

**“AUDITORY LEARNING MANUAL FOR HEARING-IMPAIRED
INFANTS AND TODDLERS”**

Register No: A0390004

A Dissertation submitted in part fulfillment of
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**ALL INDIA INSTITUTE OF SPEECH AND HEARING
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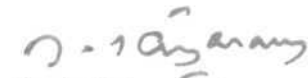
*"Dedicated to
my Dear Parents
without whom I am nowhere,
and
cute hearing-impaired kiddies"*

CERTIFICATE

This is to certify that this dissertation entitled "*Auditory learning manual for Infants and Toddlers*" is the bonafide work in part fulfillment for the degree of Master of Science (Audiology) of the student (Registration No. A0390004). 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.

Mysore

May, 2005


Prof. M. Jayaram

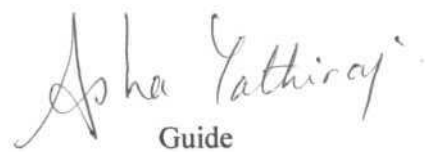
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CERTIFICATE

This is to certify that the dissertation entitled "*Auditory learning manual for Infants and Toddlers*" 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.



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DECLARATION

This is to certify that this dissertation entitled “*Auditory learning manual for hearing-impaired infants and toddlers*” is the result of my own study under the guidance of Dr. Asha Yathiraj, Reader & H.O.D., Department of Audiology, All India Institute of Speech and Hearing, Mysore, and has not been submitted in any other university for the award of any diploma or degree.

Mysore

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INTRODUCTION

Speech is the most common method used for communication. The hearing mechanism is the sense organ that is designed to perceive speech. Hence, individuals are dependent on the sense of hearing to adequately receive and perceive the complex network of the auditory stimuli, which comprise oral communication. Therefore, audition is considered as a natural modality for language learning (Boothroyd, 1978; Fry, 1978; Kretschmer & Kretschmer, 1978). Substantial evidence indicates that the newborn infant possess a functional auditory system, which allows the child to perceive auditory stimuli several weeks prior to birth (Eisenberg, Griffin, Coursin & Hunter, 1964; Johansson, Wedenberg & Westein, 1964). Rapid development and refinement of auditory processing skills takes place after birth (Eisenberg, 1970). This rapid emergence of auditory skills is crucial for the development of speech and language in infants.

Nober and Nober (1977) suggested that prerequisites of language development include cognitive and social schemes that are gradually combined into complex communicative sequences, during the sensorimotor development. Thus, a child learns about a speaker and listener's role through social interaction. Gleason (1985) found that the prosodic elements of language (e.g. pitch, intonation) are more important than the words. So it appears that the possession of normal hearing is necessary for the unassisted development of aural communication system.

The onset of a significant auditory impairment in an individual can seriously impede the ability to communicate (Erber & Greer, 1973). Hearing-impaired infants will limit their vocalizations both in variety and quantity, because auditory feedback and interaction with linguistic models is deficient and pleasure derived from kinesthetic feedback begins to wane (Nober & Nober, 1977).

Based on the critical role of audition in communication, aural rehabilitation represents an extremely important process whereby an individual's diminished ability to communicate as a result of a hearing loss can be sharpened and improved. One of the areas of aural rehabilitation, which has traditionally been included in this process, is "Auditory Training". Ling and Ling (1978) and Sanders (1993) viewed 'Auditory Training as an integral part of language and speech training. Ling (1984, as cited in Ling 1986) recommended the term 'auditory learning' rather than auditory training. This would enable the hearing impaired to refine their perception of acoustic events that naturally sound them. Thus, the essential of auditory learning is learning through listening, and the concept of helping children 'learn to listen' emerged (Beebe, Pearson & Koch, 1984).

The primary goal of auditory training is to maximize receptive communication abilities, including acquisition of more proficient speech and language skills, educational, vocational advancement and successful psychosocial adjustment. Several auditory training programs have been developed over the years, to improve listening skills. These include programs developed by Carhart (1947), which describes a systematic program

comprising of four stages (awareness, gross discrimination, and broad discriminations among speech patterns and finer discriminations for speech). Erber (1982) described a training program in terms of the linguistic units (sounds, syllables, words, phrases, sentences, and paragraphs) and a hierarchy of responses (awareness, discrimination, recognition, identification and comprehension) for older hearing-impaired children.

According to Lennenberg (1967), Marler (1970, cited in Dorman, 1999), Clopton and Winfield (1976, cited in Dorman, 1999), Johnson and Newport (1989, cited in Dorman, 1999), Newport (1990, cited in Dorman, 1999) beginning auditory-verbal practice at as early an age as possible is essential as the child's greatest facility for learning language occurs during the first two to three years of life. Normal language development provides the framework and justification for the structure of auditory-verbal therapy. Infants, toddlers and children learn language most efficiently through consistent and continual meaningful interaction in a supportive environment with sufficient caretaker (Menyuk, 1977; Krestschmer & Krestschmer, 1978; Ling, 1989; Ross, 1990).

Goals for infants and toddlers may include, drawing attention to sounds in environment, development of learning to listen sounds (Estabrooks & Shaw-Flemming, 1994, cited in Waltzman & Cohen, 2000) or beginning small conversations.

NEED FOR THE STUDY:

There is a need to develop auditory learning material for hearing impaired infants and toddlers. Such material is required since early identification of hearing impaired has received considerable importance in the past few decades. Evidence suggest that the child's best chances of developing speech and language are related to early identification of hearing loss and enrollment in a comprehensive early education program by 6 months of age (Northern & Downs, 1991; Apuzzo & Yoshinaga-Itano, 1995; Yoshinaga-Itano, Sedey, Coulter, Mehl, 1998). It has been noted that children who were identified early and had early initiation of intervention services (within the first year of life) had significantly better vocabulary, general language abilities, speech intelligibility and phoneme repertoire (Pipp-Siegel, Sedey, VanLeeuwen & Yoshinaga-Itano, 2003). Hence, hearing impairment should be identified at an early age and the child should be trained to listen and perceive auditory signals. Lenneberg (1967) persisted 'critical period' for language learning related to the maturation of the nervous system, predominantly from birth to five years, after which language learning is considered to progress more slowly. Northern and Downs (1984), viewed critical period, as the period during which auditory and language perception are formed. Early amplification and speech/language stimulation should facilitate normal or near normal communicative development in most hearing-impaired children. A manual on 'Auditory Learning' for very young children would help train hearing-impaired children utilize their residual hearing to the maximum, at a very early age. The manual having developed in other countries incorporate suprasegmental patterns that are not usually used in the Indian environment. It is essential that the manual be developed with speech sounds that incorporate suprasegmental patterns that are used

locally. A manual with meaningful use of phonemes would lead to better development of speech and language in the hearing-impaired.

OBJECTIVES:

- To develop the material for the auditory learning manual for infants and toddlers.
- Administer the developed manual on normal hearing children below 3 years.
- Check the usefulness of the manual by administering it on hearing-impaired children below 3 years of age.
- To make comparisons between the responses of normal and hearing-impaired children.

The following chapter provides a review regarding the development of auditory behaviors, speech and language in normal hearing children. An auditory learning manual, which deals with teaching listening, speech and language skills, should be based on normal development. The review also provides information regarding programs developed to impart training in auditory skills.

REVIEW OF LITERATURE

'Audition' is the most natural and efficient sensory modality for initial development of functional verbal communication skills during the first 3 years of life (Ling, 1976; Pollack, 1985). Elliot and Elliot (1964) confirmed that the human cochlea has normal functions as early as after the 20th week of gestation, which indicates that the fetus is physiologically prepared to respond to sound heard. Northern and Downs (1991), reported that at time of birth, the infant has actually been hearing sounds for at least 4 months. At birth the infant is able to discriminate his or her mother's voice. Before such discrimination the auditory system has preadapted to various acoustic discrimination of rhythm, intonation, frequency variation stress (suprasegmental aspects of speech), and phonetic components of speech (linguistic aspects). The hearing or hearing-impaired infant will actively engage listening in order to understand and influence the events in his or her environment. As early as 6 months the hearing infant can realize which acoustic cues are important for meaning (Kuhl, Williams, Laceria, Stevens, & Linoblom, 1992 as cited in Dowell, 1997).

Professionals involved in audiological rehabilitation of young hearing-impaired children require a broad base of knowledge about child development, speech acoustics that can enhance a child's listening and language development.

NORMAL DEVELOPMENT OF LISTENING ABILITY:

Pollack (1985) described the normal development of listening abilities in infants as beginning with auditory awareness and attention. This can be seen in the baby during the first 3 months after birth. Beginning at about 4 months of age, auditory discrimination and feedback begin to emerge. By about 9 months of age, the child is able to accurately identify the location of sound source at all angles from the ear (Northern & Downs, 1978). The last 3 months of the first year mark the development of more sophisticated auditory processing as the child begins to associate particular sounds and their sources and meanings. According to Pollack (1985) the key elements from this normal acquisition process are replicated in intervention with a hearing impaired child: detection, awareness, attention, and identification and associating sounds with meaning.

According to Rhoades (2000), both hard-of-hearing and deaf children must first become aware of sounds; they must then attend to those different sounds. Once a listening attitude is developed, they learn to recognize the sounds, to "know" their meaning (e.g., sound-object association). Finally, they can then react appropriately to the multitude of words they hear...they learn to understand our spoken language. Normally hearing children typically understand far more than they say. Children with hearing losses should be given that same due consideration. Rhoades (2000), keeping this aspect in view provided the below mentioned scale on the development of audition, auditory memory, and language comprehension in a baby.

Birth

- ✘ Exhibits startle reflex in response to sudden loud noises; will stiffen, quiver, blink, screw eyes up, fan out fingers and toes, or cry as a response
- ✘ Sensitive to a wide range of sounds, including prosodic and rhythmic cues
- ✘ Recognizes and prefers mother's voice; quiets if crying
- ✘ Sounds of different frequencies have different effects on the infant
- ✘ Low frequency sounds and rhythmic sounds have a calming effect
- ✘ Higher frequency sounds result in a more violent reaction
- ✘ Increases or decreases sucking in response to sound

Three Months

- ✘ Awareness of human speech; attends to voice
- ✘ Shows excitement at sound of approaching footsteps, running bath water, etc
- ✘ Awakens or quiets to sound of mother's voice
- ✘ Vocally responds to mother's voice
- ✘ Imitates own noises as he hears them - egs., *ooh, baba*
- ✘ Begins to localize sound by means of turning eyes toward the general sound source
- ✘ Begins to enjoy sound-making toys; listens to a bell near him
- ✘ Listens to music

Four Months

- ✘ Localizes sound by turning head toward general source of sound

- ✘ Searches for human voice

Five Months

- ✘ Localizes sound more specifically
- ✘ Distinguishes between friendly and angry voices, and reacts appropriately
- ✘ Reacts to music by cooing or stopping his cry
- ✘ Very interested in human voice
- ✘ Discriminates between sounds of strangers and familiar people

Six Months

- ✘ Specifically locates sound anywhere such as the bell that is running of sight
(downward localization develops before upward localization)
- ✘ Responds to human speech by smiling or vocalizing
- ✘ Turns immediately to mother's voice across the room
- ✘ Shows evidence of response to different emotional tones of mother's voice
- ✘ Responds to baby hearing tests at one and a half feet from each ear by correct visual localization, but may show slightly delayed responses
- ✘ Association of hearing with sound production is now evident, in that he repeats selected heard sounds

Eight Months

- ✘ Turns head and shoulders toward familiar sounds, even when he cannot see what is happening

- ✘ Begins to understand words in context
- ✘ Responds to a telephone ringing, a human voice, his own name, "*no-no*," "*bye-bye*"
- ✘ Enjoys games like *pat-a-cake* and *peek-a-boo*
- ✘ Looks at Daddy and other family members when named
- ✘ Raises arms when mother says, "*Come up*" and reaches toward child
- ✘ Responds more discriminatingly to adult verbalizations
- ✘ Listens with selective interest; an increase of a "listening attitude" to conversation
- ✘ Understands a few gestures and words for common items
- ✘ Responds when called to or when gestured to, such as "*Come here*," "*Want more?*"

One Year

- ✘ Jabbers in response to human voice
- ✘ Apt to cry when there is thunder
- ✘ May frown when scolded
- ✘ Enjoys listening to sounds and words
- ✘ His sound imitations indicate that he can hear the sounds and match them with his own sound production

- ✘ Responds to simple commands (at first, responds only when command is accompanied by gesture), such as giving a toy on request or going some place as directed
- ✘ Understands an assortment of action words (verbs) such as "*drink*", "*go*", "*come*", "*give*", as well as some simple directions such as "*wave bye bye*"
- ✘ No real understanding of questions is shown
- ✘ Interested in environmental noises beyond his immediate surroundings
- ✘ Likes jingles and rhymes
- ✘ Begins to recognize twelve or more objects when he hears the names of them
- ✘ Understands about 50 words

One-and-a-Half Years

- ✘ Echoes prominent or last word addressed to him
- ✘ Understands about 150-200 words
- ✘ Understands simple sentences
- ✘ Knows his/her own name
- ✘ Begins to understand prepositional phrases, but within the total unit, such as putting something in or on something
- ✘ Begins to follow directions and short series of commands such as "*Wipe the doll's nose*"
- ✘ Identifies simple pictures from names, e.g., finding a baby in a picture when asked to do so
- ✘ Points to own nose, ears, mouth, etc on request

- ✗ Points to objects when named
- ✗ Looks at correct picture as it is named

Two Years

- ✗ Shows interest in the sounds of radio or TV commercials
- ✗ Listens to reason of language
- ✗ Listens to simple stories
- ✗ Responds to command, “*Show me the --.*”
- ✗ Understands and answers simple “wh” questions, e.g., “*Where is your --?*”
- ✗ Responds to yes/no questions by shaking or nodding head
- ✗ Waits in response to “*just a minute.*”
- ✗ Identifies five body parts
- ✗ Understands family names by selecting appropriate pictures
- ✗ Understands the phrase, “*have candy after lunch*”
- ✗ Carries out 4 separate directions with a ball, egs. “*Give it to me.*” “*Put the ball on the block.*”
- ✗ Repeats two numbers, letters, or words
- ✗ Follows a direction with two critical elements
- ✗ Comprehension of vocabulary increases to an average of 300 words
- ✗ Responds differentially to directions involving prepositions: *in, on, under*
- ✗ Understands some action words by selecting appropriate pictures
- ✗ Understands the syntactic order of words when context, semantics, and prosody are coherent

Two-and-a-Half Years

- ✘ Enjoys listening to simple familiar stories read from a picture book
- ✘ When he hears pleasurable sounds, he reacts to them by running to look or by telling someone what he hears
- ✘ Responds to descriptive or locative information about things from pictures such as "*Show me the one that is up in the sky.*"
- ✘ Enjoys hearing and listening to songs
- ✘ Distinguishes between "*one*" and "*many*"
- ✘ Identifies object by use: *brush is for hair; spoon is for mouth*
- ✘ Understands approximately 500 words
- ✘ Follows simple directions, e.g., "*Sit here,*" "*Bring it to me*"
- ✘ Follows a series of two related commands, e.g., "*Pick up the ball and give it to me.*"
- ✘ Understands and responds to "what/where" questions, e.g., "*What do you hear with?*"
- ✘ Understands "*one*" and "*all*"
- ✘ Understands prepositions: *in, on, under, in front of, in back of, around*
- ✘ Understands "*just one block*" and can respond appropriately when instructed to "*give me just one block.*"
- ✘ Understands differences between sentences varying in syntax: "*Show me the car pushing the truck*" vs. "*The truck is pushing the car.*"
- ✘ Understands gross size difference: *big, little*
- ✘ Understands conjunction: *and*

- ✘ Understands variety of verbs, including concept of polar opposites: *come-go, run-stop, give-take, push-pull, up-down*
- ✘ Comprehends nearly all sentence structures

Three Years

- ✘ Carries out commands using two different prepositions
- ✘ Responds to two unrelated commands, e.g., "*Put your cup on the table and turn off the TV*"
- ✘ Listens eagerly to stories and demands his favorite ones over and over again
- ✘ Identifies the use of things in pictures such as "*Show me the one you wear.*"
- ✘ Answers simple questions (who, what, where?) and replies appropriately• with a word or gesture
- ✘ Begins to match simple sound tones
- ✘ Recognizes several melodies
- ✘ Understands approximately 900 - 1,200 words
- ✘ Knows "*big/little*" and "*in front of/behind*"
- ✘ Knows third-person pronouns, e.g., *he/she*
- ✘ Understands "*more*", e.g., "*more cats*"
- ✘ Understands regular past tense forms of verbs
- ✘ Understands articles: *a, the*
- ✘ Remembers three items of a story
- ✘ Recalls three numbers, letters, or words
- ✘ Follows a direction with three critical elements

- ✘ Repeats only first, second, or third item of a series
- ✘ Imitates a 5-7 syllable sentence based on short-term recollection
- ✘ Understands taking turns
- ✘ Understands most common adjectives
- ✘ Shows an interest in explanations of why and how

Four Years

- ✘ Pays attention to short stories and answers simple questions about them
- ✘ Listens to long stories
- ✘ Carries out, in order, a command of three parts such as "*Pick up the ball, put it on the table, and bring me the book.*"
- ✘ Carries out four separate commands using different prepositions: *in front of, beside, behind*
- ✘ Knows "*between/above/below/top/bottom*"
- ✘ Follows a four-step command; a direction with four critical elements
- ✘ Carries out more complex commands with 2-3 actions
- ✘ Understands and replies appropriately with a word or gesture to questions such as "*What do you do when you are sleepy?*" "*Which one is bigger?*"
- ✘ Comprehends time phrases: *all the time, all day, for two weeks*
- ✘ Understands irregular plurals, e.g., *child/children*
- ✘ Understands possessives: *dogs*
- ✘ Understands approximately 1500 – 2500 words
- ✘ Understands the number three, e.g., "*Give me three*"

- ✘ Imitates a 12-syllable, 9-word sentence, based on short-term recollection
- ✘ Remembers four items of a story
- ✘ Repeats two numbers backwards
- ✘ Recalls four numbers, letters, or words
- ✘ Identifies four colors
- ✘ Understands dependent clause: *if, because, when, why*
- ✘ Hears and understands most of what is said at home and school

Five Years

- ✘ Loves stories
- ✘ Comprehends more complex time phrases: *for a long time, for years, a whole week, in the meantime, two things at once*
- ✘ Knows heavy/light, loud/soft, like/unlike, long/short.
- ✘ Understands comparatives and superlatives: *tall/taller/tallest, same/more/less, and most/least, several/few, some/many, before/after, now/later*
- ✘ Understands all pronouns and contractions
- ✘ Understands "*the opposite of – is –*"
- ✘ Understands "*zero*" represents nothing
- ✘ Points to coin when named
- ✘ Understands 2,800 – 13,000 words
- ✘ Imitates a 14-syllable sentence, based on short-term recollection.
- ✘ Remembers five items of a story
- ✘ Recalls five numbers, letters, or words

- ✘ Responds correctly to complicated sentences, but may still be confused by long complex sentences, particularly those contains compound clauses

Six Years

- ✘ Knows right and left of his own body
- ✘ Understands approximately 20,000+ words
- ✘ Understands irregular comparatives, e.g., *good/better/best*
- ✘ Responds appropriately to numbers such as "*Give me four pennies.*"
- ✘ Imitates a 16-syllable sentence, based on short-term recollection
- ✘ Remembers six items of a story
- ✘ Repeats three numbers backwards

Thus, the above scale provides information regarding the development of listening and language skills from birth up to six years of age. However, development in terms of responses to specific phonemes or production of specific phonemes is not provided.

A developmental schedule has been provided by 'Children's Medical Services', which has adapted from Ear Infections and Language Development (n.d). And Developmental Index of Auditory and Listening (n.d). Table 1 gives the development

from birth to 2 - 3 years not just focusing on auditory development, but also on speech development and language development.

Table 1: “Children’s Medical Services” developmental schedule

Approximate Age	Auditory development	Language development	Speech development
0 – 28 days	Startle response; attends to music and voice, soothed by parent’s voice; some will synchronize body movements to Speech patterns; enjoys time “enface” position; hears caregiver before being picked up.		
1 – 3 months	Looks for sound source; associates sound with movement; enjoys parent’s	Startles to loud sounds; smiles when spoken to;	Makes pleasure sounds (cooing, gooing); cries

	voice; attends to noise makers; imitates vowel sounds.	seems to recognize parent voice and quiets if crying; increases or decreases sucking behavior in response to sound.	differently for different needs. Smiles when sees known caregiver.
4 – 7 months	Uses toys/objects to make sounds; plays with noise makers; pays attention to music; enjoys rhythm games; responds to changes in tone of caregiver voice; notices toys that make sound; moves eyes in direction of sounds.	Recognizes some words; responds to verbal commands (bye-bye); learning to recognize name.	Babbling sounds more speech-like with many different sounds, including p, b, and m. Vocalizes excitement and displeasure; makes gurgling sounds when left alone and when playing with caregivers
8 – 12 months	Attends to TV; localizes to sounds/voices; enjoys rhymes and songs; enjoys	Recognizes words for common items like “cup,” “shoe,”	Babbling has both long and short groups of sounds

	<p>hiding game;</p> <p>responds to vocal games</p> <p>(e.g., So Big!!, Peek-a-boo)</p>	<p>“Juice.” Begins to respond to requests.</p> <p>Understands NO</p>	<p>such as “tata upup bibibibi.” Uses speech or non-crying sounds to get and keep attention.</p> <p>Imitates different speech sounds. Has 1 or 2 words (no, dada, mama) although they may not be clear.</p>
1 – 2 years	<p>Dances to music; sees parent answer</p> <p>telephone/doorbell;</p> <p>answers to name call;</p> <p>listens to simple stories, songs, and rhymes.</p>	<p>Points to pictures in a book when named; points to a few body parts when asked;</p> <p>follows simple commands and understands simple questions (“Roll the ball” “Where’s your shoe?”)</p>	<p>Says more words every month. Uses some 1-2 word questions (“Where kitty?”). Puts 2 words together (“More cookie”).</p> <p>Uses many different consonant sounds at the beginning of words.</p>
2 – 3 years	<p>Listens on telephone;</p>	<p>Understands</p>	<p>Has a word for</p>

	dances to music; listens to story in a group; goes with parent to answer door; awakens to smoke detector	differences in meaning (“go/stop,” “up/down”). ollows two requests (“Get the book and put it on the table”). Attends to travel activities and communication.	almost everything. Uses 2-3 word “sentences” to talk about and ask for things. Speech is understood by familiar listeners most of the time. Often asks for or directs attention to objects by naming them.
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Unlike the schedule provided by Rhoades (2000), this scale does give a development of few phonemes. However, it does not give in-depth information in terms of perception or production of phonemes.

NORMAL DEVELOPMENT OF SPEECH PRODUCTION:

Several experts in the past have also described speech and language acquisition in children. Studies by Irwin (1947) have indicated that a normal hearing child is able to produce phonemes by the age of eight months. Back consonant (velars and glottals) are predominant at 5-6 months of age, with some of the labials (front) consonants entering in. At 9-10 months, the glottal sound decrease and the alveolar sounds are frequently used.

During first nine months, the infant’s speech behaviour has been described as cooing and babbling. The sound generally consists of velars or back consonantal sounds.

According to Trevarthen (1975) the infant’s first use of sounds in a repetitive manner indicates the time at which the auditory feedback loop has become effective. The infant begins to practice speech as young as 2 months. From 2 to 4 months these sounds are vowel-like. The sequence of use of vowel is presumably from the middle ‘schwa’ sound / ae / to front and back vowels (Menyuk, 1972). By 5 months the consonant vowel sequence begins. Menyuk (1972) explains this sequence of selection probably due to ease of production.

Shames, Wiig, and Secord (1998), has given developmental schedule for speech. Unlike the developmental schedule by “Children’s medical Services” this schedule has given detail information on the particular phonemes that are produced.

Table 2: Development of speech

Age	Stages	Speech development
0 – 1 month	Newborn	Reflexive behaviour, suck-swallow pattern, non differential crying, vegetative sounds with phonation but incomplete resonance
2 – 3 months	Cooing	Definite stop and start to oral movement. Velar to uvular or near closure. Back consonants and back and

		middle vowels with incomplete resonance.
4 – 6 months	Babbling	Greater independent control of tongue. Prolonged strings of sounds. More lip or labial sounds. Experiments with sounds.
6 – 10 months	Reduplication babbling	Repetitive syllable production. Increased lip control. Labial and alveolar plosives /p, b, t, d/, nasals, /j/, but not fully formed.
11 – 14 months	Phonetically consistent forms and first words	Elevates tongue tip. Variegated babbling. Intonational pattern. Phonetically consistent forms-sound-meaning relationships. Predominance of /m, w, b, p/.
2 years		First words primarily CV, VC, CVCV reduplicated, and CVCV. Has acquired /p, h, w, m, n, b, k, g/.
3 years		Has acquired / d, f, j, t, n, s/, all vowels.
4 years		Has acquired / v, sh, ch, z/
5 years		Has acquired / r, l, th, n,dz, /
6 years		Has acquired /z/, consonant blends.

Various researchers have given the typical sequence of language development in hearing children similar to that of Rhoades Auditory development scale. These studies have focused more on language development rather than auditory perception. Mc Anally, Rose & Quigley (1994), have given overview of language development in terms specific vocabulary for perception and production, along with different stages for developing

grammatical category. Stark (1983), has characterized the vocal behaviours in 6 levels discussing the kind of production from 0 – 24 months. Dale (1972), described studies of phoneme development in children. The development is more in term of production for children who are close to 2 years of age. The perception and production of younger children has not been described. Similarly, Menyuk (1971), Tranthan and Pederson (1976), Northern and Downs (1991) and Brownler (1998) have given their view on phonological development. These authors also have not explained the specific speech sounds that are perceived and produced.

Imitation:

Bower (1976) noted that imitation can occur at a young age and has photographed tongue-protrusion imitation in 6-day-old infant. Films of babies reveal a kind of ‘pre speech’ activity consisting of rudimentary form of speaking by movements of the lips and tongue, with or without sounds. Even in the second month the baby may imitate a mouth movement of a mother or a protrusion of her tongue, but this kind of behaviour is most often seen after 6 months of age and only after the act is pointedly repeated in a teacher-like way. Meltzoff and Moore (1977) have also described both manual and facial imitations in newborn babies.

Although the infant is able to differentiate various speech sounds in the first few months of life, production of the sounds does not develop at the same rate.

Berko and Brown (1960) describe the lag between the perception of differences in speech signals and the production of those speech sounds.

PERCEPTION OF SUPRASEGMENTS BY INFANTS:

At birth the infant is able to discriminate his/her mother's voice in preference to the voice of another female (Northern & Downs, 1991). Kimura (1964) has shown that the supra segmental aspects of speech are handled by the right brain, while Shankeveiler and Studdert-Kennedy (1970) have reported that the segmental, linguistic aspects are located in the left-brain. Sanders (1977) reported that neonates move in precise and sustained segments of movements that are synchronous with the articulated structure of speech. Morse (1972) showed that 25 infants, 40-45 days old, could differentiate changes between phonemes with a falling and those with a rising fundamental contour. Further perception of rhythm in 2 months old infants was demonstrated by Demany, Mckenzie, Vurpillot, (1977, cited in Northern & Downs, 1991). Spring and Dale (1977) showed that 1-4 months old babies could discriminate linguistic stress as well as location, fundamental frequency, intensity and duration. Thus, the entire gamut of suprasegmental aspects of speech seems to be available to the infant at birth.

However, this is not to decry the importance of the suprasegmental aspects of speech in learning its intelligibility. Language learning is not confined to the segmental aspects of speech. Rhythm, intonation, duration and stress are extremely important in understanding multiple meaning of words, as well as to the meanings of homophones. Many words and phrase contain multiple meaning that is made clear only by intonation,

rhythm, duration and stress. Bryant, Bradley, MacLean and Crossland (1989) have reported that songs and rhymes provide meaningful opportunities to enhance the supra segmental structure of spoken language for children with all degrees of hearing-impairment. The sense of rhymes and knowledge of nursery rhymes that young children develop also has been determined to be an important factor in their success in learning audition.

INITIAL DEVELOPMENT OF SPEECH AND LANGUAGE IN HEARING IMPAIRED CHILDREN:

Hearing-Impaired babies, even those with profound deficits of hearing, do not differ from their hearing peers in their vocalization in the first 5 to 6 months of life (Northern & Downs, 1974). Cooing, gurgling, and even babbling appear to be innately preprogrammed. However, beyond this initial stage, auditory feedback from self and others is critical to the activation and shaping of early linguistic behavior.

Markarinee, Cairns, Butterfield, (1981) compared the vocalization of a deaf infant with those of normal infant from birth to 32 weeks. They found that during this time the speech like sounds increases and the non-speech sounds decreases in the normal infants, while the deaf child's speech like and non-speech production both declines with age and showed greater variability.

Stoel-Grammon and Otomo (1986) noted that although hearing-impaired babies babbling development was different from that of the normal hearing infants, the magnitude of difference appeared to be smaller for those with moderate hearing loss

compared with those with severe to profound hearing loss. It is necessary that professionals who serve young children should be familiar with normal development patterns so that they can recognize children with atypical communication skills.

NEED FOR EARLY IDENTIFICATION AND INTERVENTION:

Downs (1986) has assured that no other group has more to gain from early identification than do those with a hearing disability. The importance is recognized in the Healthy people 2000 which established the priority in identification of infants with a hearing disability by 1 year of age (U.S Department of health and Human Services 1990, cited in Hayes & Northern, 1996).

The auditory intervention must begin as early as possible in the hearing impaired child's life. Whetnall (1958) refers to the first year of life as 'readiness to listen' year. Fry and Whetnall (1954) say that the cortical centers can readily learn to discriminate between auditory stimuli during the first 3 years of life, whereas after this period auditory learning becomes increasingly more difficult. During this time frame (0 to 3 years of age) the auditory organization and intersensory patterning that under grid oral language appear to develop. One explanation offered is the neural plasticity of the organism is lost, seriously impeding or even preventing listening skills from developing (Sanders, 1977). Some supporting evidence from sensory deprivation studies (Tees, 1967) suggests functional atrophy in cases of early deprivation of sound.

Bronfenbrenner (1975) reported on an extensive longitudinal study of early-intervention programs. He concluded that active involvement of parents in the preschool

management of their children from the programs that were mainly child centered. The superior performance of children from family-centered program were reflected not only during the pre-school period, but continued into the early school years. By contrast, children from preschool programs that trained the child but did not emphasize, or in some cases even include, parent involvement, demonstrated that early gains tends to be lost on entry to school. Similar conclusions have been reached by Gordon (1976, cited in Sanders 1982), Radin (1972, cited in Sanders 1982), Schaefer (1972, cited in Sanders 1982), and Gilmer, Miller & Gray (1970, cited in Sanders 1982).

Ample evidence shows that deprivation can produce behavioral, chemical and structural changes in the auditory system (Ruber & Rapin, 1980) and also in brainstem (Webster, 1983). These results have been interpreted to suggest that there is a critical period for the acquisition of auditory learning skills and hearing loss could cause damage to the ability to process the auditory input. The earlier and the more sever the deprivation, the greater will be the consequent effects.

EVIDENCES TO SUPPORT EARLY IDENTIFICATION:

One of the most important hypotheses about language acquisition is the critical period. According to Lenneberg (1967), the critical period of language development is the period from around two years of age to thirteen or the onset of puberty. Where as, critical period posited by Pollack (1967) is over the first year of life. Griffiths (1967) specified a maturation period for learning to listen and talk over the first 3 years, without specifying crucial or critical period, though assumed that the relevant maturation was complete by 3 years. According to Northern and Downs (1984), critical period is over the

first 2 years and Northern & Downs, (1991) from 6 months. Apuzzo and Yoshinaga-Itano, (1995) and Yoshinaga-Itano, (1998) identified 6 months as the critical age for identification of hearing loss and initiation of intervention for a normal progression of language functioning.

For deaf or hard of hearing children the critical period theory has serious implications, as language development is a slow and arduous process (Mc Anally, Rose & Quigley, 1994). Various educators and audiologists, Fiedler (1952, cited in Connor, 1976), Hardy (1960, cited in Connor, 1976), Lowell (1967, cited in Connor, 1976) and Worthington (1968, cited in Connor, 1976), stressed the need for early identification of a child with a hearing loss, the selection and fitting of hearing aids, the stimulation of communication, the retention of natural babbling and the development of beginning speech, the socialization between parents and baby and the generation of language growth.

Hayes (1994) has stressed that early, appropriate, beneficial and effective intervention can only occur in the presence of early identification. Studies comparing “early” intervention for deaf and hard of hearing children (prior to about 30 months of age) to “late” intervention (after 30 months of age) typically show greater progress for children receiving ‘early’ intervention on a variety of outcome variables (Glover, Watkins, Pittman, Johnson, and Barringer, 1994, cited in Schow & Nerbonne, 2002).

Ling (1976), and Apuzzo and Yoshinaga-Itano (1995), reported that early intervention frequently permits even children with severe to profound sensori neural hearing losses to progress through normal developmental sequences. Concerning the

importance of early intervention, it's reported that intervention during the critical period from birth to 2 ½ or 3 years of age results in greater linguistic and academic gains than intervention after age 2 ½ or 3.

The positive effects of early identification and early intervention have been consistently reported by Yoshinga-Itano, Sedey, Coulter and Mehl (1998). They have also evidenced that children with hearing loss identified between birth to 6 months of age had significantly higher developmental functioning at 40 months of age than the group of later-identified children. Both the receptive language and expressive language scores reflected a significant difference between the two groups in favor of the early identified and intervention.

The above studies do show that the earlier identification and intervention takes place, the better is the development of speech and language. Based on the findings of such studies, the Joint Committee on Infant Hearing (2000) has recommended that a hearing impairment should be identified before one month of age interdisciplinary should begin by 6 months of age.

ROLE OF AURAL REHABILITATION:

Early intervention describes the need to begin habilitation services as soon as disability is confirmed. The major component of aural rehabilitation is auditory training, also known as auditory learning (Cole & Gregory, 1986; Osberger, 1990). Auditory learning refers to the use of techniques to assist children in their development of audition or use of residual hearing. Much of current trend is on developing listening skills (i.e.) teaching the child to learn to listen and learn by listening rather than learn to hear (Ling, 1986; Osberger, 1990). Auditory learning stresses the comprehension of meaningful

sounds, which is considered to be the highest level of auditory skills (Erber, 1982; Sanders, 1982). The other three levels – detection, discrimination, and identification are important but are not sufficient for the development of listening skills. With auditory learning, there is obviously a strong focus on the development of residual hearing a critical component of auditory – verbal approaches. So aural rehabilitation connotes a narrow rather restricted approach to the remediation of communicative difficulties consequent to hearing-impairment.

The Joint Committee of ASHA and the council on Education of the deaf (1994) issued a report regarding services under the Individuals with Disability Education Act (IDEA), Part H, to D/HH children ages birth through 36 months. Early identification assessment and management should:

- Be conducted by professionals who have the qualifications to meet the needs of children who are deaf or hard of hearing, particularly infants, toddlers and their families.
- Be designed to meet the unique needs of the child and the family.

Include families in an active, collaborative role with professions in planning and provision of early intervention services (Joint Committee of ASHA and the council on Education of the Deaf, 1994).

A holistic approach to a child's auditory speech-language development ensures parallel development of children's cognitive, socio-emotional, and motor and self-help

abilities (Cole & Mischook, 1986). This approach enhances the integration of auditory listening skills cognitive experiences and social interactions throughout a child's day. The role of the aural rehabilitation is to help parent create and exploit natural and informal situations in the child's everyday life that make language more readily meaningful to the child. Because the auditory patterns received are often distorted or incomplete, however the hearing-impaired child requires more frequent exposure in order to learn.

The natural repetition in the baby's and young child's routine and his or her dependence on adults provide ample opportunity for such exposure. Intervention with the young hearing-impaired child can occur both in the child's home and in a clinical/educational environment. In the preschool years, it is the parents who become the primary habilitative agent for maintaining a child's hearing aids and enriching with listening experiences and expectations.

GOALS OF PARENT TRAINING:

The emergence of one acceptable educational approach to deaf infants might have been generated during 1965-1970 period. In lieu of uniformity in infants program, diversity and enthusiasm have emerged. Mc Crosey (1967) reported the effects of early home auditory training for young infants on speech production. Comparisons of production of the phoneme /a/ through a training program, results that infants who had training had tracings that more closely resembled those of normal hearing children than did the tracings of those without infant exposure to amplified sound.

Horton (1974) defined five general categories of program objectives for early intervention with very young hearing-impaired children as:

- To teach parents how to talk to their child.
- To teach the parents to optimize the auditory environment for their child.
- To familiarize parents with the principles, stages and sequence of normal language development and how to apply this frame of reference in stimulating their child.
- To teach parents strategies of behaviour management.
- To supply effective support to aid the family in coping with their feelings about their child and the stress that a handicapped child places on the integrity of the family.

The ultimate aim of auditory training is to achieve maximum communication potential by developing the auditory sensory channel to its fullest. Although the primary goal of auditory training is to maximize communication abilities, it is important to point out that achieving this basic goal can result in other achievements including acquisition of more proficient speech and language skills and successful psycho-social adjustments (Schow & Nerbonne, 1989).

In 1974-75, the Lexington school for the deaf reported on two research studies concerning deaf infants (0-3 years of age) which was conducted by Greenstein, (1975 cited in Connor, 1976). Preliminary results include the pinpointing of specific deviations from the normal process, involving reciprocal infant and mother interaction that progress through an orderly sequence of stages. The aspects of mother-infant interactions were

more highly correlated with the child's language acquisition than were methods or types of the mother's presentation of language. These results proclaim strong reciprocal interaction among maternal acceptance of the child, early intervention, and the child's language acquisition.

Greenstein (1975 Cited in Connor, 1976), emphasizes the needs for educators of deaf who work with infants to learn about, plan for, and establish techniques that deal with the psychological impact on the parent for the discovery of deafness. The program should build strong interactive patterns for the mother-deaf child as they live, learn and grow together.

As intensive effort must be made to delineate the specific types and degrees of interactive problems, to determine the skills and techniques required to alleviate/prevent further problem development, and to offer to the deaf baby and parents a series of activities fostering mentally healthy attitudes. It also indicates that an intimate aspect of deaf infant programs involves attitudes and affective relationship.

Yoshinaga-Itano (2002) stated that successful speech and aural habilitation approaches have skilled providers, hierarchical curricula, mass practice, unisensory stimulation, parent partnership, integrated activities in daily living, and integrated auditory activities with language.

According to Blamey and Alcantara (1994), it is possible to categorize methods of auditory training into one of four general categories, based on the fundamental strategy stressed in therapy. They are Analytic, Synthetic, Pragmatic and Eclectic. One popular specific aural habilitation approach is the Auditory Verbal Method. Other approaches

include Carhart's approach, Erber's approach, Verbo-tonal Method, Ski-Hi, and Ling Method.

I. Carhart's approach (1947):

Carhart made one of the first extensive attempts to describe the role of auditory training in the rehabilitation process within an audiological context. He gave childhood procedures as well as adult procedures of auditory training.

His auditory training program comprises the following four stages.

Stage I: Sound awareness

The goal of this stage is for the child to recognize when the sound is present and to attend to it. The child should be surrounded with sounds that are related to daily activities and that are clearly audible.

Stage II: Gross sound discrimination

The child is trained to distinguish between highly dissimilar non speech sounds, such as bells, drums, cymbal and whistles. In addition animal sounds or other environmental noises are often employed. Training at this stage includes discrimination of several parameters of sound such as intensity (loud Vs soft) duration (long Vs short) and frequency (high Vs low pitch). Once the child can discriminate among highly dissimilar sounds finer discrimination for each of the acoustical parameter is carried out.

Though this stage is labelled as discrimination task it is mainly identification that is done at this stage.

Stage III: Broad discrimination among simple speech patterns

The child should be aware that sound differs and should be ready to apply this knowledge to the understanding of speech. He recommended that the clinician begin by teaching the child to distinguish among the vowels or familiar meaningful phrases that are sufficiently different to minimize confusion. Example “Show me the dog” and “Give me the baby”.

Stage IV: Fine discrimination of speech

The child is trained to focus on subtle differences between similar vowel and consonant sounds. Ideally the child should be trained to recognize subtle phonemic differences, learn a large vocabulary of spoken words and be able to follow connected discourse.

Carhart’s approach has been criticized for several reasons. Carhart has not given the specific age group for whom this training method can be used. However, with modification the method can be applied with young children and the clinician should use his/her ingenuity to modify the technique so that it can be used with very young children. Ling (1974) also criticized the method since he felt that the perception and recall of verbal and non verbal material involves different process. According to Ling (1976), speech and non speech materials are likely be processed in different hemispheres of the brain. Ling (1978) contents that little or no amelioration of speech discrimination can be expected to result from training with gross nonverbal sounds. However, there are experts who support the use of non verbal materials. Nonspeech signals are used as training material due to the ease with children respond to and manipulate noise maker (Rodel,

1978). Knowledge of environmental sounds is important in its own right as the sounds often provide warning of impending danger (Withrow, 1974).

II. Verbo-tonal Method:

Around 1952, Professor Petar Guberina from the university of Zagreb, Yugoslavian, began developing a method to improve foreign language teaching through emphasis on the spoken rhythm of language to be learned. The verbo-tonal method is effective for establishing good spoken language and listening skills. It is based on a developmental model of normal-hearing children, and emphasizes the importance of developing good rhythm, intonation and voice quality in hearing-impaired children.

According to Craig, and Craig (1972), the Verbo-tonal approach is characterized by

- Emphasis on low frequency below 500 Hz and on vibratory clues in perception of spoken language patterns.
- Matching of special amplification devices known as SUVAG to the deaf person's optimum 'field of hearing'.
- Use of body movements to assist both production and perception of speech.
- Proving speech and language work in 'play' type situation so that much longer period of concentrated work on spoken language are possible.
- Emphasis on language in meaningful context of situation.

Guberina's concept is based on his theory that the low frequencies of spoken language do not mask the high spoken frequencies. He believes that amplification of auditory clues below 500 Hz to include rhythmic patterns and the sound fundamentals can actually help the deaf person to perceive the higher speech frequencies.

Asp (1985) reported that in the University of Tennessee Verbo-tonal preschool programs, between 65% to 75% of the hearing-impaired children have been successfully integrated.

III. Acoupedics: A uni-sensory approach to auditory training:

The term 'Acoupedics' was first used by Dr. Henk Huizing of Holland, to describe the procedure which had been developed empirically to meet the needs of young children whose hearing losses had been diagnosed at an early age and who were being fitted with powerful hearing aid. This approach was developed by Pollack (1964).

Acoupedics is the name given to a new program based upon the premises hearing can be integrated into the personality of the young deaf child, and a fundamental part of speech and language be learned through the auditory pathway, if all the emphasis is placed upon training audition first, listening must be a continuous activity.

The limited-hearing child should spend all his working hours in the world of sound, stimulated intensively by people who believe he can hear and who communicate normally with him. It has been observed that mothers, who by other criteria seem to be 'good mothers' keep their infants bathed in sound most of working hours. The young

child thus learns to talk through close association with his mother, who through unending repetitions of sound, words and phrases teaches him the pattern of his mother tongue.

The 'Acoupedic Approach' with its emphasis upon training the residual hearing, gives back to the mother her natural role. She has to intensify and enrich the normal auditory stimulation, but with professional guidance and support, as she goes about her routine. She has to be constantly alert to her child's needs and she can draw her child's attention to all the environmental sounds, and supply the words he needs to develop an inner language. Only she can give him the repletion and constant interest.

The principals of Acoupedic approach are early training using audition only, avoidance of lip reading and other cues and use of normal speech pattern.

IV. Erber's approach:

This approach was developed by Erber (1982), which is highly flexible and highly adaptable to children with a wide variety of auditory abilities, since the stimulus and response combinations range from the simplest (phoneme detection) to the most complex (sentence comprehension) perceptual task. The speech stimuli used are speech elements, syllables, words, phrases, sentences and connected discourse. The response is carried out in four different tasks. They include:

Auditory detection:

Identifying the presence of sound through a reflexive response or a purposeful change in behaviour (i.e. clapping, sucking, raise hand, yes/no), has been referred to as detection.

Auditory discrimination:

In this the child is presented with two or more stimuli and has to indicate whether they are the same sound or different. Discrimination can be in the frequency, intensity or temporal aspects.

Activities for sound discrimination include:

Play games with toy animals (the cow says 'moo', the sheep says 'baaa')

Responds to command ("give me a crayon"/"draw")

Play different or same games ("boy boy" "toy boy")

Repeat what you hear ("ma ma ma"/"pa pa pa")

Auditory identification:

This involves association of an auditory trace with past experience by pointing to a picture, pointing to an object, or imitating.

Some of the activities may include:

Play the game Candy land and listen for the names of the colours

Play with sets of post cards of stickers ("show me the cat")

Auditory comprehension:

The individual has to associate auditory trace with past experience and relate it to other stored information by answering questions about stories, following directions, etc. Erber (1982) has also suggested that one could add an open response set, increase the length of the stimulus, noise, distance, sequencing, memory, etc.

Though this method does not mention the age group for which it is to be used, it could be modified for any age. It is up to the clinician to decide the most appropriate activities for children of different ages, including those who are very young.

V. SKI-HI Approach:

Clark and Watkins (1985, cited in Schow and Nerbonne, 1996), developed the Ski-Hi program, which is a comprehensive identification and home intervention treatment plan for hearing-impaired infants and young children and their families. Many speech language pathologist and audiologists use the developmentally based auditory stimulation and training program that is included in the treatment plan. The program explains eleven auditory skills in four phases. As the skill level changes, the auditory behaviour becomes more complex. The four phases and eleven skills of the SKI-HI programs suggested by Watkins and Clarks (1993, cited in Schow and Nerbonne, 1996) are given below.

Phase I:

- ✓ Attending: Here the child is made aware of the presence of home and or speech sounds but may not know meaning; he stops and listens etc.,
- ✓ Early vocalization: the child coos, gurgles, repeats syllables, etc.

Phase II:

- ✓ Recognizing: the child knows the meaning of home and or speech sounds but may not be able to locate; smiles when hear Daddy come home etc.
- ✓ Locating: the child turns to point to and locate sound sources.
- ✓ Vocalizing with inflection: the vocalization could be high or low, soft or loud, up or down.

Phase III:

- ✓ Hearing at distances and levels: the child locates sounds far away or above and below
- ✓ Producing some vowels and consonants

Phase IV:

- ✓ Environmental discrimination and comprehension: the children hear differences among and or understand home sounds.
- ✓ Vocal discrimination and comprehension: the child hears differences among vocal sounds, among words, phrases or understand them
- ✓ Speech discrimination and comprehension: the child hears differences among and /or understands distinct speech sounds.
- ✓ Speech: the child imitates and or uses speech meaningfully.

The parents' objective will be to provide repeated meaningful opportunities for their child to associate environmental and speech sounds with their sources. The child's objective will be to demonstrate recognition of environmental and speech sounds by realizing their sources.

The lesson is reviewed with the parents about the sounds/activities, which the therapist had utilized for previous work. These activities are continued, insuring that the child is aware of the sources of the sound and that the sounds are relevant to the child. The materials recommended are naturally occurring environmental sounds and voice. Some of the activities used to improve attending skills are:

- Ask everyone who comes to visit to knock several times, pause and knock again. When somebody knocks, the child is taken to the door and told 'listen' etc.
- The child is encouraged to discover different sounds toys make by providing him/her playtime with several different toys
- The child is stimulated to produce sounds by manipulating objects/toys (banging pans, squeezing toys etc) and stimulate vocalization by making sounds as therapist plays with the toys
- The therapist imitates the child's action such as shaking a rattle and vocalization
- Speech is associated with all major movements (saying 'roll' each time therapist rolls the child over and 'up' when the child is picked up)

- The child should be stimulated to associate particular voices with particular people by having siblings/relatives use voice as they play with the child.

VI. Ling's Approach:

Ling (1976) developed a speech training program system that has the following characteristics.

- Is based upon the acoustic characteristic of speech.
- Emphasis listening aided by amplification.
- Involves segments as well as suprasegments
- Recognizes the need to attain vocal system, respiration and motor control coordination (phonetic level) prior to the use of speech in meaningful contexts (phonological level).

Ling (1976) emphasized that speech should be taught primarily at the phonetic level rather than at the phonological level. At the phonetic level, the child gains experience and supra segmental features of speech (pitch, loudness and rhythm) which are without meaning. The child must experience these patterns and combinations of patterns until they become automatic. Finally, the use of these patterns in meaningful expression is foster (phonological level).

According to Ling (1978), when the child is developing and learning language, utilizing an auditory approach, he or she must learn to respond to these six sounds /u/, /a/, /i/, /s/, /Sh/, and /m/. Incorporating them into everyday situations so that the sounds

become familiar to the child can do conditioning the child to respond to most of these sounds. For example, the parent can say, “Mmmmmmm, this ice cream tastes good”, “Oooo, you scaped your knee.” “Aaaaah, that puppy is so cute”, “ Eeeeeee, that water’s cold”, or “Ssssh, baby is sleeping”, “ Shhhh, snake is moving,”.

The child’s ability to detect all six sounds discussed above demonstrates the ability to detect all aspects of speech, because these sounds encompass the frequency range of all phonemes and the voiced sounds contain sufficient harmonics to convey suprasegmental information. The Lings program is theoretically based and appropriately sequenced accordingly in the hierarchy of detection, discrimination, identification and comprehension (Ling, 1989).

Ling in 1996 recommended that parents of a hearing-impaired must direct their child’s attention to the auditory aspects of the on going daily experience as soon after hearing aid fitting and integrate audition into their everyday life. Hence, appropriate amplification and critical role played by parents and professionals in the aural rehabilitation process of children under 3 years is very crucial and important.

The major weakness of this program may lie in the transition from the non-meaningful use of speech to the meaningful use of speech. Ling (1976) reported that there are marked differences in the way speech and non-speech sounds are processed and that no benefits can be expected from training with non-verbal sounds. While training in the detection and identification of non-speech sounds may be worthwhile for other reasons, evidence indicates that it is not essential for auditory learning of language.

VII. Auditory-Verbal Approach: -

Daniel Ling, Doreen Pollack, and Hellen Beede formed the International Committee on Auditory-Verbal Communication (ICAVC) in 1978, in order to support the auditory approach. In 1981, ICAVC joined with Alexander Graham Bell Association for the deaf and worked together till 1986. It became independent in 1986, in order to achieve the goal of increasing availability and effectiveness of Auditory-Verbal Approach. ICAVC thereby evolved into Auditory Verbal-International (Goldberg, 1993). The auditory-verbal philosophy supports the option to develop children of all degrees of hearing-impairment to develop the ability to listen and to use verbal communication within his/her family and community. According to Simser (1993), creating a listening environment is a necessary part of learning to listen at home and includes:

- Being close to the microphone of a child's cochlear implant or hearing aid of better ear,
- Sitting beside a child and focusing on objects placed in front of parent and child,
- Minimizing background noises,
- Using spoke language that is rich in supra-segmental qualities, repetitive in nature, initially focusing on low and mid-frequency vowel content, and in the context of short, meaningful 2 to 3 word phrases,
- Cueing a child to listen while the parent points to his or her ear to alert a child to attend to auditory input and meaningful environmental sounds, and observing a child's listening and responding behaviours (e.g. cessation of

movement, eye contact with an object or person imitation of a sound, or a response indicating listening through body posture,

- Reinforcing the expectation that with auditory-verbal techniques a child will learn to listen.

Simer (1996) explained that in a typical auditory verbal session therapist models to the parent and child suggested activities that will reinforce specific targets, explaining a variety of ways in which to reinforce these activities within the home environment. Then the therapist immediately transfers the teaching of an activity to the parent so they have practical experience before reinforcing targets at home. Parents are shown that their activities with someone special to them.

General Principals in an auditory-verbal approach:

a. Use of speech:

To develop spoken language, verbal stimuli, rather than environmental sounds, must be emphasized (Ling & Ling, 1978). Speech is a complex coded signal and only the use of speech will facilitate a child's listening repertoires. Parents can alert their child to attend to meaningful environmental sounds.

b. Normal sequential development:

Babies and young children learn language through natural, meaningful interaction when they are relaxed and comfortable with parents or caregivers. When a child is hearing-impaired parents need to create an effective listening and learning

environment and become skilled in teaching, the child to attend to auditory input (Pollack, 1985).

c. Emphasis on audition:

Children learn to listen rather than to watch, as the emphasis is placed on the use of audition in interpreting spoken language. In doing so, there is a reciprocal benefit; as children improve their auditory perception of speech, speech production is enhanced. In poor acoustic condition, children will naturally supplement listening with lip reading.

Most infants who are hearing-impaired cry and laugh and produce neutral vowels while vocalizing. This vocal play should be encouraged through social reinforcement. In the beginning, physical imitation will precede vowel imitation; parents are encouraged to imitate 'babies' physical and vocal activities. In play, physical actions that match the nature of vocal input are modeled. E.g. A long slow petting action for a cat may reinforce the longer sound of 'meow' while a sharp, staccato-like hand movement may accompany the production of 'bow-wow' for a dog. After extensive listening experience, babies begin to imitate what they have heard, developing an auditory feedback loop. As parents hear familiar speech sounds babbled by their babies, they reinforce them in meaningful language.

For example: [a-a] becomes baaa for a lamb

[aaaa] for a flying aeroplane

[m-m-m] becomes associated with eating or smelling a fragrant flower.

So, parents need to listen carefully to the early vocalization and subsequent stages of spoken language, by their babies to carefully understand beginning speech, which may contain only suprasegmental qualities and vowel content.

d. A listening attitude:

To the general public, the word 'deaf' is viewed as synonymous with 'cannot hear'. Most hearing parents emerge from the group who were told that their child is deaf from the day of diagnosis. Therefore, professionals should model for parents an attitude that gently expects children to listen, hear and speak. Within the first few months of intervention, parents need to make a conversion from the general public's attitude of 'cannot hear' to can hear with training and proper amplification. Whether or not parents comes to believe that their child can hear and therefore, can learn to listen and speak, will contribute greatly to the choice of methodology and of professionals employed for their child's rehabilitation.

Curriculum developed for auditory verbal therapy:

➤ Learning to listen sounds: A hierarchy in Auditory-Verbal Therapy developed by Edwards and Estabrooks (1994) gives in detail the activities for each sound like a (rr), oo,

bu, bu, and other sounds. For all these sounds, songs were also associated with the activities. For example

- ❖ bu, bu, was associated with a bus for activity and ‘The bus...’ for a song,
 - ❖ owowow, was associated with ambulance for activity and ‘The ambulance’ for a song.
- Similar module was prepared by Powell and Rhoades (2000) for very young and preschool children. According to Rhoades the Learning to listen sounds were taught in the in the order of :
- ❖ Transport vehicle: sound object association.
 - ❖ Animal: sound object association.
 - ❖ Other sound object association.

For each of the sounds, meaningful activities were associated along different intonation pattern.

➤ Estabrooks (2004) has developed age appropriate lesson plans for language learning through listening and uses their skills to develop communication abilities. In this lesson plan, for children below 3 years, he has also given suggestion to work on in the hierarchy of vehicles, animals and objects. Carry-over activities are given for each of the sounds, i.e. expanding the sounds for other situations.

Several programs have been developed for training listening activities fro hearing-impaired children. Some of include specific activities and describes specific ways in

which they are to be utilized like, Ski-Hi approach, Ling's approach, Auditory-Verbal approach. While other approaches have just given an overview regarding the way the testing have been done.

Though there are differences in these approaches, the integral component of rehabilitation program for children are to achieve adequate speech perception skills, speech production skills, language skills and educational achievement.

METHOD

The present study was conducted with the aim of developing an auditory learning manual for infants and toddlers. To check the utility of the manual, it was tried on a group of normal hearing children, as well as a group of hearing-impaired children.

The study was carried out in two phases. While Phase I involved the development of the therapy material, phase II involved administration of the material first on a group of normal hearing children, and then on hearing-impaired children.

Phase-I: - Development of therapy material

Based on the development of phonemes in normal children as reported in literature material for the manual was developed. Each of the phonemes were linked with meaningful activity.

For example: - /aaa.... / - to indicate appreciation of an object/toy using a rising intonation.

/iii.... / - Brushing the teeth with a repeated rising and falling pattern.

The material in the manual was reviewed by seven speech and hearing professionals and three parents of normal hearing children. This was done to obtain information regarding the appropriateness of activities associated with each of the phonemes. The modification suggested by major of the professionals and parents was

incorporated in the manual. The revised version of the manual contained forty-six phonemes with each phoneme having 1 – 4 meaningful activities associated with them phoneme (Appendix A). The phonemes included were vowels, consonants, blends and clusters.

PHASE-II:

Subjects:

Thirty children in the age ranging between 9 months – 3 years, who had hearing thresholds within normal limits, formed group 1. These children were further divided into 2 subgroups based on their age. The younger age was 9 months to 2 years and older group from 2 years to 3 ½ years. There were fifteen children in each of these sub groups. Group 2 consisted of ten hearing-impaired children with an age ranging from 2 months – 12 months and chronological age of less than 3 years. They were also divided into two sub groups based on their age. The younger age was from 1 to 2 years and older group from 2 to 3 years.

Subject selection criteria for normal hearing child: -

- Children who are exposed mainly to Kannada
- Normal speech, language and motor milestones
- No history of otologic or neurologic problems
- No history of hearing loss

Subject selection criteria hearing impaired children: -

- Aided speech spectrum within 40-50 dBHL
- Should have used hearing aids for at least 6 months
- Should have no additional handicap

a) *Administration of therapy material on normal hearing children.*

The developed material was administered on thirty normal hearing children who met the subject selection criteria. Each child was tested individually.

TASK:

Material:

For each of the activity there were toys representing them like models of vehicles, models of animals, brush, boat, doll, etc.

Environment:

Administering of the manual was done in a quite room, which was also free of distractions.

Procedure: -

The method to instruct the children varied with their age and comprehension level. Other children in the age range 2 to 3 were instructed to listen to sounds produced by the experimenter as well as watch the movements associated with each sound and imitate them. Following this a demonstration of an activity was carried out. Simpler instructions were used with the younger in the age range of 9 months to 1 year. With them, the instructions mainly involved a demonstration of what had to be done. For

example the experimenter produced the sound “iii” with a rising intonation and an insect flying in the air. The child was encouraged to follow the direction of the hand movement. Following this, the toy of an insect was given to the child and he/she was encouraged to imitate the movement as well as phoneme produced. In the event that the child did not imitate the activity, a caregiver, who also listened to the instruction, modeled activity. Once again, following this, the child was encouraged to carry out the activity by giving the object in his hand or making him imitates the hand movements. Children who carried out the activity were reinforced using a combination of a social (smile, pat or clapping) and a token reinforces (stickers, sweets or small toys). All the evaluation was carried out using a live voice procedure.

Once a child could imitate a phoneme, the next activity was taken-up. The order in which the phonemes were presented to the children was the same. However, the number of times the activity had to be demonstrated varied, depending on the abilities of the child. Children who followed the instructions easily were tested in one session, which lasted up to one hour. The younger children required more than one hour. The younger children, who required more instruction, were evaluated in more than one session. The maximum number of sessions used was three.

The abilities of the children to imitate the activities were noted. As a majority of the normal hearing children were able to carry out all the activities, no modification was made to the manual.

b) Administering of manual on hearing-impaired children

Procedure similar to that done with normal hearing children was used for administering the manual on ten hearing-impaired children. These children met the subject selection criteria for hearing-impaired group. Each of these children required more than six sessions for the manual to be administered. Since the hearing-impaired subjects took longer to respond to the stimuli the entire material could not be administered in one session. The abilities of these children to imitate the activities were noted.

The material for the manual was recorded with different intonation patterns on Pentium IV computer using the software 'Creative wave studio'. The signals were normalized /scaled to ensure that all the stimuli were equal in intensity. Interstimuli interval of four seconds was maintained between each stimulus. This recording was done using Sony Dynamic Microphone F-500. This audio recording was done to serve as a guideline to the experimenter. So that the same intonation pattern were utilized across all the subjects. The recorded material was copied on to a CD using a "Herblett Packard" CD writer. This recording was however not used during the administration of manual on children.

RESULTS AND DISCUSSION

An auditory learning manual was developed considering the normal development of phonemes in normal children and administered on two groups of subjects (normal hearing group and hearing-impaired group). A descriptive report regarding the responses of the children who were administered the developed auditory learning manual is described in three phases as given below.

Phase I : Responses of normal hearing infants and toddlers

Phase II : Responses of hearing-impaired children

Phase III: Comparison of response between normal and hearing-impaired children

Phase I: Responses of normal hearing infants and toddlers

The developed manual was administered on 30 normal hearing children who were below 3 ½ years of age. The children were divided age wise to check if there were any developmental changes in the response patterns. The responses of the children below 2 years of age and above two years of age were noted separately. Fifteen children in each of the two age groups were tested. In the group of children below 2 years of age, three children were below one year of age whose responses were found to be different. Hence, their responses are discussed separately.

The responses of these infants and toddlers are described in Table 3 with reference to 3 age groups (9 months to 1 year, 1 to 2 years, and 2 to 3 years). A response was considered present, if approximately 80% of the children could carry out the activity.

Table 3: Responses of the normal hearing infants and toddlers

S.No	Target syllabi	Stimuli produced	Activities	Responses observed		
				9 months-1 year (N = 3)	1 year - 2 years (N = 12)	2 years -3 years (N = 15)
	<i>Vowels</i>					
1.	a	aa..	Aeroplane flying	+* (2)	+	+
		aa..	Crying out in pain	+* (2)	+	+
		aa..	Touching hot objects	+* (2)	+	+
		aa..	Eating spicy food	+* (2)	+	+
2.	i	ii..	Brushing teeth	+	+	+
		ii..	Insect flying	+* (2-3)	+	+
		ii..	Touching dirty slippers	+** (3-4)	+* (2)	+*
3.	u	uu..	Train moving	+	+	+
		uu..	Child crying	+	+	+
4.	o	oo..	Forgetting	+*	+	+
	<i>Diphthongs</i>					
5.	ai	ai...	Excitement seeing doll	+* (2-3)	+	+
6.	iu	iu, iu, iu	Ambulance going	+* (2-3)	+	+
7.	iya, ia, o	iya, iya, o	Mc Donald song	+* (2-3)	+	+
8.	pa	paappa..	Calling father	+* (3)	+*	+
		pappu..	Calling a baby	+* (3)	+* (4)	+* (2)
9.	pi	pipii..	Jeep sound	+	+	+
		pi pipi pi	Musical sound	+	+	+
10.	po	pom..pom	Van sound	+** (3-4)	+*	+

11.	phu	phuphu	Blowing the air	+* (3-4)	+* (2)	+
12.	ba	baa, baa,..	Calling for hen	+* (4)	+	+
13.		bou, bou	Dog barking	+* (2)	+* (2)	+
14.		bu, bu,	Boat sound	+* (2)	+	+
15.	Ta	TaaTaa	Saying bye	+* (2)	+	+
16.		Tup, Tup	Water falling in bucket	+* (4)	+* (2)	+
17.		taa, tai, tai	Dancing ta tai ta tai	+** (3)	+	+
18.		taataa	Calling grandfather	+* (2)	+	+
		taa	Asking for something	+* (3)	+	+
19.	m	mm...	Tasty food	+* (4)	+	+
		mm..	Saying yes	+* (2)	+* (2)	+* (2)
		mm..	Thinking something	+* (3-4)	+* (2)	+* (2)
20.		mae, mae..	Goat sound	+**	+* (2)	+* (2)
21.		miau miau	Cat sound	+* (2)	+	+
22.		amba..	Sound made by cow	+** (4-5)	+* (2)	
23.	Da	Dam,Dam	Banging on the table	+** (4-5)	+* (2)	+
		Dam,Dam	Banging the drum	+** (4)	+* (2)	+
24.	Di	Ding dong	Clock sound	+** (3)	+* (4-5)	+* (2)
		Ding dong	Door bell	+** (3)	+* (4-5)	+
25.	ha	ahaa...	Appreciation	+* (4)	+*	+
26.		haa, haa,	Laughing	+	+	+
27.		haai	Saying hai	+	+	+
28.		hee..	Calling while playing	+** (3)	+*	+
29.	ka	akka	How to call akka?	+*	+	+
		akka...	Calling for your akka	+*	+	+
30.		kaa kaa	Sound of a crow	+	+	+
31.	ku	ku..kuu..	Bird singing	+* (3)	+* (2)	+
32.		ku...chk	Train moving	+* (2)	+	+
33.	Ta	Tak	Horse running	+* (2)	+* (2)	+
		Tak, Tak	Footsteps	+** (4)	+* (2)	+

		Tak, Tak	Knocking the door	+** (4)	+	+
34.	Ti	Tik	Sound made by watch	+** (3)	+* (4)	+* (2)
35.	na	na,nana,na	Sing song	+* (2)	+	+
36.	s	ssss..	Snake hissing	+* (4-5)	+* (2)	+
		ss..	Cooker sound	+* (4-5)	+* (4)	+* (2)
		ss..	Air from balloon	+* (2-3)	+* (2)	+
37.	sh	sh..	Baby sleeping	+* (3)	+	+
		sh..	Asking to be silence	+* (3)	+	+
38.		sh..	Rain falling	+* (1-2)	+	+
39.		sh, sh,	Chasing animal away	+* (3)	+	+
40.	la	la, lalaa	Singing song	+* (2)	+	+
	<i>Blends</i>					
41.	br	brrr..	Bus sound	+** (3-4)	+* (4)	+
42.	dr	drr...	Auto sound	+** (4)	+* (2)	+
43.	kr	krrr...	Lion sound	+** (4)	+* (2)	+
	<i>Clusters</i>					
44.	quack	quack,	Duck sound	+** (2)	+* (2)	+*
45.	Tring	Tring,	Cycle bell	+** (4)	+* (3)	+
46.	kodra	kodra,	Pig sound	+** (4)	+* (3)	+

Note: - + Response present

+* Response present with repetition of stimuli and requiring 2 – 3 sessions.

+** Response present with repetition, require 2 – 3 session and able to imitate
only suprasegmental patterns

() Number of repetitions per session by the clinician/mother mentioned within
bracket

From Table 3, it is evident that the youngest age group children (9 months to 1 year) required to be tested over several sessions. They required atleast three sessions to carryout the activities. As many as 3 – 4 repetitions were required in order to elicit a response. Actual imitation of the phoneme as well as intonation was observed only for twenty-one speech sounds. They responded to the remaining stimuli by imitating the intonation pattern and trying to approximate the articulation.

The older two (1-2 years and 2-3 years) groups responded in a similar manner. They required lesser number of sessions. They were able to carry out the activity in one to two sessions. These children were not markedly different in their responses to the vowels and diphthongs and a few consonants. However, the 1 – 2 years required relatively more repetitions to be able to produce some of the consonants and all of the blends and clusters. Both these age groups were able to imitate the intonation as well as the phonemes. Since the mean age of the 1 – 2 year group old was (1year 11 months) it was observed that they were able to imitate and able to produce the sounds fairly accurately.

It was found that children imitated sounds that had more Suprasegmental variations better than those that had lesser Suprasegmental variation. For example /pi/ produced to represent music which had a lot more variations and intonation was perceived better than /pi/ produced to represent the jeep horn since it had a more flat intonation. Further, a few parents reported that children in two age groups were able to generalize and produce some of the sounds in real life situation. For example they were able to say Tak, Tak while opening a door even 2 – 3 days after they were evaluated. This

indicates that the children were able to remember the sounds and use them meaningfully in a real life situation.

Since it was noted that the majority of the children were able to carry out the activity it was not necessary to make any changes in the matter of the manual that was developed.

Phase II: Responses of hearing-impaired children

The developed manual was administered on 10 hearing-impaired children whose hearing ages ranged from 2 months to 1 year. All of them had a chronological age below 3 years. Four children were in the age range of 1 – 2 years and remaining six were in the age range of 2 – 3 years.

The responses of these children are described in Table 4 with reference to the two age groups (1 – 2 years, and 2 – 3 years). As done with the normal age group response was considered as present, if approximately 80% of the children could carry out the activities.

Table 4: Responses of the hearing-impaired children

S.No	Target syllabi	Stimuli produced	Activities	Responses observed	
				1 – 2 years (N = 4)	2 – 3 years (N = 6)
	<i>Vowels</i>				
1.	a	aa..	Aeroplane flying	+* (2)	+*
		aa..	Crying out in pain	+* (4)	+* (2)
		aa..	Touching hot objects	+* (4 -5)	+*
		aa..	Eating spicy food	+* (4)	+* (2)

2.	i	ii..	Brushing teeth	+* (3)	+*
		ii..	Insect flying	+* (4)	+* (3)
		ii..	Touching dirty slippers	-	+* (2-3)
3.	u	uu..	Train moving	+* (3)	+* (2)
		uu..	Child crying	+* (4)	+* (4)
4.	o	oo..	Forgetting	+* (3-4)	+* (4)
<i>Diphthongs</i>					
5.	ai	ai...	Excitement seeing doll	+* (5)	+* (3)
6.	iu	iu, iu, iu	Ambulance going	+* (4)	+* (2)
7.	iya, iya, o	iya, iya, o	Mc Donald song	+* (4)	+* (3)
8.	pa	paappa..	Calling father	+** (4-5)	+**
		pappu..	Calling a baby	+* (3)	+* (4)
9.	pi	pipii..	Jeep sound	+** (5)	+** (2)
		pi pipi pi	Musical sound	+** (2)	+* (2)
10.	po	pom..pom	Van sound	+** (2)	+**
11.	phup	phuphu	Blowing the air	+** (2)	+* (3)
12.	ba	baa, baa,..	Calling for hen	+* (5)	+*
13.		Bou, bou	Dog barking	+* (3)	+* (2)
14.		bu, bu,	Boat sound	+* (4)	+*
15.	Ta	TaaTaa	Saying bye	+*(4)	+* (2)
16.		Tup, Tup	Water falling in bucket	+** (4-5)	+** (2)
17.		taa, tai,taa,	Dancing ta tai ta tai	+** (2)	+*
18.		taataa	Calling grandfather	+* (4)	+* (4)
		taa	Asking for something	+** (4)	+* (2)
19.	m	mm...	Tasty food	+** (2)	+* (4)
		mm..	Saying yes	+** (4)	+* (4)
		mm..	Thinking something	+** (5)	+** (4-5)
20.		mae, mae..	Goat sound	+** (3)	+* (4)
21.		miau,	Cat sound	+* (3)	+* (2)
22.		amba..	Sound made by cow	+** (4-5)	+* (2)

23.	Da	Dam,Dam	Banging on the table	+** (3)	+* (3-4)
		Dam,Dam	Banging the drum	+** (3)	+* (3-4)
24.	Di	DingDong	Clock sound	-	+** (3-4)
		Ding dong	Door bell	-	+** (3)
25.	ha	ahaa...	Appreciation	+** (4)	+** (4 -5)
26.		haa, haa,	Laughing	+*	+*
27.		haai	Saying hai	+** (2)	+** (2)
28.		hee..	Calling while playing	+** (3)	+* (4)
29.	ka	akka	How to call akka?	+** (3)	+* (3)
		akka...	Calling for your akka	+** (2)	+* (3)
30.		kaa kaa	Sound of a crow	+* (3)	+* (2-3)
31.	ku	ku..kuu..	Bird singing	+* (4)	+* (2)
32.		ku...chk	Train moving	+* (3)	+* (2)
33.	Ta	Tak	Horse running	+** (2)	+* (3)
		Tak, Tak	Footsteps	+** (2-3)	+* (3)
		Tak, Tak	Knocking the door	+** (2)	+* (3)
34.	Ti	Tik	Sound made by watch	+** (4-5)	+* (3)
35.	na	na,nana,	Sing song	+* (4)	+*(2)
36.	s	ssss..	Snake hissing	+* (4-5)	+* (2)
		ss..	Cooker sound	+** (2)	+* (4)
37.		ss..	Air released from ballon	+** (2-3)	+* (3)
38.	sh	sh..	Baby sleeping	+* (4)	+* (2-3)
		sh..	Asking to be silence	+* (4)	+* (2-3)
		sh..	Rain falling	+* (3)	+*
39.		sh, sh,	Chasing an animal away	+** (2)	+* (3)
40.	la	la, lalaa	Singing song	+* (4)	+*
	<i>Blends</i>				
41.	br	brrr..	Bus sound	+* (4-5)	+* (2-3)
42.	dr	drr...	Auto sound	-	+** (4-5)
43.	kr	krrr...	Lion sound	+** (4-5)	+* (4-5)

	<i>Clusters</i>				
44.	quack	quack,	Duck sound	-	+** (4-5)
45.	Tring	Tring,	Cycle bell	-	+** (4-5)
46.	kodra	kodra,	Pig sound	-	+** (4-5)

Note: - + Response present

+* Response present with repetition of stimuli and requiring 2 – 3 sessions

+** Response present with repetition, requiring 2 – 3 sessions and able to imitate suprasegmental patterns

() Number of repetitions per session by the clinician/mother are mentioned in bracket

- Only suprasegmental were produced, but with less approximation

It was observed that in both the age groups none of the children could imitate the sounds correctly in the first session. On an average, they needed around 5-6 sessions with around 4-5 repetitions in each session. Since the hearing-impaired subjects took longer to respond to the stimuli the entire material could not be administered in one session.

All children imitated the segmental aspects of vowels and diphthongs along with the suprasegmental patterns. For most consonants, the segmental aspects could not be imitated except for sounds like ‘mm’, ‘pa’, ‘pu’, ‘ba’, ‘bow’, ‘tata’. It was also noted that signals that are of shorter duration was more difficult to imitate than the once with longer. For example the shorter /i/ to represent ‘dirty slipper’ was more difficult than the longer /i/ which is used to depict ‘brushing the teeth’.

It was also noted that the younger children required a larger number of sessions and lot more repetitions to carry out the activities when compared to the older group.

Also the former group was not able to imitate a few sound combinations such as dingdong, drrr..., and all the clusters.

Thus it can be seen than hearing-impaired children, with some training were able to carry out most of the activities that are recommended in the sessions. The clinician/caregiver would have to persist using appropriate reinforcement in order to elicit the responses from these children. It was noted that if the experimenter persisted in trying to get a child to imitate a sound using more than 3 repetitions the child lost interest in the activity. However, when a different activity was taken up with in session the children continued to do the activity.

Phase III: Comparison of response between normal and hearing-impaired children

On comparing the responses of the normal hearing-impaired children it was noted that there were some similarities as well as some differences in the way they responded. The number of sessions that were required to elicit the response from the hearing-impaired group was more than the normal hearing group and the repetition required were also more. Comparing the Table 3 and Table 4 it is evident that the younger hearing-impaired group could imitate only the suprasegmental patterns frequently and segmental those were produced are mainly vowels and diphthongs. There were also a few sounds like clusters for which even the suprasegmental were not approximated accurately.

However, the young hearing children in age range (1 – 2 years) normal hearing children were able to imitate the sounds most of the time. When asked questions regarding how a particular sound is produced it was observed that for several activities

that normal hearing children were able to give appropriate answers without the clinician/caregiver providing a model of how the sound is produced. Such spontaneous responses were not observed for any of the hearing-impaired children. This indicates that with the normal hearing children incidental learning took place while no such learning took place in the hearing-impaired group that was studied.

The similarities noted were that, both the subject groups responded better when the stimuli had larger intonation variations compared to stimuli that did not have much intonation variation. Also both groups responded better to longer duration stimuli than the stimuli with shorter duration. They were able to imitate suprasegments better than the segmental cues. Both the age groups required more than one session in order to carry out the activity.

Hearing-impaired children showed more restlessness during one session. This was probably on account of them finding the activity difficult. They required more reinforcements when compared to the normal hearing children to hold their attention.

The parents of both the subject groups reported long-term memories for the speech sounds. However, the hearing-impaired children were able to use sounds outside the therapy situation only after several sessions. In contrast the normal hearing children were able to do this with just one session.

In the literature several auditory learning activities have been described (Acoupedic approach, Ski-Hi approach and Auditory verbal therapy for very young children). Though articles are available regarding the activities that are to be used for

different ages, research studies regarding the utility of these programs is scarce. It is generally assumed that a program is useful if it is widely used, and not because research is available regarding its utility. Hence, comparison of the findings of this with that of other studies published in literature is difficult. It can be concluded that the activities of this manual would be useful in providing auditory learning therapy to young hearing-impaired children. The clinician would have to use appropriate intonation, activities and reinforcement for success in carrying out the program.

It is recommended that expansion of all the “learning to listen sounds” be carried out to enable better development of speech and language skills through the auditory modality. Recommendations for further expansions of learning to listen sounds have been provided in Appendix B and C. It is suggested that this expansions be taught once a child is able to imitate a particular sound.

SUMMARY AND CONCLUSION

Researchers have reported that hearing-impaired children have a better chance of developing speech and language if their problem is identified early and they are enrolled in a comprehensive early education program. It is recommended that this training starts by the age of six months (Northern & Downs, 1991; Apuzz & Yoshinaga-Itano, 1995; Yoshinaga-Itano et al, 1998).

The present study aimed at developing an auditory learning manual for infants and toddlers. This manual is recommended for hearing-impaired children who have been identified as early as 6 months of age and appropriate listening devices are fitted. The study was carried out in two phases.

Phase I: - Development of the material for the auditory learning manual

The material for the manual was developed based on the development of phonemes in normal children. Each of the phonemes was linked with meaningful activities. In order to establish appropriateness of activities associated with the phonemes, the manual was reviewed by seven speech and hearing professionals and three parents of normal hearing children. The revised version of the manual contains training activities for forty-six different speech sounds with each having 1-4 activities associated with them. The speech sounds include vowels, consonants, blends and clusters.

Phase II: - a) Administration of therapy material on normal hearing children

After the development of the manual it was administered on thirty normal hearing children in the age range of 9 months to 3 years. The number of sessions to administer the manual varied from 1 hour to 3 sessions (each session's duration being one hour). The ability of the children to imitate the activity was noted. A descriptive report was given regarding their performance. The results revealed that the children below 1 year responded differently than the older two groups (1 to 2 years and 2 to 3 years olds). The children below 1 year required more number of sessions and more repetitions, to elicit correct responses compared to the older children. However, they could imitate the suprasegmental patters more correctly, while just approximating the segmental patterns. No modification was made to the manual since the majority of the normal hearing children were able to imitate all the activities.

b) Administration of therapy material on hearing-impaired children

A procedure similar to that done with normal hearing children was carried out on 10 hearing-impaired children with a hearing age between 2 months and 11 month and a chronological age between 1 to 3 years. The abilities of these children to imitate the activities were documented.

The results reveal that the younger the hearing-impaired groups had similar kind of responses. None of these children could imitate the sounds correctly in the first sessions. On an average they required around 5-6 sessions with around 4-5 repetitions of an activity in each sessions.

Phase III: *Comparisons of responses between normal and hearing-impaired children.*

Comparing the responses of the two subject groups, it was noted that, the number of sessions and repetitions required to elicit the responses from the hearing-impaired group was more than that required for the normal hearing group. Also incidental learning was present in the normal hearing children as they were able to give spontaneous responses when questions were asked. This was not seen in the hearing-impaired children. However, there were also some similarities noted between the two groups. Both the subject groups were able to imitate the suprasegmental patterns more correctly when compared to the segmental aspects. Also both groups responded better to longer duration stimuli rather than to shorter duration stimuli. As reported by the parents of both the subject groups, it was noted that they were able to generalize the activities to a real life situation.

Based on the results of this study, it can conclude that early intervention is the key to appropriate auditory habilitation. It is of utmost importance that the hearing impaired children be taught using the sounds normal children hear and play with, at an early age. Manuals to facilitate auditory learning in infants and toddlers, especially in the Indian context are unavailable. This study has made an attempt to develop such a manual. An

audio CD and additional activities have been provided along with the manual as a guide for the clinician/caregiver. Every effort has been made to make it simple and comprehensive. Hence, using this manual, the parents/ caregivers and clinicians get a systematic guide to train a hearing impaired child.

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APPENDIX A

*AUDITORY LEARNING MANUAL FOR
INFANTS AND TODDLERS*

This auditory learning manual contains activities that can be taught to hearing-impaired children soon after the hearing problem has been identified and appropriate listening devices are fitted. The manual contains training for 46 different phonemes including vowels, consonants, blends and clusters. For each of these phonemes activities have been suggested so that they are learnt meaningfully. The activities may be modified depending on the abilities of the child. As far as possible, follow the order that has been given in the manual. The clinician/caregiver should model the activities so that the child can imitate them.

AUDITORY LEARNING MANUAL FOR INFANTS AND TODDLERS

S.No	Target syllabi	Stimuli produced	Activities	Intonation pattern
	<i>Vowels</i>			
1.	a	aa..	Aeroplane flying	Falling rising falling
		aa..	Crying out of pain	Rising
		aa..	Touching hot things	Rising
		aa..	Eating spicy food	Rising falling
2.	i	ii..	Brushing teeth	Repeated rising falling
		ii..	Insect flying	Rising
		ii..	Touching slippers	Rising
3.	u	uu..	Train moving	Flat
		uu..	Child crying	Repeated rising falling
4.	o	oo..	forgot	Rising falling
	<i>Diphthongs</i>			
5.	ai	ai...	Excitement seeing doll	Rising
6.	iu	iu, iu, iu	Ambulance going	Repeated rising falling
7.	iya, iya, o	iya, iya, o	Mc Donald song	Repeated rising falling
8.	pa	pappa..	Calling father	Rising
		pappu..	Calling a baby	Falling
9.	pi	pipi	Jeep sound	Flat
		pi pipi pi	Musical sound	Falling rising
10.	po	pom..pom	Van sound	Flat
11.	phup	phuhpu	Blowing the air	Falling

12.	ba	ba, ba,..	Calling for hen	Repeated rising falling
13.		bow	Dog barking	Rising
14.		bu, bu,	Boat sound	Rising
15.	ta	tata	Saying bye	Rising
16.		Tup, Tup	Water falling in bucket	Flat
17.		ta, tai, ta, tai	Dancing ta tai ta tai	Repeated rising falling
18.		thatha	Calling grandfather	Rising
		tha	Asking for things	Flat
19.	m	mm...	Tasty food	Rising
		mm..	Saying yes	Falling
		mm..	Thinking about something	Falling
20.		mae, mae..	Goat sound	Repeated rising falling
21.		mew, mew,	Cat sound	Falling rising
22.		amba	Sound made by cow	Flat
23.	Da	Dum, Dum	Banging on the table	Rising
		Dum, Dum	Banging the drum	Flat
24.	Di	Ding Dong	Clock sound	Repeated rising falling
		Ding Dong	Door bell	Repeated rising falling
25.	ha	aha...	Appreciation	Rising
26.		ha, ha, ha	Laughing	Repeated rising falling
27.		hai	Saying hai	Rising
28.		hey..	Calling while playing	Rising
29.	ka	akka	How to call akka?	Flat
		akka...	Calling for your akka	Rising
30.		ka ka ka	Sound of a crow	Falling
31.	ku	ku..ku..	Bird singing	Rising falling
32.		ku...chk	Train moving	Flat

33.	Ta	Tak	Horse running	Repeated rising falling
		Tak, Tak	Footsteps	Flat
		Tak, Tak	Knocking the door	Flat
34.	Ti	Tick	Watch sound	Flat
35.	na	na,nana, na	Sing song	Repeated rising falling
36.	s	ssss..	Snake moving	Flat
		ss..	Cooker sound	Rising
37.		ss..	Air from ballon	Flat
38.	sh	sh..	Baby sleeping	Falling
		sh..	Making the people silent	Flat
		sh..	Rain falling	Repeated rising falling
39.		sh, sh,	Chasing the animal	Rising
40.	la	la, lala	Singing song	Repeated rising falling
	<i>Blends</i>			
41.	br	brrr..	Bus sound	Falling
42.	dr	drr...	Auto sound	Falling
43.	kr	krrr...	Lion sound	Rising
	<i>Clusters</i>			
44.	quack	quack, quack	Duck sound	Flat
45.	Tring	Tring, Tring	Cycle bell	Repeated rising falling
46.	kodra	kodra, kodra	Pig sound	Flat

APPENDIX B

EXPANSIONS

INSTRUCTIONS

A few suggestions are given to expand the “learning to listen sounds”. It is recommended that these expansions are carried out while the learning to listen sounds is being taught. The actual vocabulary/sentences can be varied to suit each child’s needs.

- Use appropriate intonations, materials and reinforcements while carrying out the activity.
- Appropriate modeling of the production should be done, so that child picks up what has been said.
- Instruct the parents/caregivers to expose the child to the actual sounds, in a real life situation.
- These activities may be done both in the therapy situation as well as home training.
- **Do not use recordings of the sounds in the initial stages.**

EXPANSIONS
FOR
LEARNING TO LISTEN SOUNDS

Learning to listen the sound /a/

/a/ - aa...Aeroplane (*Intonation – Falling rising falling*)

Therapist/Parents: What sound does the Aeroplane make?

Child : “aaa” (The aeroplane says “aaaaaa”)

Therapist/Parents: What makes the sound /a/?

Child : The aeroplane makes the sound aaa...

Therapist/Parents: Where does the aeroplane fly?

Child : aaa... the aeroplane flies in the sky.

/a/ -aa... Pain (*Intonation – Rising*)

Therapist/Parents: When you have pains what do you say?

Child : “aaa” it is paining.

Therapist/Parents: Do you have pain?

Child : aaaa....my stomach is paining.

/a/ - aa.. Hot (*Intonation –rising*)

Therapist/parents: What do you say when you touch a hot candle?

Child : aaaa....its very hot.

Therapist/parents: Do you say /a/ when you touch hot things?

Child : yes, it hurts.

Therapist/parents: Is the candle very hot?

Child : aaa....it is very hot.

/a/ - aa..Spicy (*Intonation – Rising falling*)

Therapist/parents: What will you say when you eat hot food?

Child : aaaa....the food is hot.

Therapist/Parents: Do you say /a/ after eating hot food?

Child : aa...its hot.

Therapist/Parents: Is the food hot?

Child : aaa...the food is very hot.

Learning to listen the sound /i/

/i/ -ii... Brushing (*Intonation – Repeated rising falling*)

Therapist/Parents: How do you brush your teeth?

Child : iii.....I brush my teeth

Therapist/Parents: When do you say /i/?

Child : When I brush my teeth.

Therapist/Parents: Do you brush your teeth everyday?

Child : iii....I brush my teeth everyday.

/i/ - ii..Insect (*Intonation –Rising*)

Therapist/Parents: What sound does an insect make?

Child : iii.....the insect flies.

Therapist/Parents: What goes /i/ while flying?

Child : The insect goes iii...

Therapist/Parents: How does the insect fly up?

Child : iii...insect flies up.

/i/ - ii.. Slippers (*Intonation – Falling rising falling*)

Therapist/Parents: What do you say for touching dirty slippers?

Child : iii....its dirty.

Therapist/Parents: Do you touch your slippers?

Child : iii....I don't touch slippers.

Learning to listen to the sound /u/

/u/ - uu..Train (*Intonation –Flat*)

Therapist/Parents: How does the train go?

Child : uuuu...the train goes uuuu...

Therapist/Parents: What makes the sound /u/?

Child : The train makes the sound uuu..

Therapist/Parents: what is coming there? (Show a toy train)

Child : uuu.... The train is coming.

/u/ - uu..Crying (*Intonation – Repeated rising falling*)

Therapist/Parents: How do you cry?

Child : uuuu.....

Therapist/Parents: When do you make the sound /u/?

Child : uuu....When I fall down.

Therapist/Parents: Who is crying there?

Child : uuu...baby is crying.

Learning to listen to the sound /o/

/o/ - oo..Forgot (*Intonation –Rising falling*)

Therapist/Parents: You forgot something?

Child : ooo...I forgot your name.

Therapist/Parents: When do you say oooo?

Child : ooo...when I forget.

Learning to listen to the sounds Diphthongs

/ai/ - ai...Doll (*Intonation – Rising*)

Therapist/Parents: Is the doll nice?

Child : ai, ai,... the doll is looking nice.

/iu/ - iu, iu...Ambulance (*Intonation – Repeated rising falling*)

Therapist/Parents: What sound does the ambulance make?

Child : iu, iu, iu

Therapist/Parents: What makes the sound iu, iu?

Child : The ambulance goes iu, iu, iu...

Therapist/Parents: Where is the ambulance?

Child : iu, iu the ambulance is here.

/iya, iya, o/ Mc Donald song (*Intonation –Repeated rising falling*)

Therapist/Parents: What does the old Mc Donald sing?

Child : iya, iya, o.....

Therapist/Parents: Who sings iya, iya, o?

Child : The old Mc Donald sings iya, iya, o..

Therapist/Parents: What does old Mc Donald have?

Child : Old Mc Donald has a farm, iya, iya, iya, o....

Learning to listen to the sound /Pa/

/Pa/ - Papa (Calling Daddy) (*Intonation –Rising*)

Therapist/Parents: How do you call your Daddy?

Child : Papa..

Therapist/Parents: Whom do you call papa?

Child : My daddy...

Therapist/Parents: What did papa get for you?

Child : Papa buys chocolate for me.

/Pa/ - Papuuu.. (*Intonation – Falling*)

Therapist/Parents: How do you call a baby?

Child : Papu...

Therapist/Parents: Whom do you call papu?

Child : Little baby.

Therapist/Parents: Call the baby.

Child : Papu come here.

The sound is / Pi/

/pi/ - pi, pi, Jeep (*Intonation –Flat*)

Therapist/Parents: What sound does the jeep make?

Child : Pi, pi, pi...

Therapist/Parents: What makes the sound pi, pi, pi?

Child : The jeep goes pi, pi pi...

Therapist/Parents: Where is the jeep?

Child : Pi pi comes the jeep.

/Pi / - Music (*Intonation – Falling rising*)

Therapist/Parents: How does the music sound?

Child : Pipi pi...

Therapist/Parents: What is that sound pi pipi pi?

Child : Its nice music...

/Pa/ - pom..pom Van (*Intonation –Flat*)

Therapist/Parents: What sound does the van make?

Child : pom...pom...

Therapist/Parents: What makes the sound pom...pom?

Child : The van goes pom.. pom..

Therapist/Parents: Where is the van?

Child : pom...pom... comes the van.

/Pa/ - phup, phup... Air (*Intonation – Falling*)

Therapist/Parents: What sound do you make while blowing?

Child : phup..phup..

Therapist/Parents: When do you say phup...phup....phup...?

Child : While blowing.

/ba/ - ba, ba,..Calling hen (*Intonation – Repeated rising falling*)

Therapist/Parents: How do you call a hen to give food?

Child : ba, ba, ba

Therapist/Parents: When do you say ba, ba, ba?

Child : To give food to hen.

Therapist/Parents: What is hen doing?

Child : ba ba ba the hen is eating food.

/Ba/ - bow, bow..Dog (*Intonation –Rising*)

Therapist/Parents: How does the dog bark?

Child : Bow...bow..

Therapist/Parents: Which barks bow bow?

Child : The dog barks bow..bow..

Therapist/Parents: What does the dog eat?

Child : Bow, bow the dog eats bones.

/Ba/ - bu, bu, bu.. Boat (*Intonation –Rising*)

Therapist/Parents: What sound does the boat make?

Child : bu...bu...bu...

Therapist/Parents: What makes the sound Bu...Bu...Bu?

Child : The boat says bu..bu...bu

Therapist/Parents: Where does the boat go?

Child : bu bu bu the boat goes in water.

Learning to listen to the sound /Ta/

/Ta/ - Taataa...Bye (*Intonation –Rising*)

Therapist/Parents: What do you say while going out?

Child : Taataa....

Therapist/Parents: When do you say taataa?

Child : While going out.

Therapist/Parents: Are you going out?

Child : ta ta ...I am going out.

/Ta/ - Tap, Tap...Water falling (*Intonation –Flat*)

Therapist/Parents: What sound do you hear when water falls in the bucket?

Child : Tap, tap, tap...

Therapist/Parents: When do you hear the sound tap, tap, tap?

Child : When the water falls into bucket.

Therapist/Parents: Fill the bucket with water

Child : Tap Tap...water is falling.

/Ta/ - ta, tai, ta, tai....Dance (*Intonation –Repeated rising falling*)

Therapist/Parents: How do you dance? What do you sing while dancing?

Child : Ta tai ta Tai

Therapist/Parents: When do you sing ta tai ta tai?

Child : While dancing.

Therapist/Parents: Do you want to dance?

Child : Ta tai ta tai, lets dance now..

/Ta/ - thatha...Grand father (*Intonation – Falling rising falling*)

Therapist/Parents: How do you call your grand father?

Child : Thatha

Therapist/Parents: Whom do you call thatha?

Child : My grandfather.

Therapist/Parents: Do you like your Thatha?

Child : Yes, thatha tells me nice stories.

/ Ta/ - Ta...Give (*Intonation –Rising*)

Therapist/Parents: What do you say if you want something?

Child : Ta.....

Therapist/Parents: When do you say ta?

Child : If I want something.

Learning to listen to the sound /m/

/m/ - mm... Tasty (*Intonation –Rising*)

Therapist/Parents: What do you say if the food is tasty?

Child : mmmm.....

Therapist/Parents: When do you say mmmm?

Child : When the food is very tasty.

Therapist/Parents: How is the food?

Child : The food is yum yum.

/m/ - mm.. Yes (*Intonation – Falling*)

Therapist/Parents: Have you had your food?

Child : mmmm.... I had my food.

Therapist/Parents: Do you want this sweet?

Child : mmm... I want the sweet.

/m/ -mm..Thinking (*Intonation – Falling*)

Therapist/Parents: How do you think?

Child : mmm...

Therapist/Parents: When do you say mmmm?

Child : mmm...I am thinking.

/m/ - mae...mae..Goat (*Intonation –Repeated rising falling*)

Therapist/Parents: What does the goat say?

Child : mae....mae...

Therapist/Parents: What makes the sound mae, mae?

Child : The goat says mae...mae...

Therapist/Parents: Where is the goat?

Child : Mae, mae comes the goat.

/m/ - miau..miau..Cat (*Intonation – Falling rising*)

Therapist/Parents: What does the cat say?

Child : Miau...miau...

Therapist/Parents: What makes the sound meow, meow?

Child : The cat says miau...miau

Therapist/Parents: Where is the cat?

Child : Miau, miau the cat is under the chair.

/m/ - ambaa...Cow (*Intonation –Flat*)

Therapist/Parents: What does the Cow say?

Child : amba....amba...

Therapist/Parents: Which makes the sound amba?

Child : The cow says amba...amba...

Therapist/parents: What does the cow eat?

Child : amba... amba.... Cow eats grass.

/Da/ - Dam...Dam...Door Knocking (*Intonation –Rising*)

Therapist/Parents: Is someone banging the door?

Child : Dam Dam... someone is there at the door.

Therapist/Parents: When do you hear Dam, Dam?

Child : When someone bangs the door.

/Da/ - Dam Dam...Drum (*Intonation –Flat*)

Therapist/Parents: How does the drum sound when banged?

Child : Dam dam

Therapist/Parent: When do you hear the sound dum, dum?

Child : When someone bangs the drum.

Therapist/Parents: What do you do when you hear dum, dum

Child : Dum, dum we will march/dance.

Learning to listen to the sound /Di/

/Di/ - Ding dong, Ding dong...Clock (*Intonation –Repeated rising falling*)

Therapist/Parents: What sound does the clock make?

Child : Dingdong.

Therapist/Parents: What makes the sound Dingdong?

Child : Clock goes dingdong

Therapist/Parents: What is that sound?

Child : Dingdong, dingdong.... its time to play.

/Da/ - Ding dong...Door Bell (*Intonation – Repeated rising falling*)

Therapist/Parents: How does the door bell ring?

Child : Ding Dong, ding dong...

Therapist/Parents: When do you hear Ding Dong, Ding Dong?

Child : When door bell rings.

Therapist/Parents: Ding-dong, who is that?

Child : Someone is there at the door.

Learning to listen to the sound /Ha/

/Ha/ - aha...appreciation (*Intonation –Rising*)

Therapist/parents: How is the doll?

Child : Aha..aha..its very nice.

Therapist/Parents: When do you say aha?

Child : When the doll (or some other toy) looks nice.

Therapist/Parents: Did you like the doll?

Child : Aha...the doll is beautiful.

/Ha/ - ha, ha, ha...Laughing (*Intonation – Repeated rising falling*)

Therapist/Parents: How do you laugh?

Child : Ha, ha, ha..

Therapist/Parents: When do you say ha ha ha?

Child : When I hearing a joke.

/Ha/ - Hai... (*Intonation - Rising*)

Therapist/Parents: When you see someone what do you say?

Child : Hai.....

Therapist/Parents: When do you say hai?

Child : As soon as I see someone I say hai...

Therapist/Parents: Hai, how are you?

Child : Hai, I am fine.

/Ha/ - hee....Jumping (*Intonation – Falling rising falling*)

Therapist/Parents: How do you call while playing?

Child : Hey...

Therapist/Parents: When do anna's say hey....?

Child : When they call for someone while playing.

The sound is /Ka/

/Ka/ - akka... (*Intonation –Flat*)

Therapist/Parents: How do you call for your elder sister?

Child : Akka

Therapist/Parents: Whom do you call akka?

Child : My sister.

Therapist/Parents: Call your Akka, for playing.

Child : Akka, come let's play.

/Ka/ - akka ... (*Intonation – Falling rising falling*)

Therapist/Parents: Call your sister?

Child : Akka...

Therapist/Parents: Whom do you call akka?

Child : My sister.

Therapist/Parents: Call your Akka.

Child : Akka, come here.

/Ka/ - ka, ka, ka...Crow (*Intonation -Falling*)

Therapist/Parents: How does the crow sing?

Child : ka, ka, ka...

Therapist/Parents: What makes the sound ka, ka, ka?

Child : Crow sings ka, ka, ka..

/Ku/ - ku, ku, ...Bird (*Intonation –Rising falling*)

Therapist/Parents: How does the bird sing?

Child : Ku, ku ..

Therapist/Parents: What sings ku, ku, ku?

Child : Birds sing ku, ku, ku..

Therapist/Parents: Did you hear the birds singing?

Child : Ku, ku, ku... birds are singing.

/Ka/ - ku..ku...chik..Train (*Intonation –Flat*)

Therapist/Parents: How does the train go?

Child : Ku.....Ku..

Therapist/Parents: What makes the sound ku while moving?

Child : Train goes ku..ku..

Therapist/Parents: Where is the train?

Child : Kuuu... the train is in the railway station.

/Ta/ - Tak...Tak...Horse (*Intonation –Repeated rising falling*)

Therapist/Parents: What sound does the horse makes while running?

Child : Tak tak tak..

Therapist/Parents: What makes the sound tak tak tak tak tak?

Child : Horse goes tak, tak, tak..

Therapist/Parents: How does the horse run?

Child : Tak tak tak ..runs the horse.

/Ta/ - Tak...Tak...Foot step (*Intonation –Flat*)

Therapist/Parents: What sounds do you while you walk?

Child : Tak tak

Therapist/Parents: When do you hear the sound tak tak?

Child : While walking..

Therapist/Parents: Are you hearing someone walking?

Child : Tak tak, someone is walking.

/Ta/ - Tak..Tak..Door knock (*Intonation –Flat*)

Therapist/Parents: What sound do you hear while knocking the door?

Child : Tak Tak Tak...

Therapist/Parents: When do you hear Tak Tak Tak?

Child : While knocking the door,

Therapist/Parents: Check is there some out out?

Child : Tak Tak..is someone there out?

/Ta/ - Tick..tick..Watch (*Intonation –Flat*)

Therapist/Parents: What sound does the clock make?

Child : Tick, Tick...

Therapist/Parents: What makes the sound Tick...Tick?

Child : The clock goes tick tick.

Therapist/Parents: It is the time to paly/eat.

Child : yes, it is the time to eat.

The sound is /Na/ (*Intonation –Repeated rising falling*)

/Na/ - na..nana..na..Song (*Intonation – Falling rising falling*)

Therapist/Parents: How do you sing a song?

Child : na, na, na...

Therapist/Parents: When do you say na, na, na?

Child : When I sing na, na, na...

Learning to listen to the sound /s/

/s/ - sss...Snake (*Intonation –Flat*)

Therapist/Parents: What sound does the snake make?

Child : ssss....

Therapist/Parents: What makes the sound sssss?

Child : The snake goes ssss....

Therapist/Parents: What is the snake doing?

Child : Sss the snake is moving.

/s/ - sss...Cooker (Intonation –Rising)

Therapist/Parents: What sound comes from cooker?

Child : ssss.....

Therapist/Parents: What is there in cooker?

Child : ssss...the food is ready in cooker.

/s/ - sss...Balloon (Intonation –Flat)

Therapist/Parents: How does the air come from balloon?

Child : sss.....

Therapist/Parents: What happened to ballon?

Child : Sss...the air is gone.

The sound is /sh/

/sh/ - shh....Baby sleeping (Intonation –Falling)

Therapist/Parents: What do you say when someone makes noise while a
baby sleeps?

Child : sh, sh, sh...don't make noise.

Therapist/Parents: Is the baby sleeping?

Child : sh, sh,...the baby is sleeping.

/sh/ - Silence (*Intonation –Flat*)

Therapist/Parents: What will you say when someone shouts?

Child : sh, sh, sh....

Therapist/Parents: When do you say sh sh..?

Child : When someone shouts.

Therapist/Parents: Ask them not to shout.

Child : sh, sh don't make noise.

/sh / - shh...Raining (*Intonation –Repeated rising falling*)

Therapist/Parents: How does it rain?

Child : sh..sh..sh..

Therapist/Parents: sh sh what is that sound?

Child : Its raining...

Therapist/Parents: sh, sh its raining.

Child : Lets play in the rain.

/sh/ - shu..shu...Chasing (*Intonation –Rising*)

Therapist/Parents: How do you chase the animal?

Child : sh, sh, sh.....

Therapist/Parents: Chase the animal out.

Child : sh, sh..go away.

Learning to listen to the sound /La/

/La/ - la..lala..la Song lullaby (*Intonation –Repeated rising falling*)

Therapist/Parents: How do you make babies sleep?

Child : la, la, la..

Therapist/Parents: When do you sing la, la, la?

Child : To make the babies sleep.

Therapist/Parents: Did you make the baby to sleep?

Child : La, la, la, the baby is sleeping.

Learning to listen to the sound Blends

/Ba/ - brr...Bus (*Intonation – Falling*)

Therapist/Parents: What sound does the bus makes?

Child : brrrrr.....

Therapist/Parents: What makes the sound brrrr?

Child : Bus goes brrrrr...

Therapist/Parents: Where is the bus?

Child : brrr...comes the bus/brr...the bus is on the road.

/Drrr/ - drrr...Auto (*Intonation – Falling*)

Therapist/Parents: How does the auto go?

Child : Drrr..

Therapist/Parents: What makes the sound drrrrr?

Child : Auto goes drrr....

Therapist/Parents: Where is the auto?

Child : Drrr..., the auto is going on the road.

/Krrr/ - krr...Lion (*Intonation –Rising*)

Therapist/Parents: How does the lion roar?

Child : Krrr...

Therapist/Parents: What makes the sound krrrr?

Child : Lion roars krrr..

Learning to listen to the sounds Clusters

/Quack/ - quack...quack...Duck (*Intonation –Flat*)

Therapist/Parents: What sound does the duck make?

Child : quack, quack..

Therapist/Parents: What makes the sound quack, quack?

Child : Duck says quack, quack...

Therapist/Parents: Where is the duck?

Child : Quack, quack, the duck is in the water.

/Trg/ - tring...tring..Cycle Bell (*Intonation –Repeated rising falling*)

Therapist/Parents: How does the cycle bell sound?

Child : Tring, tring...

Therapist/Parents: What goes tring tring?

Child : The cycle goes tring, tring.

Therapist/Parents: Did you hear the sound?

Child : Tring, tring...cycle is coming.

/Kodra/ - kodra..kodra...Pig (*Intonation –Flat*)

Therapist/Parents: What sound does the pig make?

Child : Kodra, kodra..

Therapist/Parents: What makes the sound kodra, kodra?

Child : Pig says..kodra, kodra.

APPENDIX C

EXPANSIONS

**EXPANSIONS
FOR
LEARNING TO LISTEN SOUNDS**

Learning to listen the sound /a/

/a/ - aaa...Aeroplane (*Intonation –Falling rising falling*)

Therapist/Parents: vimaana yeenu shabda maaDutte?

Child : “aaaa” (Vimaana “aaaaaa” shabda maaDutte).

Therapist/Parents: yeenu /a/ shabda maaDutte?

Child : vimaana /a/ shabda maaDutte...

Therapist/Parents: vimaana yelli haarutte?

Child : aaa... vimaana aakaasha dalli haarutte.

/a/ - aa..Pain (*Intonation – Rising*)

Therapist/Parents: noovaadare yeenu heLttiya?

Child : “aaaa” novaaguttidde.

Therapist/Parents: noovideya?

Child : aaaa... hoTTe noovuttaaide.

/a/ - aa..Hot (*Intonation - Rising*)

Therapist/parents: bisi candlannu muTTidaaga yeenu heLttiya?

Child : aaaa....bisi yide.

Therapist/parents: bisiyaada vastu muTTidaaga /a/ heLttiya?

Child : aaaa.... houdu novttaaitte.

Therapist/parents: 'candle' bisi ideya?

Child : aaa....bisi ide.

/a/ - aa..Spicy (*Intonation - Rising*)

Therapist/parents: kaara uuTa maaDidaaga yeenu heLttiya?

Child : aaaa....uuTa kaara ide.

Therapist/Parents: kaara uaTa maaDi /a/ heLttiya?

Child : aaa.. haavuDus.

Therapist/Parents: uaTa kaara ideya?

Child : aaa....uuTa kaara ide.

Learning to listen the sound /i/

/i/ - ii.. Brushing (*Intonation – Repeated rising falling*)

Therapist/Parents: hallu hegee udzduttiya?

Child : iii.....hallu udzutteene.

Therapist/Parents: yaavaaga iiiii heLttiya?

Child : hallu udzuvaaga.

Therapist/Parents: hallu dina:lu udzuttiya?

Child : iii....haudu udzuttene.

/i/ - ii..Insect (*Intonation - Rising*)

Therapist/Parents: huLa yeenu shabda maaDutte?

Child : iii....huLa haaruttide.

Therapist/Parents: haaruvaaga yaavudu iii shabda maaDutte?

Child : huLa iii shabda maaDutte.

Therapist/Parents: huLa heege haarutte?

Child : iii...huLa mele mele haarutte.

/i/ - ii..Slippers (*Intonation - Rising*)

Therapist/Parents: 'slipper' muTTidre yenu heLttiya?

Child : iii....galiidzu.

Therapist/Parents: niinu 'slipper' muTTiyaa?

Child : iii....naanu muTTalla.

Learning to listen to the sound /u/

/u/ - uu..Train (*Intonation - Flat*)

Therapist/Parents: 'Train' hege shabda maaDutte?

Child : uuuu...train hogtaaide...

Therapist/Parents: yenu uuuu shabda maaDutte?

Child : 'Train' uuuu shabda maaDutte.

Therapist/Parents: yenu bartaaide?

Child : uuu... 'Train' bartaaide

/u/ - uu..Crying (*Intonation – Repeated rising falling*)

Therapist/Parents: hege aLuttiya?

Child : uuuu.....

Therapist/Parents: uuuu anta yaavaaga aLutiya?

Child : uuu....keLage bidde.

Therapist/Parents: yaaru aLuttidaare?

Child : uuu...magu aLuttaaide.

Learning to listen to the sound /o/

/o/ - oo...Forgot (*Intonation – Rising falling*)

Therapist/Parents: yenuo martu hoitaa?

Child : oo...haudu Ninna hesaru martuhooitu.

Therapist/Parents: oo.. anta yaavaaga heLttiya?

Child : yethanu marathodre oo...heLttini.

Learning to listen to the sounds Diphthongs

/ai/ - ai.. Doll (*Intonation - Rising*)

Therapist/Parents: gombe cennaagideya?

Child : ai, ai,...gombe cennaagide.

/iu/ - iu, iu, iu...Ambulance (*Intonation – Repeated rising falling*)

Therapist/Parents: ‘ambulance’ yeenu shabda maaDutte?

Child : iu, iu, iu

Therapist/Parents: yaavudu iu iu anta shabda maaDutte?

Child : ‘ambulance’ iu iu iu anta hoogutte

Therapist/Parents: ‘ambulance’ yellide?

Child : iu iu ambulance iLiette.

iya, iya, o- Mc Donald song (*Intonation – Repeated rising falling*)

Therapist/Parents: Mc Donald yenu haaDu haaDutte?

Child : iya, iya, o.....

Therapist/Parents: yaaru iya, iya, o... anta haaDutte?

Child : Mc Donald iya, iya, o.. anta haaDutte.

Therapist/Parents: Mc Donald attare yennu itte?

Child : Mc Donald attre ‘farm’ itte ..iya, iya, o....

Learning to listen to the sound /Pa/

/Pa/ - papa (*Intonation - Rising*)

Therapist/Parents: daddyna heege karittiya?

Child : Papa.

Therapist/Parents: yaarannu papa anta karittiyaa?

Child : daddyna.

Therapist/Parents: papa yeenu tanndru?

Child : Papa 'sweets' tanndru.

/Pa/ - paapu.... (*Intonation - Falling*)

Therapist/Parents: maguvanna heege karittiya?

Child : Paapu...

Therapist/Parents: yaarannu paapu anta karittiya?

Child : maguvanna..

Therapist/Parents: maguvanna kari...

Child : Paapu illi baa..

The sound is / Pi/

/pi/ - pi, pi, pi...Jeep (*Intonation - Flat*)

Therapist/Parents: 'Jeep' yeenu shabda ma:Dutte?

Child : pi, pi, pi...

Therapist/Parents: yeenu pi pi pi shabda maaDutte?

Child : 'Jeep' pi pi pi anta hoitu.

Therapist/Parents: 'Jeep' elide?

Child : Pi pi 'Jeep' bartaaide

/Pi / - pi pipi pi...Music (*Intonation - falling rising*)

Therapist/Parents: haaDu hege keLsotte?

Child : pipi pi...

Therapist/Parents: pi pipi pi.. yenu shabda?

Child : adu haadu cenaagide

/Pa/ - pom...pom...Van (*Intonation - Flat*)

Therapist/Parents: van yeenu shabda maadotte?

Child : pom...pom...

Therapist/Parents: yaavudu pom pom shabda maaDotte?

Child : van pom pom anta hoguttide

Therapist/Parents: van elli?

Child : pom...pom... van bartaaide..

/Pa/ - phup..phup..Air (*Intonation - Falling*)

Therapist/Parents: gaaLi uuduvaaga yeenu shabda maaDttiya?

Child : phup..phup..

Therapist/Parents: pup pup pup...shabda yaavaaga maaDttiya?

Child : gaaLi uuduvaaga.

Learning to listen to the sound /Ba/

/Ba/ - ba, ba, ba..hen (*Intonation – Repeated rising falling*)

Therapist/Parents: kooLi yannu heege kariittiya?

Child : ba, ba, ba

Therapist/Parents: yaavaaga ba, ba, ba, anta heLttiya?

Child : kooLige uuTa koDuvaaga.

Therapist/Parents: kooLi yenu maaDuttide?

Child : ba, ba, ba, kooLi tinnuttide.

/Ba/ - bow..bow..Dog (*Intonation - Rising*)

Therapist/Parents: naayi hege bogaLutte?

Child : bow...bow.

Therapist/Parents: yeenu bow bow annutte?

Child : naayi bow..bow.. anta bogaLutte.

Therapist/Parent: naayi yeenu tinnotte?

Child : bow, bow .. naayi biscuit tinnotte.

/Ba/ - bu, bu, bu...Boat (*Intonation - Rising*)

Therapist/Parents: boat yeenu shabda maaDutte?

Child : bu...bu...bu

Therapist/Parents: yeenu bu...bu..bu.. shabda maadutte?

Child : bu..bu...bu.. anta boat hoittu.

Therapist/Parents: boat ellige hoitu?

Child : bu bu bu boat neera meLe hoitu.

Learning to listen to the sound /Ta/

/Ta/ - TaTa...Bye (*Intonation - Rising*)

Therapist/Parents: horage hooguvaaga yenu heeLtiya?

Child : TaTa....

Therapist/Parents: yaavaaga TaTa heeLtiya?

Child : horage hooguvaaga.

Therapist/Parents: horage hoogttiya?

Child : Ta Ta ...naanu horage hogtiini.

/Ta/ - Tap..Tap...Water falling (*Intonation - Flat*)

Therapist/Parents: 'bucket' alli niirubiiLuvaaga yeenu shabda keLsotte?

Child : Tap, Tap, tap...

Therapist/Parents: Tap, Tap..yeenu shabda adu?

Child : niiru biiLtaa ide.

Therapist/Parents: 'Bucket' alli niiru tumbisu

Child : Tap Tap.. niiru tumbutta ide...

/Ta/ - ta tai ta tai..Dancing (*Intonation – Repeated rising falling*)

Therapist/Parents: heegae 'dance' maaDuttiya?

Child : Ta tai ta Tai

Therapist/Parents: yaavaaga ta tai ta tai annuttiya?

Child : 'Dance' maaDuvaaga.

Therapist/Parents: 'Dance' maaDuttiya?

Child : Ta tai ta tai, havuudu..

/Ta/ - tata..Grand father (*Intonation - Rising*)

Therapist/Parents: adzdnannu hege karittiya?

Child : tata ..

Therapist/Parents: yaarannu tata anta karittiya?

Child : adzdnannu.

Therapist/Parents: ninage adzdz ishtanaa?

Child : haudu, tata ishta.

/ Ta/ - Give (*Intonation - Flat*)

Therapist/Parents: yenaadaru beekidre heege keeLttiya?

Child : taa.....

Therapist/Parents: yaavaagat ta anta heLttiya?

Child : yeenadaru beekidre..

Learning to listen to the sound /m/

/m/ - mm..Tasty (*Intonation - Rising*)

Therapist/Parents: uuTa cenaagide?

Child : mmmm.....

Therapist/Parents: yaavaaga mmmm anta heLttiya?

Child : uuTa t enaagidre mmmm heLtiini.

Therapist/Parents: uuTa heegide?

Child : uuTa 'yum yum' aagide.

/m/ - mm..Yes (*Intonation - Falling*)

Therapist/Parents: uuTa aiita?

Child : mm.... aaitu.

Therapist/Parents: yaavaaga mm... anta heLttiya?

Child : mm..uuTa maaDide.

/m/ - mm..Thinking (*Intonation - Falling*)

Therapist/Parents: hege yocanne maaDttiya?

Child : mm...

Therapist/Parents: mm.. anta yaavaaga heLttiya?

Child : mm...yocane maaDuttaiTini.

/m/ - mae..mae..Goat (*Intonation – Repeated rising falling*)

Therapist/Parents: meeke yenu shabda ma:Dutte?

Child : mae....mae...

Therapist/Parents: yenu mae mae shabda maaDutte?

Child : meeke mae mae shabda maaDutte.

Therapist/Parents: meke yellide?

Child : Mae, mae meke barta:ide.

/m/ - miau..miau..Cat (*Intonation – Falling rising*)

Therapist/Parents: bekku yenu heeLutte?

Child : miaw miaw...

Therapist/Parents: yeenu miaw miaw anta heeLutte?

Child : bekku miaw miaw anta heeLutte.

Therapist/Parents: bekku elide?

Child : miaw miaw bekku 'chair' kelagae ittae..

/m/ - amba..Cow

Therapist/Parents: hasu ye:nu heeLutte?

Child : amba....amba...

Therapist/Parents: yaavudu amba anta heeLutte?

Child : hasu amba...amba...anta heeLutte.

Therapist/parents: hasu ennu tinnatte?

Child : amba... amba.... hasu hullu tinnutte.

Learning to listen to the sound /Da/

/Da/ - Dam..Dam..Banging the door (*Intonation - Rising*)

Therapist/Parents: yaaro baagilu tattutaa iddaare?

Child : Dum Dum... jaaroo iddaare.

Therapist/Parents: yaavaaga Dum Dum shabda keLsotte?

Child : baagilu tattidaaga.

/Da/ - Dam..Dam..Drum (*Intonation - Flat*)

Therapist/Parents: drum heege shabda maaDotte?

Child : Dum Dum

Therapist/Parent: yaavaaga Dum Dum shabda keLsotte?

Child : drum hoDedaaga keLsotte.

Therapist/Parents: Dum Dum yenu maaDttiya?

Child : Dum, Dum march maaDteene.

/Di/ - DingDong...DingDong..Clock (*Intonation – Repeated rising falling*)

Therapist/Parents: gaDiyaara yeenu shabda maaDotte?

Child : DingDong.

Therapist/Parents: DingDong yeenu shabda adu?

Child : gaDiyaarada shabda.

Therapist/Parents: Time aita?

Child : DingDong, DingDong.... its time to play.

/Di/ - DingDong..Door Bell (*Intonation – Repeated rising falling*)

Therapist/Parents: manee bell heege shabda maaDotte?

Child : Ding Dong, Ding Dong...

Therapist/Parents: Ding Dong, Ding Dong yeenu shabda?

Child : manee bell shabda.

Therapist/Parents: DingDong, yaaralli?

Child : yaaru attu?

Learning to listen to the sound /Ha/

/Ha/ - aha...appreciation (*Intonation –Rising*)

Therapist/parents: goombae hegae idea?

Child : aha..aha....

Therapist/Parents: yaavaga aha heLuttiya?

Child : goombae cannagittrae aha..aha..haLuttenae

Therapist/Parents: gombae ishTana?

Child : aha...ishTa..

/Ha/ - ha, ha, ...Laughing (*Intonation – Repeated rising falling*)

Therapist/Parents: heege negaaDuttiya?

Child : ha, ha, ha..

Therapist/Parents: yaavaaga ha, ha, ha, anta heLttiya?

Child : naguvaaga

/Ha/ - Hai...(*Intonation - Rising*)

Therapist/Parents: yaarannu nooDidaaga yeenu heLttiya?

Child : hai.....

Therapist/Parents: yaavaaga hai heLttiya?

Child : yaarannu nooDidaaga hai heLttene

Therapist/Parents: hai, heegiddiya?

Child : hai, naanu cennaagidiini.

/Ha/ - hee...Calling while playing (*Intonation - Rising*)

Therapist/Parents: huDugaru aaDuvaaga heege karitaare?

Child : hee...

Therapist/Parents: huDugaru hee..yaavaaga karitaare?

Child : aaDuvaaga hee... anta karitaare.

The sound is /Ka/

/Ka/ - Akka (*Intonation - Flat*)

Therapist/Parents: akka nannu heege karittiya?

Child : akka

Therapist/Parents: yaarannu akka anta karittiya?

Child : akka nannu

Therapist/Parents: akkanannu aaDokke kari?

Child : akka, banni aaDuva

/Ka/ - Akka (*Intonation - Rising*)

Therapist/Parents: akkanannu kari

Child : akka...

Therapist/Parents: yara akka anna karittiya?

Child : nanna akkana..

. /Ka/ - ka, ka, ka..Crow (*Intonation - Falling*)

Therapist/Parents: kaage heege haaDotte?

Child : ka, ka, ka...

Therapist/Parents: yeenu ka.. ka ..ka ..anta shabda maaDotte?

Child : kaage ka ..ka ..ka ..anta haaDotte.

/Ku/ - ku...ku...Bird (*Intonation – Rising falling*)

Therapist/Parents: hakki heege aaDotte?

Child : Ku, ku ..

Therapist/Parents: yeenu ku ku ku anta haaDotte?

Child : hakki ku ku ku anta haaDotte.

Therapist/Parents: hakki haaDiddu keeLidiya?

Child : Ku, ku, ku... hakki haaDtte.

/Ka/ - ku..ku..chik..chik..Train (*Intonation - Flat*)

Therapist/Parents: ‘Train’ heege hoogutte?

Child : Ku.....Ku..

Therapist/Parents: yeenu hooguvaaga ku....anta shabda maaDutte?

Child : railu ku ku...anta hoogutte.

Therapist/Parents: railu elli?

Child : Kuuu... ‘railway station’ nalli ide.

/Ta/ - Tak..Tak...Horse (*Intonation – Repeated rising falling*)

Therapist/Parents: kudure ooDuvaaga yeenu shabda maaDotte?

Child : Tak Tak Tak..

Therapist/Parents: yaavudu Tak Tak Tak anta shabda maaDotte?

Child : kudure Tak Tak Tak anta shabda maaDotte.

Therapist/Parents: kudure heege hoogotte?

Child : Tak Tak Tak ..kudure hoogotte.

/Ta/ - Tak..Tak..Foot step (*Intonation - Flat*)

Therapist/Parents: naDeyuvaaga yeenu shabda aagotte?

Child : Tak Tak

Therapist/Parents: ya:va:ga tak tak shabda barotte?

Child : naDeyuva:ga.

Therapist/Parents: yaaraadaru naDeyuvude keLsotta?

Child : Tak tak, yaaroo nadittidaare.

/Ta/ - Tak..Tak..Door knock (*Intonation - Flat*)

Therapist/Parents: baagilu tattuvaaga yenu shabda aagotte?

Child : Tak Tak Tak...

Therapist/Parents: yaavaaga Tak Tak Tak shabda keLsotte?

Child : baagilu tattuvaaga.

/Ta/ - Tick..Tick..Watch (*Intonation - Flat*)

Therapist/Parents: gadiyaara yenu shabda maaDutte?

Child : Tick, Tick...

Therapist/Parents: yeenu Tick Tick shabda maaDutte?

Child : gadiyaara tick tick annutte.

The sound is /Na/

/Na/ - na..na..na..Song (*Intonation – Repeated rising falling*)

Therapist/Parents: haaDu heege haaDttiya?

Child : na, na, na...

Therapist/Parents: yaavaaga na, na, na... heLttiya?

Child : na na na haadovaaga.

Learning to listen to the sound/s/

/s/ - sss...Snake (*Intonation - Flat*)

Therapist/Parents: haavu yeenu shabda maaDutte?

Child : ssss....

Therapist/Parents: yaavudu ssss shabda maaDutte?

Child : haavu ssss anta hoitu.

Therapist/Parents: haavu yeenu madtaaide?

Child : ssss haavu hogtaaide.

/s/ - sss...Cooker (*Intonation - Rising*)

Therapist/Parents: kukkarinda yeenu shabda barutte?

Child : ssss....

Therapist/Parents: kukkeralli yeenu ide?

Child : ssss...uuTa 'ready' ide.

/s/ - sss...Balloon (*Intonation - Flat*)

Therapist/Parents: balloninda gaaLi heege barutte?

Child : sss.....

Therapist/Parents: ballonige yenaiitu?

Child : sss...gaaLi hoiitu.

The sound is /sh/

/sh/ - sh....Baby sleeping (*Intonation - Falling*)

Therapist/Parents: magu malagidaagay aaru shabda maaDidare yeenu eeLtiya?

Child : shh.... ...shabda maabeda.

Therapist/Parents: magu malagtaaideya?

Child : shhhh...magu malgtaaide.

/sh/ - sh...Silence (*Intonation - Flat*)

Therapist/Parents: yaaru shabda maaDidre yenu heLttiya?

Child : shh...

Therapist/Parents: yaavaaga sh sh heLttiya?

Child : yaaru shabda maaDidare.

Therapist/Parents: avarige shabda maaDadiru endu heeLu

Child : shhhh... shabda maadbeeDa.

/sh / - sh...Rain (*Intonation – Repeated rising falling*)

Therapist/Parents: male heege barutte?

Child : sh...

Therapist/Parents: sh sh yenu shabda adu?

Child : maLe shabDa

/Sh/ - sh, sh, sh..Chasing (*Intonation - Rising*)

Therapist/Parents: praaNina hege ooDisttiya?

Child : sh, sh, sh.....

Therapist/Parents: praaNina ooDusu.

Child : sh, sh..hoogu.

Learning to listen to the sound /La/

/La/ - la, lala, la lallaby (*Intonation – Repeated rising falling*)

Therapist/Parents: maguna heege maLagstiya?

Child : la, la, la..

Therapist/Parents: yaavaaga la la la anta haaDtitiya?

Child : maguna malagisuvaaga.

Therapist/Parents: maguna malagisdiya?

Child : la, la, la, magu malagtide.

Learning to listen to the Blends

/Ba/ - brr...Bus (*Intonation - Falling*)

Therapist/Parents: bus yenu shabda maadutte?

Child : brrrrr.....

Therapist/Parents: yenu brrrr shabda maaDutte?

Child : brrrr... anta bus hoitu.

Therapist/Parents: bus elli?

Child : Brr... bus rooDu maLe hoguuttaite.

/Drrr/ - drr...Auto (*Intonation - Falling*)

Therapist/Parents: auto heege hoogutte?

Child : Drrrr..

Therapist/Parents: yeenu drrr... anta shabda maaDutte?

Child : auto drrr.. anta hoogutte.

Therapist/Parents: auto elli?

Child : drrr..., auto hoogttide.

/Krrr/ - krr...Lion (*Intonation - Rising*)

Therapist/Parents: simha heege gardzisuttade?

Child : krrr...

Therapist/Parents: yeenu krrr.. anta shabda maaDutte

Child : simha krrrr.. anta gardzisuttade.

Learning to listen to the clusters

/Quack/ - Duck (*Intonation - Flat*)

Therapist/Parents: baatukooLi yeenu shabda maaDutte?

Child . : quack, quack..

Therapist/Parents: yeenu quack quack anta heeLutte?

Child . : baatukooLi quack quack anta heeLutte.

Therapist/Parents: baatulooLi elli?

Child . : quack, quack, baatukooLi niiralli ide.

/Tring/ - Cycle Bell (*Intonation – Repeated rising falling*)

Therapist/Parents: cycle bell heege shabda maaDutte?

Child : Tring, Tring...

Therapist/Parents: yeenu Tring Tring anta shabda maadutte?

Child : cycle Tring Tring anta hoogutte..

Therapist/Parents: shabda kelsita?

Child : Tring, Tring...cycle bartaa ide

/Kodra/ - Pig (*Intonation - Flat*)

Therapist/Parents: handi yeenu shabda maaDutte?

Child : kodra, kodra..

Therapist/Parents: yeenu kodra kodra anta shabda maaDutte?

Child : handi kodra kodra anta heeLutte.