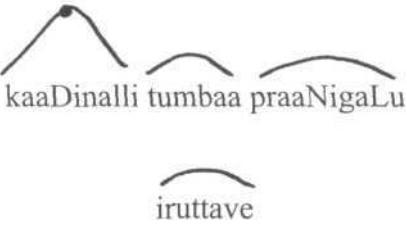


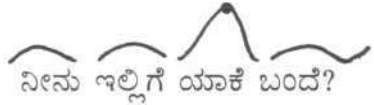


The purpose of this testing phase is to test the child's ability to identify the nucleus in an utterance

Instruction'

Play the audiocassette No.4C (4C6 to 4C10). Encourage the child to listen to the speech of the model speaker in which sentences are uttered with differing placement of nucleus/ stress. Ask the child to perform the task as indicated in the Table 36.

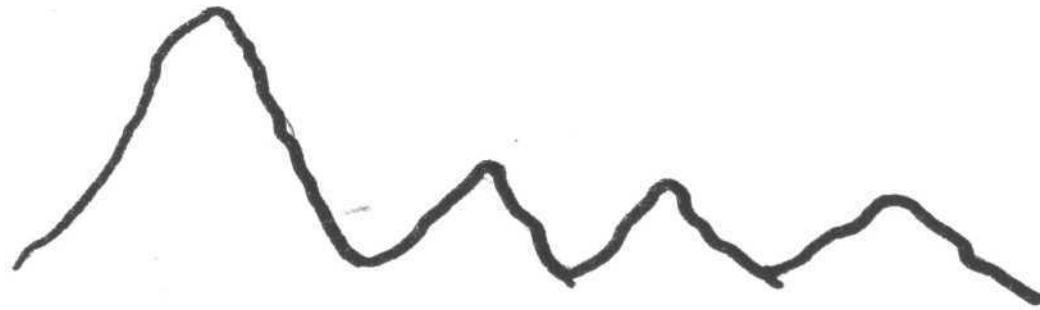
Table 36: Stimuli for testing phase IVC

SL No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture Reference	Expected response (Choose a picture, which depicts appropriate placement of nucleus)	Score 1=correct response 0= no/incorrect response
1	 <p>kaaDinalli tumbaa praaNigaLu iruttave</p>	 <p>ಕಾಡಿನಲ್ಲಿ ತುಂಬಾ ಪ್ರಾಣಿಗಳು ಇರುತ್ತವೆ ಇರುತ್ತವೆ</p>	4C-6	4C-6 to 4C-8	Should choose picture 4C-7	
2	 <p>kaaDinalli tumbaa praaNigaLu iruttave</p>	 <p>ಕಾಡಿನಲ್ಲಿ ತುಂಬಾ ಪ್ರಾಣಿಗಳು ಇರುತ್ತವೆ ಇರುತ್ತವೆ</p>	4C-7	4C-6 to 4C-8	Should choose picture 4C-8	

3	 <p>kaaDinalli tumbaa praaNigaLu</p> <p>iruttave</p>	 <p>ಕಾಡಿನಲ್ಲಿ ತುಂಬಾ ಪ್ರಾಣಿಗಳು ಇರುತ್ತವೆ</p>	4C-8	4C-6 to 4C-8	Should choose picture 4C-6	
4	 <p>niinu illige yaake bande</p>	 <p>ನೀನು ಇಲ್ಲಿಗೆ ಯಾಕೆ ಬಂದೆ?</p>	4C-9	4C-6 to 4C-8	Should choose picture 4C-8	
5	 <p>niinu illige yaake bande</p>	 <p>ನೀನು ಇಲ್ಲಿಗೆ ಯಾಕೆ ಬಂದೆ?</p>	4C-10	4C-6 to 4C-8	Should choose picture 4C-6	
Total score						

Criteria : 80% correct responses is the criterion level to move to the next module. Repeat the training phase, until the criterion level is successfully reached.

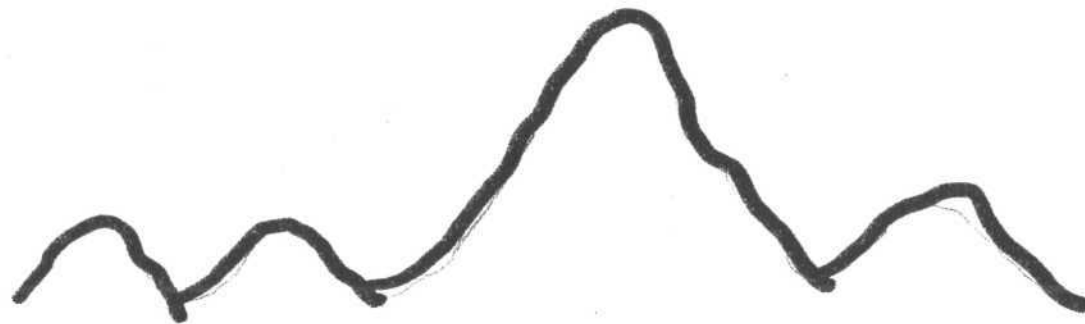
4C-6



4C-7



4C-8



SUBSECTION II
PRODUCTION OF NUCLEUS IN A PITCH CONTOUR

The goal of this subsection is to train the child to produce appropriate nucleus, depending upon the intention/attitude of the speaker and on command. There is only 1 module, in this subsection

MODULE IV D: Production of Nucleus




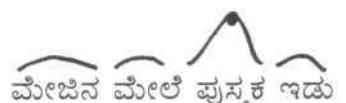

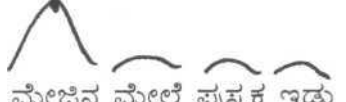
MODULE IV D: Production of Nucleus in a pitch contour




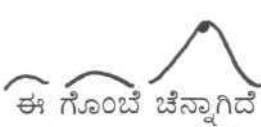
Aim : To train the child to produce appropriate phrasal stress (nucleus) depending upon the intention or attitude of the speaker, and also on command. This module has 2 phases namely, training and testing phases.

Training Phase-IV D

The purpose of this training phase is to train the child to produce appropriate stress, in utterances. Train the child to perform the task as indicated in the Table 37.

Table 37: Stimuli for training phase IV D

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Explanation	Picture reference	Task to be trained
1	 meejina mele pustaka iDu	 ಮೇಜಿನ ಮೇಲೆ ಪುಸ್ತಕ ಇಡು	4D-1	Here the intention of the speaker is to indicate to keep the book on the Table and not under the Table etc	4D-1	Train the child to imitate the model speaker. Picture can be used as feedback
2	 meejina mele pustaka iDu	 ಮೇಜಿನ ಮೇಲೆ ಪುಸ್ತಕ ಇಡು	4D-2	Here the speaker stresses on the word "pustaka," as the intention of speaker is to indicate to keep the book on the Table and nothing else	4D-2	Train the child to imitate the model speaker. Picture can be used as feedback
3	 meejina mele pustaka iDu	 ಮೇಜಿನ ಮೇಲೆ ಪುಸ್ತಕ ಇಡು	4D-3	Here the intention of the speaker is to indicate to keep the book on the Table and not on bed / floor	4D-3	Train the child to imitate the model speaker. Picture can be used as feedback

4	 <p>ii gombe cenaagide</p>	 <p>ಈ ಗೊಂಬೆ ಚೆನ್ನಾಗಿದೆ</p>	4D-4	Here the intention of the speaker is to convey that the doll is nice	4D-4	Train the child to imitate the model speaker. Picture can be used as feedback
5	 <p>ii gombe cenaagide</p>	 <p>ಈ ಗೊಂಬೆ ಚೆನ್ನಾಗಿದೆ</p>	4D-5	Here the speaker wants to convey that the doll is nice.	4D-5	Train the child to imitate the model speaker. Picture can be used as feedback

Note: Randomize and repeat the **steps** until the child performs the task **with** 80% accuracy and then proceed to testing phase.



4D-1



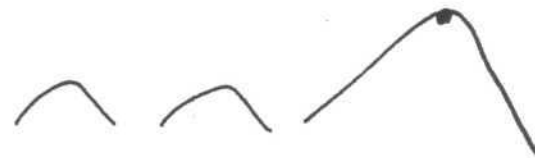
4D-2



4D-3



4D-4



4D-5

Testing Phase IV D

The purpose of the testing phase is to test the child's ability to produce appropriate phrasal stress (nucleus) in an utterance.




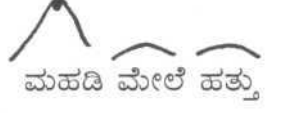

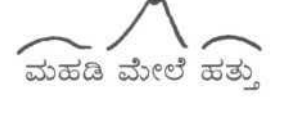
This Testing phase consists of 2 parts




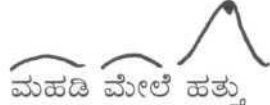
Part I:

Instruction:

The child has to listen to the voice of model speaker recorded in the audiocassette No.4D (411 to 4D20) and imitate the model speaker as indicated in Table 38. Appropriate line drawing should be given as a cue if necessary.

Table 38: Stimuli for testing phase IV D Part-I

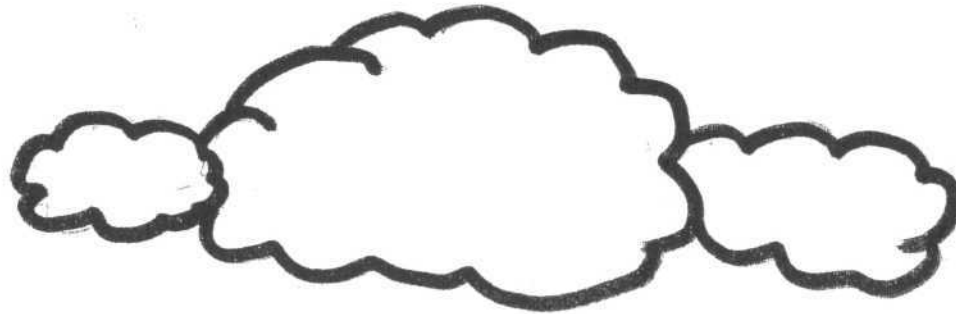
Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture Reference	Expected response (Imitate the model speaker)	Score 1= correct response 0= no / incorrect response
1	 <p>idu nanage beeDa</p>	 <p>ಇದು ನನಗೆ ಬೇಡ</p>	4D-6	4D-8		
2	 <p>mahaDi meeLe hattu</p>	 <p>ಮಹಡಿ ಮೇಲೆ ಹತ್ತು</p>	4D-7	4D-6		
3	 <p>mahaDi meeLe hattu</p>	 <p>ಮಹಡಿ ಮೇಲೆ ಹತ್ತು</p>	4D-8	4D-7		

4	 idu nanage beeDa	 ಇದು ನನಗೆ ಬೇಡ	4D-9	4D-7		
5	 mahaDi mele hattu	 ಮಹಡಿ ಮೇಲೆ ಹತ್ತು	4D-10	4D-8		
Total score						

Criteria : 80% correct responses is the criterion level to move to the next module. Repeat the training phase, until the criterion level is successfully reached.



4D-6



4D-7



4D-8

Part II:

Instruction: The child to listen to the instruction provided by the model speaker, recorded in audiocassette No.4D (4D21 to 4D30), and perform the task accordingly as indicated in Table 39.

Table 39: Stimuli for testing phase IV D- Part-II

Sl. No.	Instruction provided by model speaker	Instruction provided by model speaker (given in Kannada)	Cassette Reference	Expected response	Score 1= correct response 0= no / incorrect response
1	Say the sentence "naanu aaTa aaDooke horage hoogtiini" with stress on the word "aaTa aaDooke"	"ನಾನು ಆಟ ಆಡೋಕೆ ಹೊರಗೆ ಹೋಗ್ತೀನಿ" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ "ಆಟ ಆಡೋಕೆ" ಎಂಬ ಪದವನ್ನು ಒತ್ತಿ ಹೇಳಿ	4D- 11		
2	Say the sentence "naanu aaTa aaDooke horage hoogtiini" with stress on the word "horage"	"ನಾನು ಆಟ ಆಡೋಕೆ ಹೊರಗೆ ಹೋಗ್ತೀನಿ" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ "ಹೊರಗೆ" ಎಂಬ ಪದವನ್ನು ಒತ್ತಿ ಹೇಳಿ	4D-12		

3	Say the sentence "naanu aaTa aaDooke horage hoogtiini" with stress on the word "hoogtiini"	"ನಾನು ಆಟ ಆಡೋಕೆ ಹೊರಗೆ ಹೋಗ್ತೀನಿ" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ "ಹೋಗ್ತೀನಿ" ಎಂಬ ಪದವನ್ನು ಒತ್ತಿ ಹೇಳಿ	4D-13		
4	Say the sentence "idu haLadi baNNa" with stress on the word "haLadi"	"ಇದು ಹಳದಿ ಬಣ್ಣ" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ "ಹಳದಿ" ಎಂಬ ಪದವನ್ನು ಒತ್ತಿ ಹೇಳಿ	4D-14		
5	Say the sentence "idu haLadi baNNa" with stress on the word "baNNa"	"ಇದು ಹಳದಿ ಬಣ್ಣ" ಎಂಬ ವಾಕ್ಯದಲ್ಲಿ "ಬಣ್ಣ" ಎಂಬ ಪದವನ್ನು ಒತ್ತಿ ಹೇಳಿ	4D-15		
				Total score	

Criteria : 80% correct responses is the criterion level to move to the next module. Repeat the training phase, until the criterion level is successfully reached.

SECTION V

EMOTIONAL SENTENCES

This section describes the way in which different intonation contour can convey different emotions, when a sentence is uttered.

The section consists of two subsections.

SUBSECTION I: Perception of Emotional Sentences

SUBSECTION II: Production of Emotional Sentences

Sets of pictures along with audiocassettes are provided for training the child in this section. The **Audio Cassette No: 5** contain the speech of a model speaker, in which the sentences are uttered with appropriate intonation contour so as to convey different emotions of the speaker. The clinician should encourage the child to listen to the cassette, and train the child to perceive and then produce different emotions conveyed through the utterances. To achieve this goal, follow the stimuli as indicated in the following pages.

SUBSECTION I

PERCEPTION OF EMOTIONAL SENTENCES

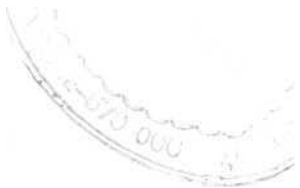
The goal of this section is to train the child to listen and perceive the pitch contour in the voice of model speaker, which is audio **recorded** in **Cassette. No.5**

There are 3 modules, within this section:

Module 5A Detection of emotional sentences

Module 5B Discrimination of emotional sentences

Module 5C Identification of emotional sentences



MODULE VA: Detection of different emotional sentences

Aim : To train the child to detect various emotions in sentences which are uttered with appropriate intonation contour to convey the emotions by the model speaker. The primary emotions, which are taken into consideration in training in this module, are happy, grief, angry, surprise, and fear. "Neutral" utterances with very minimal or no emotion conveyed is also included so that the child learns to discriminate between a "no emotion" condition and an "emotional condition". This section also incorporates training and a testing phase.

Note: The child should be instructed and be made aware that same intonation contours could convey different emotions. For example, a falling terminal intonation contour is often seen for neutral, happy, sad, angry, worry and surprise emotions. So, depending upon the context, one should be able to perceive the emotions conveyed through the utterances and also produce appropriate emotional sentences.




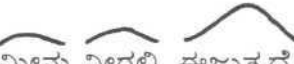


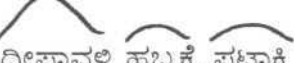

Training phase VA

The purpose of this training phase is to train the child to detect various emotions, conveyed through sentences with appropriate intonation contour, by model speakers.

Instruction: Play the audiocassette No.5A. Encourage the child to listen to the sentences uttered by the model speaker with various emotions depending upon the intention. Train the child to perform the task as indicated in the Table 40.

Table 40: Training phase - Neutral Sentences

(Note: A neutral sentence generally is expressed through a falling terminal pitch direction)

Sl.No	Utterances represented in IPA	Utterances represented in Kannada	Cassette Reference	Context reference	Picture Reference	Task to be Trained
1.	 avanu huDuga	 ಅವನು ಹುಡುಗ	5A-N1	CN1	5A-N1	Point to Picture 5A-N1
2.	 miinu niiralli ijuttade	 ಮೀನು ನೀರಲ್ಲಿ ಈಜುತ್ತದೆ	5A-N2	CN2	5A-N2	Point to Picture 5A-N2
3.	 diipavaLi habbakke paTaaki  hoDiitaare	 ದೀಪಾವಳಿ ಹಬ್ಬಕ್ಕೆ ಪಟಾಕಿ  ಹೊಡೀತಾರೆ	5A-N3	CN3	5A-N3	Point to Picture 5A-N3

4.	 idu haLadi baNNa	 ಇದು ಹಳದಿ ಬಣ್ಣ	5A-N4	CN4	5A-N4	Point to Picture 5A-N4
5.	 idu gaaDi	 ಇದು ಗಾಡಿ	5A-N5	CN5	5A-N5	Point to Picture 5A-N5

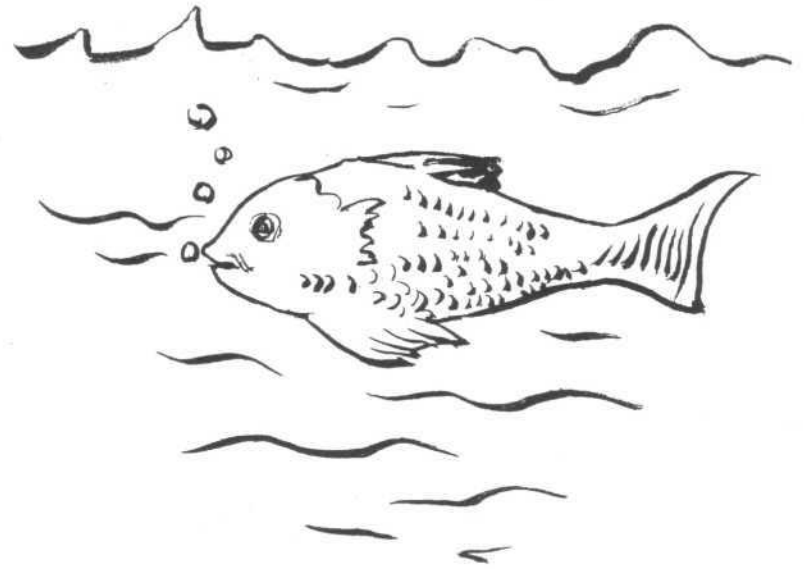
Note: Randomize and Repeat the steps until the **child** performs with 80% accuracy and then proceed to the testing phase 5A



NEUTRAL EMOTION



5A-N1

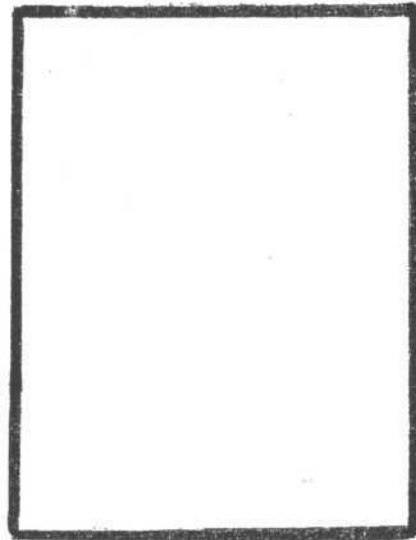


5A-N2

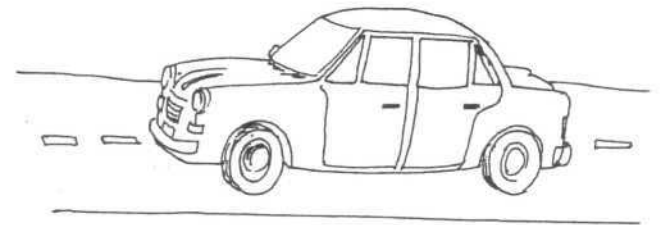




5A-N3



5A-N4







5A-N5



Table 41: Training phase: Happy Emotional sentences

(Note: A happy utterance generally tends to have a rising / falling intonation pattern (Manjula, 1979; Nataraja, 1982). This mainly depends on the context in which such sentences are uttered. Thus depending on the context, and the intonation pattern, the child should be trained to perform the task)

SL No	Utterances represented in IPA	Utterances represented in Kannada	Cassette Reference	Context reference	Picture Reference	Task to be Trained
1.	 ajji nanage gombe koTTaru	 ಅಜ್ಜಿ ನನಗೆ ಗೊಂಬೆ ಕೊಟ್ಟರು	5A-H1	CHI	5A-H1	Point to Picture 5A-H1
2.	 ii gombe cenaagide	 ಈ ಗೊಂಬೆ ಚೆನ್ನಾಗಿದೆ	5A-H2	CH2	5A-H2	Point to Picture 5A-H2

3.	naanu aiskriim tinnutiini	ನಾನು ಐಸ್ ಕ್ರೀಂ ತಿನ್ನುತ್ತೀನಿ	5A-H3	CH3	5A-H3	Point to Picture 5A-H3
4.	nanage bahumaana saktu	ನನಗೆ ಬಹುಮಾನ ಸಿಕ್ಕು	5A-H4	CH4	5A-H4	Point to Picture 5A-H4
5.	uuTa maaDooke horage hoogtiivi	ಊಟ ಮಾಡೋಕೆ ಹೊರಗೆ ಹೋಗ್ತೀವಿ	5A-H5	CH5	5A-H5	Point to Picture 5A-H5

Note: Randomize and Repeat the steps until the child performs with 80% accuracy and then proceed to the testing phase 5 A



HAPPY EMOTION



5A-H1



5A-H2





5A-H3



5A-H4




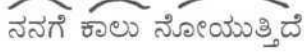






5A-H5



Table 42: Training phase: "Grief Emotional sentences

(Note: A sentence expressing grief generally tends to have a falling terminal intonation pattern. Appropriate **context** is **provided** to facilitate better understanding)

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette Reference	Context reference	Picture Reference	Task to be Trained
1.			3A-G1	CGI	3A-G1	Point to Picture 3 A-G1
2.			3A-G2	CG2	3A-G2	Point to Picture 3A-G2
3.			3A-G3	CG3	3A-G3	Point to Picture 3A-G3

4.	nanage bahumaana sikkilla	ನನಗೆ ಬಹುಮಾನ ಸಿಕ್ಕಿಲ್ಲ	3A-G4	CG4	3A-G4	Point to Picture 3A-G4
5.	nanna tamma keLagaDe bidida	ನನ್ನ ತಮ್ಮ ಕೆಳಗಡೆ ಬಿದ್ದ	3A-G5	CG5	3A-G5	Pont to Picture 3A-G5

Note: Randomize and Repeat the steps until the child performs with 80% accuracy and then proceed to the testing phase 5 A



GRIEF EMOTION



5A-GI





5A-G2



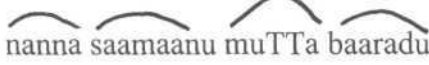
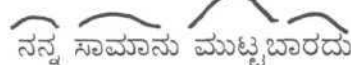





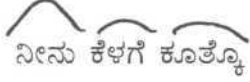


5A-G3



Table 43: Training phase: "Anger" Emotional sentences

(Note: An angry sentence tends to have either a rising / falling intonation pattern (Manjula, 1979; Nataraja, 1982). This depends on the context in which, such sentences are uttered. Thus, depending on the kind of intonation pattern, train the child to perform the task)

Sl.No	Utterances represented in IPA	Utterances represented in Kannada	Cassette Reference	Context reference	Picture Reference	Task to be Trained
1.	 niinu horage hoogo	 ನೀನು ಹೊರಗೆ ಹೋಗು	3A-A1	CA1	3A-A1	Point to Picture 3A-A1
2.	 nanna saamaanu muTTa baaradu	 ನನ್ನ ಸಾಮಾನು ಮುಟ್ಟಬಾರದು	3A-A2	CA2	3A-A2	Point to Picture 3A-A2
3.	 gombe yaake oDedu haakte?	 ಗೊಂಬೆ ಯಾಕೆ ಹೊಡೆದಾಕ್ತೆ?	3A-A3	CA3	3A-A3	Point to Picture 3A-A3

4.	 niinu keLage kuutko	 ನೀನು ಕೆಲಗೆ ಕೂತೆಕ್ಕು	3A-A4	CA4	3A-A4	Point to Picture 3A-A4
5.	 sumne kirucha beeDa	 ಸುಮ್ಮೆ ಕಿರುಚ ಬೇಡ	3A-A5	CA5	3A-A5	Point to Picture 3A-A5

Note: Randomize and Repeat the steps until the child performs with 80% accuracy and then proceed to the testing phase 5A



ANGER EMOTION



5A-A1



5A-A2





5A-A3



5A-A4





5A-A5



Table 44: Training phase: "Fear" Emotional sentences

(Note: A sentence expressing fear also tends to have either a rising / falling intonation contour, depending on the context in which it occur when a fearful sentence is expressed, the loudness is generally reduced along with falling intonation contour)

Sl.No	Utterances represented in IPA	Utterances represented in Kannada	Cassette Reference	Context reference	Picture Reference	Task to be Trained
1.	Hey, adanna muTTa baaradu	ಹೇ, ಅದನ್ನು ಮುಟ್ಟಬಾರದು	3A-F1	CF1	3A-F1	Point to Picture 3 A-F1
2.	naanu allige barallappa	ನಾನು ಅಲ್ಲಿಗೆ ಬರಲ್ಲಪ್ಪ	3A-F2	CF2	3A-F2	Point to Picture 3A-F2
3.	PaaTa oodade iddare, ninna miss ninage baiyuttaare	ಪಾತ ಓದದೇ ಇದ್ದರೆ ನಿನ್ ಮಿಸ್ ನಿನಗೆ ಬಯ್ಯುತ್ತಾರೆ	3A-F3	CF3	3A-F3	Point to Picture 3A-F3

4.	niinu jooRaagi maataaDa beeDa	ನೀನು ಜೋರಾಗಿ ಮಾತಾಡ ಬೇಡ	3A-F4	CF4	3A-F4	Point to Picture 3A-F4
5.	amma nanage hoDibeeDi	ಅಮ್ಮ ನನಗೆ ಹೊಡಿಬೇಡಿ	3A-F5	CF5	3A-F5	Point to Picture 3A-F5

Note: Randomize and Repeat the steps until the child performs with 80% accuracy and then proceed to the testing phase 5A.



FEAR EMOTION



5A-F1



5A-F2





5A-F3



5A-F4











5A-F5



Table 45: Training phase: "Surprise" Emotional sentences

{Note: A sentence expressing surprise generally tends to have falling / rising intonation contour, depending on the context}

SI. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette Reference	Context reference	Picture Reference	Task to be Trained
1.	 idannu nanage koDtidiyaa?	 ಇದನ್ನ ನನಗೆ ಕೊಡ್ತಿದೀಯಾ?	3A-S1	CS1	3A-S1	Point to Picture 3 A-S1
2.	 nanage idu nambooke aagalla	 ನನಗೆ ಇದು ನಂಬೋಕೆ ಆಗಲ್ಲ	3A-S2	CS2	3A-S2	Point to Picture 3A-S2
3.	 maLe bartaa ide	 ಮಳೆ ಬರ್ತಾ ಇದೆ	3A-S3	CS3	3A-S3	Point to Picture 3A-S3

4.	nanage bahumaana siguttaa	ನನಗೆ ಬಹುಮಾನ ಸಿಗುತ್ತಾ?	3A-S4	CS4	3A-S4	Point to Picture 3A-S4
5.	hey santa barta iddaane	ಹೇ, ಸಂತ ಬರ್ರಾ ಇದ್ದಾನೆ	3A-S5	CS5	3A-S5	Point to Picture 3A-S5

Note: Randomize and Repeat the steps until the child performs with 80% accuracy and then proceed to the testing phase 5A



SURPRISE EMOTION



5A-S1



5A-S2





5A-S3



5A-S4





5A-S5



Table 46: Description of the context in which the utterances are made with reference to the diagrams which are used to represent various emotions

Sl. No.	Picture Reference No.	Utterances represented in IPA	Context
1.	CH1	'ajji nanage gombe koTTru'	Grandmother bought a doll for her granddaughter. The child then waits for her father to come back home and tells him "grandmother gave me a doll"
2.	CH2	'ii gombe cannagide'	A boy finds a toy which is very nice, so he comments happily that the doll is nice
3.	CH3	"naanu aiskriim tinnutiini"	A child is happily telling his mother, that he is eating an ice cream
4.	CH4	"nanage bahumaana saktu"	After winning a cup in sports, the child brings it home and tells his mother, "I got the prize".
5.	CH5	"uuTa maaDoke horage hoogtiini"	A child is telling his friend happily, that he along with his parents are going out for lunch
6.	CG1	nanage kaalu noyuttide	A child while playing hurt his leg, and so he cries and tells his mother, "My leg is paining"
7.	CG2	nanna hattira hosa angi illa	A child sees his friend in new cloths and so he complaints to his parents that he doesn't have a new dress

8.	CG3	gombe oDedooitu.	While playing, a child broke his toy. So, he sadly tells his mother that the toy broke
9.	CG4	nanage bahumaana sikkallilla	A child participated in a competition, but didn't win any prize. So he sadly tells his mother that he didn't get any prize
10.	CG5	nanna tamma keLagaDe bidda	The child complains sadly to her mother that her brother fell down.
11.	CA1	niinu horage hoogo	A child broke a glass in the kitchen. So, the mother angrily asks him to get out from there.
12.	CA2	nanna saamaanu muTTa baardu	Here there is a quarrel between 2 brothers. And so, elder brother angrily tells his younger brother, not to touch his belongings
13.	CA3	gombe yaake oDiitiiyaa?	Looking at a child trying to break a toy, the mother angrily asks him, "Why are you breaking the toy"?
14.	CA4	niinu keLage kuutko	A child behaves very mischevously in the class. So, the teacher angrily instructs the child to sit down.
15.	CA5	sumne kirucha beeDa	A child is not given what he wants. So, he keeps screaming. Then his mother angrily commands him not to scream.
16.	CF1	'adanna muTTa baaradu'	A child is telling her younger sister, not to touch the vessel which is kept on the stove

17.	CF2	'naanu allige baralla'	A child calls his friend to see a snake, which has been spotted by people. So, the friend says, "I'm not coming there".
18.	CF3	'ninna Tiichar ninage baitaare'	When the child doesn't do the homework, the mother scares the child by telling, "your teacher will scold you, if you don't do your work".
19.	CF4	'niinu jooraaagi maataaD beeDa'	Children are playing hide and seek. One of them tells the other not to talk loudly. Otherwise we'll get caught
20.	CF5	'anna nanga hoDibeDi'	Child has done a mistake and when the mother is going to beat the child, the child is saying "amma, please don't hit me".
21.	CS1	idannee nange koD tiiya?	When someone gives the child something she likes, unexpectedly, the child says, 'are you giving this to me?'
22.	CS2	nange idu nambooke aagalla	The child is surprised to know that she is getting a gift.
23.	CS3	maLe bartaidiya?	The child is surprised to know that it is raining
24.	CS4	nanage bahumaana sigutta	The child just hears that she is winning a prize, so, she's surprised and says "Am I getting the prize?"
25.	CS5	hey sanTa bartaidaane	The child is surprised to know that the sanTa is coming.

Testing phase VA




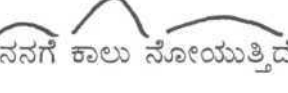
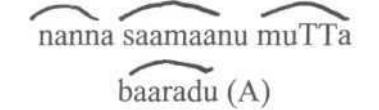

The purpose of this testing phase is to test the child's ability to detect various emotions, which are conveyed through sentences with appropriate pitch direction, by model speaker.

Instruction:

Play the audiocassette No.5A. Encourage the child to listen to the emotional sentences uttered by the model speaker in different combinations. Ask the child to perform the task as indicated in the Table 47.

Table 47 (a): Testing phase VA








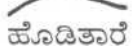
(Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief S= Surprise)

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response Raise your hand when you hear a happy emotion	Score 1= correct response 0= no / incorrect response
1	 nanage bahumaana saktu (H)	 ನನಗೆ ಬಹುಮಾನ ಸಿಕ್ಕು	5A-H6	Should raise the hand	
2	 nanage kaalu nooyuttide (G)	 ನನಗೆ ಕಾಲು ನೋಯುತ್ತಿದೆ	5A-H7	Should not respond	
3	 nanna saamaanu muTTa baaradu (A)	 ನನ್ನ ಸಾಮಾನು ಮುಟ್ಟಬಾರದು	5A-H8	Should not respond	

4	ii gombe chennagide (H)	ಈ ಗೊಂಬೆ ಚೆನ್ನಾಗಿದೆ	5A-H9	Should raise the hand	
5	naanu aiskriim tinnuttiini (H)	ನಾನು ಐಸ್ ಕ್ರೀಂ ತಿನ್ನುತ್ತೀನಿ	5A-H10	Should raise the hand	
				Total score	

Table 47 (b): Testing phase VA

(Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief S= Surprise)

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (Should point to picture when neutral sentence is heard)	Score 1= correct response 0= no / incorrect response
1	 niinu horage hoogo (A)	 ನೀನು ಹೊರಗೆ ಹೋಗು	5A-N6	Should not respond	
2	 miinu niiralli iijuttade (N)	 ಮೀನು ನೀರಲ್ಲಿ ಈಜುತ್ತದೆ	5A-N7	Should point to picture 5A-N	
3	 diipavaLi habbakke paTaaki  hoDitaare (N)	 ದೀಪಾವಳಿ ಹಬ್ಬಕ್ಕೆ ಪಟಾಕಿ  ಹೊಡಿತಾರೆ	5A-N8	Should point to the picture 5 A-N	

4	maLe bartaa ideya(s)	ಮಳೆ ಬರತಾ ಇದೆಯಾ?	5A-N9	Should not respond	
5	idu gaaDi(N)	ಇದು ಗಾಡಿ	5A-N10	Should point to the picture 5A-N	
				Total score	







5A-N

Table 47 (c): Testing phase VA

(Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief S= Surprise)

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (Colour the picture when you hear a grief emotion)	Score 1= correct response 0= no / incorrect response
1	gombe oDedoitu (G)	ಗೊಂಬೆ ಒಡೆದೊಯಿತು	5A-G6	Colour the picture 5A-G6	
2	hey santa bartaa iddaane (S)	ಹೇ, ಸಂತ ಬರ್ತಾ ಇದ್ದಾನೆ	5A-G7	Should not respond	
3	nanna tamma keLagaDe bidida(G)	ನನ್ನ ತಮ್ಮ ಕೆಳಗಡೆ ಬಿದ್ದು	5A-G8	Colour the picture 5A-G7	

4	 <p>uuTa maaDooke horage hoogtiivi(H)</p>	 <p>ಉಟ ಮಾಡೋಕೆ ಹೊರಗೆ ಹೋಗ್ತೀವಿ</p>	5A-G9	Should not respond	
5	 <p>nanage bahumaana sikkallila (G)</p>	 <p>ನನಗೆ ಬಹುಮಾನ ಸಿಕ್ಕಲಿಲ್ಲ</p>	5A-G10	Colour the picture 5A-G8	
Total score					



5A-G6









5A-G7



5A-G8

Table 47 (d): Testing phase VA

{Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief S= Surprise}

Sl. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (Raise your hand when you hear a surprise sentence)	Score 1= correct response 0= no / incorrect response
1	 nanage bahumaana siguttaa (S)	 ನನಗೆ ಬಹುಮಾನ ಸಿಗುತ್ತಾ	5A-S6	Should raise the hand	
2	 idannu nanage koDtidiyaa? (S)	 ಇದನ್ನು ನನಗೆ ಕೊಡ್ತಿದೀಯಾ?	5A-S7	Should raise the hand	
3	 amma nanage hoDiibeDii	 ಅಮ್ಮ ನನಗೆ ಹೊಡೀಬೇಡಿ	5A-S8	Should not respond	

4	hey santa barta idaane(S)	ಹೇ, ಸಂತ ಬರ್ರಾ ಇದ್ದಾನೆ	5A-S9	Should raise the hand	
5	nanna hattira hosa angi illa(G)	ನನ್ನ ಹತ್ತಿರ ಹೊಸ ಅಂಗಿ ಇಲ್ಲ	5A-S10	Should not respond	
				Total score	

Table 47 (e): Testing phase VA

(Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief S= Surprise)

SI. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (Should mark a tick if anger emotion is heard)	Score 1= correct response 0= no / incorrect response
1	nanna saamaanu muTTa baaradu(A)	ನನ್ನ ಸಾಮಾನು ಮುಟ್ಟಬಾರದು	5A-A6	Should put a tick	
2	gombe yaake oDitiiyaa?(A)	ಗೊಂಬೆ ಯಾಕೆ ಒಡಿತಿಯಾ?	5A-A7	Should put a tick	
3	avanu huDuga(N)	ಅವನು ಹುಡುಗ	5A-A8	Should not respond	

4	niinu keLage kuutko(A)	ನೀನು ಕೆಲಗೆ ಕೂತೊ	5A-A9	Should put a tick	
5	naanu allige baralla(F)	ನಾನು ಅಲಿಗೆ ಬರಲ್ಲ	5A-A10	Should not respond	
				Total score	

Table 47 (f): Testing phase VA

(Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief, S= Surprise)

SL No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response (Raise your hand when you hear a fearful emotion)	Score 1= correct response 0= no / incorrect response
1	adanna muTTa baaradu (F)	ಅದನ್ನು ಮುಟ್ಟಬಾರದು	5A-F6	Should raise the hand	
2	nanage bahumaana sigutta (S)	ನನಗೆ ಬಹುಮಾನ ಸಿಗುತ್ತಾ ?	5A-F7	Should not respond	
3	paaTa oodeidre ninn missu ninage baitaare(F)	ಪಾಠ ಓದದೇ ಇದ್ದರೆ ನಿನ್ ಮಿಸ್ ನಿನಗೆ ಬಯ್ಯುತ್ತಾರೆ	5A-F8	Should not respond	

4	niinu jooraagi maataaDabeeDa (F)	ನೀನು ಜೋರಾಗಿ ಮಾತಾಡ ಬೇಡ	5A-F9	Should raise the hand	
5	sumne kirucha beeDa (A)	ಸುಮ್ಮೆ ಕಿರುಚ ಬೇಡ	5A-F10	Should raise the hand	
				Total score	

Note: (80%) correct responses is the criteria level to move to the next module. Repeat the training phase (from Table 47 (a) to 47 (f)), until the criterion level is successfully reached.

MODULE VB: Discrimination of different emotional sentences

Aim : To train the child to discriminate various primary emotions conveyed through sentences with appropriate pitch direction, by **the model speaker**. This section incorporates training and a testing phase.

Training phase VB

The purpose of this training phase is to train the child to discriminate various emotions, conveyed through sentences with appropriate pitch direction, by model speaker.

Instruction:

Play the audiocassette No.5A (5A1 to5A10). Encourage the child to listen to the sentences uttered by the model speaker in various emotions depending upon the intention. Train the child to perform the task **as** indicated in the Table 48.

Table 48: Stimuli for training phase VB

(Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief, S= Surprise)

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be Trained
1.	<p>idu kempu bassu (N)</p> <p>nanage bahumaana saktu (H)</p>	<p>ಇದು ಕೆಂಪು ಬಸ್ಸು</p> <p>ನನಗೆ ಬಹುಮಾನ ಸಿಕ್ಕು</p>	5B1	5B3& 5B4	Point to Picture 5B3 & 5B4
2.	<p>idannu nanage koDtaa iddiyaa (S)</p> <p>maLe bartaa iddiyaa (S)</p>	<p>ಇದನ್ನು ನನಗೆ ಕೊಡ್ತಾ ಇದ್ದೀಯಾ?</p> <p>ಮಳೆ ಬರ್ತಾ ಇದೇಯಾ?</p>	5B2	5B1 & 5B2	Point to Picture 5B1 & 5B2

3.	<p>gombe oDedoitu (G)</p> <p>gombe yaake oDitiya? (A)</p>	<p>ಗೊಂಬೆ ಒಡೆದೋಯಿತು</p> <p>ಗೊಂಬೆ ಯಾಕೆ ಒಡಿತೀಯಾ?</p>	5B3	5B3 & 5B4	Point to Picture 5B3 & 5B4
4.	<p>miinu niiralli ijuttade (N)</p> <p>miinu niiralli ijuttade? (S)</p>	<p>ಮೀನು ನೀರಲ್ಲಿ ಈಜುತ್ತದೆ</p> <p>ಮೀನು ನೀರಲ್ಲಿ ಈಜುತ್ತದೆ</p>	5B4	3B3 & 5B4	Point to Picture 5B3 & 5B4
5.	<p>hey, adanna muTTa baardu (F)</p> <p>idu gaaDi (N)</p>	<p>ಹೇ, ಅದನ್ನು ಮುಟ್ಟಬಾರದು</p> <p>ಇದು ಗಾಡಿ</p>	5B5	5B3 & 3B4	Point to Picture 5B3 & 5B4

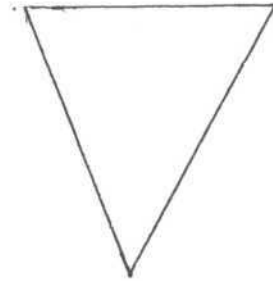
6.	<p>uuTa maaDooke horage hoogtiivi (H)</p> <p>amma eeTu koTTru (S)</p>	<p>ಊಟ ಮಾಡೋಕೆ ಹೊರಗೆ ಹೋಗ್ತೀವಿ.</p> <p>ಅಮ್ಮ ಏಟು ಕೊಟ್ಟು</p>	5B6	5B3 & 5B4	Point to Picture 5B3 & 5B4
7.	<p>niinu horage hoogo (A)</p> <p>Hey santa bartiddaane(S)</p>	<p>ನೀನು ಹೊರಗೆ ಹೋಗು</p> <p>ಹೇ ಸಂತ ಬರಿದ್ದಾನೆ</p>	5B7	5B3 & 5B4	Point to Picture 5B3 & 5B4
8.	<p>nanna hattira hosa angi illa (G)</p> <p>nanage kaalu nooyuttide (G)</p>	<p>ನನ್ನ ಹತ್ತಿರ ಹೊಸ ಅಂಗಿ ಇಲ್ಲ</p> <p>ನನಗೆ ಕಾಲು ನೋಯುತ್ತಿದೆ</p>	5B8	5B1 & 5B2	Point to Picture 5B1 & 5B2

9.	<p>nanna saamaanu muTTa baardu (A)</p> <p>niinu jooragi maataaDa beeDa (F)</p>	<p>ನನ್ನ ಸಾಮಾನು ಮುಟ್ಟಬಾರದು</p> <p>ನೀನು ಜೋರಾಗಿ ಮಾತಾಡ ಬೇಡ</p>	5B9	5B3 & 5B4	Point to Picture 5B3 & 5B4
10.	<p>sumne kiruchabeeDa</p> <p>niinu keLage kuutko (A)</p>	<p>ಸುಮ್ಮೆ ಕಿರುಚ್ ಬೇಡ</p> <p>ನೀನು ಕೆಲಗೆ ಕೂತ್ಕೊ</p>	5B10	5B1&5B2	Point to Picture 5B1 & 5B2

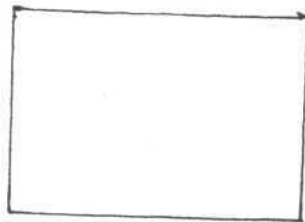
Note: Randomize and Repeat the steps until the child performs with 80% accuracy and then proceed to the testing phase 5B



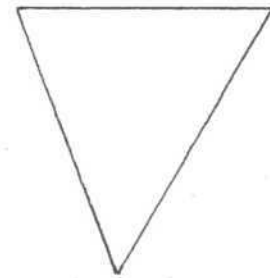
5B1



5B2



5B3



5B4

Testing Phase VB

The purpose of this testing phase is to test the child's ability to discriminate different emotional sentences, which differ in their pitch contour.

Instruction:

Play the audiocassette No: 5B (5B 11 to 5B20). Encourage the child to listen to different emotional sentences uttered by the model speaker and which differ in their pitch direction. Ask the child to perform the task, as indicated in Table 49.

Table 49: Stimuli for Testing phase VB

{Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief, S= Suiprise)

SI. No.	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Expected response Mark 'V' if the emotions conveyed are same and mark ' x ' if they are different	Score 1= correct response 0= no / incorrect response
1.	<p>naanu aiskriim tinnuttini (H)</p> <p>nanage bahumaana saktu (H)</p>	<p>ನಾನು ಐಸ್ ಕ್ರೀಂ ತಿನ್ನುತ್ತೀನಿ</p> <p>ನನಗೆ ಬಹುಮಾನ ಸಿಕ್ಕು</p>	5B11		
2.	<p>nanage kaalu noyuttide (G)</p> <p>niinu keLage kuutko (A)</p>	<p>ನನಗೆ ಕಾಲು ನೋಯುತ್ತಿದೆ</p> <p>ನೀನು ಕೆಳಗೆ ಕೂತ್ಕೊ</p>	5B12		

3.	<p>miinu niiralli iijuttade (N)</p> <p>nanage idu nambooke aagtaa illa (S)</p>	<p>ಮೀನು ನೀರಲ್ಲಿ ಈಜುತ್ತದೆ</p> <p>ನನಗೆ ಇದು ಸಂಬೋಕೆ ಆಗ್ತಾ ಇಲ್ಲ</p>	5B 13		
4.	<p>amma nanage hoDiibeeDi(F)</p> <p>niinu horage hoogo (A)</p>	<p>ಅಮ್ಮ ನನಗೆ ಹೊಡಿಬೇಡಿ</p> <p>ನೀನು ಹೊರಗೆ ಹೋಗು</p>	5B 14		
5.	<p>nanage bahumaana sigutta(S)</p> <p>gombe yaake oDitiiyaa?(A)</p>	<p>ನನಗೆ ಬಹುಮಾನ ಸಿಗುತ್ತಾ?</p> <p>ಗೊಂಬೆ ಯಾಕೆ ಒಡೀತೀಯಾ?</p>	5B 15		

6.	<p>ajji, nanage gombe koTTru (H)</p> <p>niinu jooraaagi maataaD beeDa (F)</p>	<p>ಅಜ್ಜಿ ನನಗೆ ಗೊಂಬೆ ಕೊಟ್ಟರು</p> <p>ನೀನು ಜೋರಾಗಿ ಮಾತಾಡಬೇಡ</p>	5B 16		
7.	<p>nanna tamma bidbiTTa (G)</p> <p>nanna tamma bidbiTTA (G)</p>	<p>ನನ್ನ ತಮ್ಮ ಬಿದ್ ಬಿಟ್ಟು</p> <p>ನನ್ನ ತಮ್ಮ ಬಿದ್ ಬಿಟ್ಟನಾ?</p>	5B17		
8.	<p>ii gombe cennagide (S)</p> <p>ii gombe cennagide (H)</p>	<p>ಈ ಗೊಂಬೆ ಚೆನ್ನಾಗಿದೆ</p> <p>ಈ ಗೊಂಬೆ ಚೆನ್ನಾಗಿದೆ</p>	5B 18		

9.	<p>idu doDDA pustaka (N)</p> <p>idu haLadi baNNA (N)</p>	<p>ಇದು ದೊಡ್ಡ ಪುಸ್ತಕ</p> <p>ಇದು ಹಳದಿ ಬಣ್ಣ</p>	5B 19		
10	<p>nanna saamanu muTTa baardu (A)</p> <p>nanna saamaanu muTTa baardu (A)</p>	<p>ನನ್ನ ಸಾಮಾನು ಮುಟ್ಟ ಬಾರದು</p> <p>ನನ್ನ ಸಾಮಾನು ಮುಟ್ಟ ಬಾರದು</p>	5B20		
Total score					

Criteria: 80% correct responses is the criteria level to move to the next module. Repeat the training phase, until the criterion level is successfully reached.

MODULE VC: Identification of different emotional sentences

Aim: **To train the child to** identify different emotions conveyed through sentences uttered by the model speaker.

Training Phase: VC

The purpose of this training phase is to train the child to identify different primary emotions in the voice of the model speaker when conveyed through sentences.



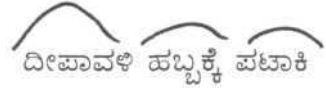







Instruction:


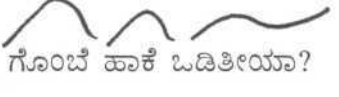



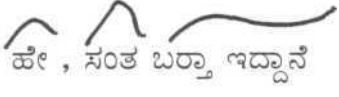
Play the audiocassette No.5C (5C1 to 5C10). Encourage the child to listen to the emotional sentences uttered with appropriate pitch direction by the model speaker. Train the child to perform the task as indicated in the Table 54.

Table 50: Stimuli for training phase VC

(Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief, S= Surprise)

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained
1.	ajji nanage gombe koTTru (H)	ಅಜ್ಜಿ ನನಗೆ ಗೊಂಬೆ ಕೊಟ್ಟರು	5C-1	5C1,5C2, 5C3, 5C4, 5C5 and 5C6	Train to choose picture 5C-2
2.	nanna tamma keLagaDe bidDa(G)	ನನ್ನ ತಮ್ಮ ಕೆಳಗಡೆ ಬಿದ್ದು	5C-2	5C1.5C2, 5C3, 5C4, 5C5 and 5C6	Train to choose picture 5C-1
3.	niinu horage hoogo (A)	ನೀನು ಹೊರಗೆ ಹೋಗು	5C-3	5C1.5C2, 5C3.5C4, 5C5 and 5C6	Train to choose picture 5C-3

4.	 <p>diipaavaLi habbakke paTaaki</p>  <p>hoDitaare (N)</p>	 <p>ದೀಪಾವಳಿ ಹಬ್ಬಕ್ಕೆ ಪಟಾಕಿ</p>  <p>ಹೊಡಿತಾರೆ</p>	5C-4	5C1.5C2, 5C3, 5C4, 5C5 and 5C6	Train to choose picture 5C-4
5.	 <p>nanage Bahumaana sigutta(S)</p>	 <p>ನನಗೆ ಬಹುಮಾನ ಸಿಗುತ್ತಾ?</p>	5C-5	5C1.5C2, 5C3, 5C4, 5C5and5C6	Train to choose picture 5C-5
6.	 <p>adannu muTTa baardu (F)</p>	 <p>ಅದನ್ನು ಮುಟ್ಟಿ ಬಾರದು</p>	5C-6	5C1, 5C2, 5C3, 5C4, 5C5 and 5C6	Train to choose picture 5C-6
7.	 <p>niinu jooraagi maataaD beeDa(F)</p>	 <p>ನೀನು ಜೋರಾಗಿ ಮಾತಾಡ್ ಬೇಡ</p>	5C-7	5C1.5C2, 5C3, 5C4, 5C5 and 5C6	Train to choose picture 5C-6

8	 <p>gombe yaake oDitiya ? (A)</p>	 <p>ಗೊಂಬೆ ಹಾಕೆ ಒಡಿತೀಯಾ?</p>	5C-8	5C1,5C2, 5C3, 5C4, 5C5 and 5C6	Train to choose picture 5C-3
9.	 <p>nanage bahumaana sikkallilla (G)</p>	 <p>ನನಗೆ ಬಹುಮಾನ ಸಿಕ್ಕಲಿಲ್ಲ</p>	5C-9	5C1,5C2,5C3,5C4, 5C5 and 5C6	Train to choose picture 5C-1
10.	 <p>hey, santa Bartaa idaane(S)</p>	 <p>ಹೇ , ಸಂತ ಬರ್ರಾ ಇದ್ದಾನೆ</p>	5C-10	5C1,5C2,5C3,5C4, 5C5 and 5C6	Train to choose picture 5C-5

Note: Randomize and Repeat the steps until the child performs with 80% accuracy ;ind then proceed to the testing phase 5C



5C 1



5C 2



5C 3



5C 4



5C 5



5C 6

Testing Phase VC






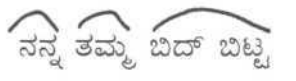
The purpose of this testing phase is to test the child's ability to identify different emotions conveyed through sentences uttered by the model speaker.

Instruction:

Play the audiocassette No: 5C (5C 11 to 5C20). Encourage the child to listen to the emotional sentences uttered with appropriate terminal pitch direction by the model speaker. Train the child to perform the task as indicated in the Table 51.

Table 51: Stimuli for Testing phase VC

{Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief, S= Surprise}

Sl.No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Expected response (choose an appropriate picture)	Score 1= correct response 0= no / incorrect response
1.	 idannu nanage koDttiddiyaa (S)	 ಇದನ್ನು ನನಗೆ ಕೊಡ್ತಿದ್ದೀಯಾ?	5C 11	5C1,5C%, 5C9, 5C10, 5C11 and 5C12	Should choose picture 5C-8	
2.	 ii gombe cennaagide (H)	 ಈ ಗೊಂಬೆ ಚನ್ನಾಗಿದೆ	5C 12	5C7, 5C8, 5C9, 5C10, 5C11 and 5C12	Should choose picture 5C-10	
3.	 nanna tamma bidbiTTa (G)	 ನನ್ನ ತಮ್ಮ ಬಿದ್ ಬಿಟ್ಟ	5C13	5C7, 5C8, 5C9, 5C10, 5C11 and 5C12	Should choose picture 5C-12	

4.	avanu huDuga (N)	ಅವನು ಹುಡುಗ	5C15	5C7, 5C8, 5C9, 5C10, 5C11 and 5C12	Should choose picture 5C-7	
5.	adannu muTTa baardu (F)	ಅದನ್ನು ಮುಟ್ಟಿ ಬಾರದು	5 15	5C7, 5C8, 5C9, 5C10, 5C11 and 5C12	Should choose picture 5C-9	
6.	adannu muTTa baardu (A)	ಅದನ್ನು ಮುಟ್ಟಿ ಬಾರದು	5C16	5C7, 5C8, 5C9, 5C10, 5C11 and 5C12	Should choose picture 5C-11	
7.	hakki haaruttide (N)	ಹಕ್ಕಿ ಹಾರುತ್ತಿದೆ	5C 17	5C7, 5C8, 5C9, 5C10, 5C11and 5C12	Should choose picture 5C-7	

8	nanna hattira hosa angi illa (G)	ನನ್ನ ಹತ್ತಿರ ಹೊಸ ಅಂಗಿ ಇಲ್ಲ	5C 18	5C7, 5C8, 5C9, 5C10, 5C11 and 5C12	Should choose picture 5C-12	
9.	Hey, santa barta iddaane (S)	ಹೇ ಸಂತ ಬರ್ರಾ ಇದ್ದಾನೆ	5C 19	5C7, 5C8, 5C9, 5C10, 5C11 and 5C12	Should choose picture 5C-8	
10.	amma nanage hoDii beDi	ಅಮ್ಮ ನನಗೆ ಹೊಡಿಬೇಡಿ	5C20	5C7, 5C8, 5C9, 5C10, 5C11 and 5C12	Should choose picture 5C-9	
					Total score	

Criteria: (80%) correct responses is the criteria level to move to the next module. Repeat the training phase, until the criterion level is successfully reached.



5C 7



5C 8



5C 9



5C 10



5C 11



5C 12

SUBSECTION II

PRODUCTION OF EMOTIONAL SENTENCES

The goal of this subsection is to train the child to produce different emotional sentences with appropriate pitch direction. There is only 1 module, in this subsection.

Module 5D: Production of Emotional sentences

MODULE VD: Production of Emotional Sentences

Aim : To train the child to produce different emotional sentences with appropriate pitch contours. There is a training phase and two testing phases.

Training Phase: 5D


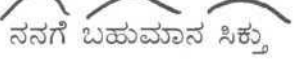






The purpose of this training phase is to train the child to produce different emotional sentences with appropriate terminal pitch contour. The techniques, which can be used to train to produce pitch contours, are imitation, visual, tactile, auditory cues and motor movement.

Instruction:

Play the audiocassette No.5D (5D1 to 5D10). Encourage the child to listen to the emotional sentences uttered by the model speaker. Train the child to perform the task as indicated in the Table 52.

Table 52: Stimuli for training phase VD

{Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief, S= Surprise}

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Task to be trained
1.	 nanage bahumaana saktu (H)	 ನನಗೆ ಬಹುಮಾನ ಸಿಕ್ಕು	5D 1	5D 1	Train the child to react when hurt/scared and imitate
2.	 nanage idu maaDooke aagalla (G)	 ನನಗೆ ಇದು ಮಾಡೋಕೆ ಆಗಲ್ಲ	5D2	5D2	Train to react when bored/tried and also train to imitate
3.	 nanage idu maaDooke aagalla (A)	 ನನಗೆ ಇದು ಮಾಡೋಕೆ ಆಗಲ್ಲ	5D3	5D3	Train to imitate the model speaker
4.	 adannu muTTa baardu (A)	 ಅದನ್ನು ಮುಟ್ಟಿ ಬಾರದು	5D4	5D3	Train to imitate the model speaker

5.	adannu muTTa baardu (F)	ಅದನ್ನು ಮುಟ್ಟ ಬಾರದು	5D5	5D4	Train to imitate the model speaker
6.	idannu nanage koDttiddiia?(S)	ಇದನ್ನು ನನಗೆ ಕೊಡ್ತಿದ್ದೀಯಾ?	5D6	5D5	Train to imitate the model speaker
7.	miinu niiralli iijuttade (N)	ಮೀನು ನೀರಲ್ಲಿ ಈಜುತ್ತದೆ	5D7	5D6	Train to imitate the model speaker
8	miinu niiralli iijuttadaa?(S)	ಮೀನು ನೀರಲ್ಲಿ ಈಜುತ್ತದಾ?	5D8	5D5	Train to imitate the model speaker
9.	niinu jooraagi maataaDa beeDa (F)	ನೀನು ಜೋರಾಗಿ ಮಾತಾಡ ಬೇಡ	5D9	5D4	Train to imitate the model speaker
10.	naanu aiskriim tinnuttini (H)	ನಾನು ಐಸ್ ಕ್ರೀಂ ತಿನ್ನುತ್ತೀನಿ	5D10	5D1	Train to imitate the model speaker

Note: Randomize and Repeat the steps until the child performs with 80% accuracy **and** then proceed to the testing phase 5D.



5D 1



5D 2



5D 3



5D 4



5D 5



5D 6

Testing Phase VD

The purpose of this testing phase is to test the child's ability to produce different emotional sentences with appropriate intonation contour.

This Testing phase consists of 2 parts




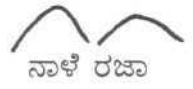




Part I:

Instruction:

The child has to listen to voice of model speaker recorded in the audiocassette No.5D (511 to 5D20) and imitate the model speaker as indicated in Table 53. Appropriate line drawing should be given as a cue if necessary.

Table 53: Stimuli for Testing phase VD - Part I

{Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief, S= Surprise}

Sl. No	Utterances represented in IPA	Utterances represented in Kannada	Cassette reference	Picture reference	Expected response (imitate the model speakers)	Score 1= correct response 0= no / incorrect response
1.	 naaLe raja (N)	 ನಾಳೆ ರಜಾ	5D 11	5D7		
2.	 naaLe raja (H)	 ನಾಳೆ ರಜಾ	5D12	5D8		
3.	 naaLe raja (G)	 ನಾಳೆ ರಜಾ	5D13	5D9		
4.	 naale rajaana ? (s)	 ನಾಳೆ ರಜಾನಾ?	5D 14	5D10		

5.	naanu allige baralla (F)	ನಾನು ಅಲ್ಲಿಗೆ ಬರಲ್ಲ	5D 15	5D 11		
6.	naanu allige baralla (A)	ನಾನು ಅಲ್ಲಿಗೆ ಬರಲ್ಲ	5D 16	5D 12		
7.	nanna hattira hosa angi illa (G)	ನನ್ನ ಹತ್ತಿರ ಹೊಸ ಅಂಗಿ ಇಲ್ಲ	5D17	5D9		
8	gombe yaake oDettiiya (A)	ಗೊಂಬೆ ಯಾಕೆ ಒಡತಿಯಾ?	5D 18	5D 12		
9.	gombe oDedoitu (S)	ಗೊಂಬೆ ಒಡೆದೋಯ್ತು	5D19	5D10		
10.	ninna missu ninge baitaare (F)	ನಿನ್ನ ಮಿಸ್ ನಿನಗೆ ಬೈತಾರೆ	5D20	5D11		
Total score						

Criteria: 80% correct responses is the criteria level to move to the next module. Repeat the testing phase, until the criterion level is successfully reached.



5D-7



5D-8



5D-9



5D-10



5D 11



5D 12

Part II :

Instruction:

The child should listen to the instruction provided by the model speaker, which is recorded in audiocassette No.5D (5D21 to 5D30), and perform the task accordingly as indicated in Table 54.

Table 54: Stimuli for Testing phase VD - Part II

(Note: H= Happy, A= Anger, F= Fear, N= Neutral, G= Grief, S= Surprise)

Sl. No	Instruction provided by the model speaker	Instruction provided by the model speaker represented in Kannada	Cassette reference	Expected response Perform the task as instructed	Score 1= correct response 0= no / incorrect response
1.	Say the sentence “adanna muTTa baardu” in angry emotion	"ಅದನ್ನು ಮುಟ್ಟಿ ಬಾರದು" ಎಂಬ ವಾಕ್ಯವನ್ನು ಕೋಪಗೊಂಡ ರೀತಿಯಲ್ಲಿ ಹೇಳಿ	5D 21		
2.	How would you say the sentence “adanna muTTa baardu” if you were scared/ fearful	"ಅದನ್ನು ಮುಟ್ಟಿ ಬಾರದು" ಎಂಬ ವಾಕ್ಯವನ್ನು ಭಯಗೊಂಡ ರೀತಿಯಲ್ಲಿ ಹೇಳಿ	5D 22		
3.	Say the sentence “niinu keLage kuutko in angry emotion	"ನೀನು ಕೆಳಗೆ ಕೂತ್ಕೊ" ಎಂಬ ವಾಕ್ಯವನ್ನು ಕೋಪಗೊಂಡ ರೀತಿಯಲ್ಲಿ ಹೇಳಿ:	5D 23		

4	Say the sentence "uuTa maaDooke horage hoogtini" in happy emotion	‘ಊಟ ಮಾಡೋಕೆ ಹೊರಗೆ ಹೋಗ್ತೀವಿ’ ಎಂಬ ವಾಕ್ಯವನ್ನು ಸಂತೋಷದ ರೀತಿಯಲ್ಲಿ ಹೇಳು :	5D 24		
5	Say the sentence "nanage kaalu noyuttide” in sad emotion	‘ನನಗೆ ಕಾಲು ನೋಯುತ್ತಿದೆ’ ಎಂಬ ವಾಕ್ಯವನ್ನು ದುಃಖದ ರೀತಿಯಲ್ಲಿ ಹೇಳಿ	5D 25		
6	Say the sentence “nanage bahumaana siguttaa?” with surprise emotion	"ನನಗೆ ಬಹುಮಾನ ಸಿಗುತ್ತಾ?" ಎಂಬ ವಾಕ್ಯವನ್ನು ಆಶ್ಚರ್ಯದ ರೀತಿಯಲ್ಲಿ ಹೇಳಿ	5D 26		
7	Say the sentence “idu haLadi baNNa" in neutral emotion	"ಇದು ಹಳದಿ ಬಣ್ಣ" ಎಂಬ ವಾಕ್ಯವನ್ನು ಸಾಮಾನ್ಯವಾದ ರೀತಿಯಲ್ಲಿ ಹೇಳಿ	5D 27		

8	Say the sentence "Hey Santa is coming!" in surprise emotion	"ಹೇ ಸಂತ ಬರ್ತಾ ಇದ್ದಾನೆ" ಎಂಬ ವಾಕ್ಯವನ್ನು ಆಶ್ಚರ್ಯಗೊಂಡ ರೀತಿಯಲ್ಲಿ ಹೇಳಿ	5D 28		
9.	Say the sentence "nanage bahumaana sikkallilla" in sad emotion	"ನನಗೆ ಬಹುಮಾನ ಸಿಕ್ಕಿಲ್ಲ" ಎಂಬ ವಾಕ್ಯವನ್ನು ದುಃಖದ ರೀತಿಯಲ್ಲಿ ಹೇಳಿ “	5D 29		
10.	Say the sentence "nanna aiji nanna manege bartaare" in happy emotion	"ನನ್ನ ಅಜ್ಜಿ ನನ್ನ ಮನೆಗೆ ಬರ್ತಾರೆ" ಎಂಬ ವಾಕ್ಯವನ್ನು ಸಂತೋಷದ ರೀತಿಯಲ್ಲಿ ಹೇಳಿ	5D 30		
Total score					

Criteria: (80%) correct responses is the criteria level to move to the next module. Repeat the training phase, until the criterion level is successfully reached.

SUMMARY

Manual for the correction of Intonation in Kannada speaking children with Speech and Language disorders (MCI-K) is developed for targeting the correction of intonation in Kannada speaking children with speech and language disorders. MCI-K is developed based on literature available on the general principles of treatment for intonation and the structure of intonation in Kannada. MCI-K is devised as a simple and easy-to-use manual for the speech - language pathologists. This manual provides step-by-step activities for the speech language pathologists. It is structured to improve the perception of pitch contours and its associated characteristics and also facilitate the production of utterances with appropriate intonation curves/contours.

Structure of the manual:

There are two components of this manual:

- Text of the manual
- Pre-recorded audio cassette with target speech elements uttered with appropriate intonation as per requirement, which is modeled by a female speaker.

It follows a sequential pattern through hierarchies of tasks, as follows:

- Gradation of exercises from sound level to syllables, to words and then to sentences.
- Use of simple to complex sentences.

The manual is divided into five main sections, and each of these sections are further divided into subsections to improve upon and train the child in *detection, discrimination* and *identification* of specific aspects of intonation that are addressed in the main sections.

The five main sections include:

- Section I : Pitch height
- Section II : Pitch variation
- Section III : Pitch contour/Intonation contour
- Section IV : Nucleus in a pitch contour
- Section V : Emotional Sentences

Each of the sections has 2 subsections

- Subsection I : Perception of the selected feature of Intonation
- Subsection II : Production of selected feature of Intonation

Subsection I in each of the sections generally consists of 3 modules, namely,

- Module A : Detection of the selected feature of Intonation
- Module B : Discrimination of the selected feature of Intonation
- Module C : Identification of the selected feature of Intonation

Subsection II in each of the sections generally consists of only 1 module, namely

- Module D : Production of Intonation

Each of the modules within the subsection incorporates:

- Training phase: during which the child is guided to perceive and produce the specific feature of an intonation contour. The training phase is followed by a testing phase.
- Testing phase: during which the child's ability to perform the skills that are trained is tested.

Clear instructions are given for each activity in the training and testing phases. The criterion level to proceed with training to next module during training phase and the success criteria in testing phase of each module is also specified. The manual consists of picture stimuli to aid in the perception and production of appropriate intonation contours during the training and testing phases within the various sections. The tasks and the test stimuli are recorded in audio cassettes. The audio cassettes consist of the voice/speech samples of a model speaker (female) who is selected for this task. The targeted activities/goals in each section and subsection are recorded by a model speaker. This will enable the clinician to guide the child to imitate or model the speech utterances of the model speaker with appropriate pitch control/intonation contour as required in the task.

The manual was administered on three children with Delayed Speech and Language for item validation. Subsequently, the instruction and the activities were modified in the manual. Hence MCI-K is an easy to use programmed approach meant

for correction of intonation in Kannada speaking children with Speech and Language disorders.

Recommendations:

- The manual can be tested and standardized on more number of clients with Speech and Language disorders.
- Similar manual can be developed in other Indian languages.
- A manual for correction of intonation can be developed exclusively for the use of adults with Speech and Language disorders.
- A manual can be developed to target the correction of intonation at the higher linguistic constituents such as paragraphs and discourses.

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