

***CHILD DIRECTED SPEECH .- A COMPARISON BETWEEN
NORMAL AND HEARING IMPAIRED CHILDREN***

Reg. NO.M9605

Dissertation submitted as part fulfilment for the final year
M.Sc, (Speech and Hearing), Mysore.

All India Institute of Speech and Hearing

Mysore 570006

1998

DEDICATED TO THE ALMIGHTY

*ananyas cintayanto mam ye janah paryupasate/
tesam nityabhiyuktanam yogaksemam vahamy aham*

*"To those men who worship me alone,
thinking of no other,
who are ever devout,
I provide gain and security"*

- Bhagavadgita

CERTIFICATE

This is to certify that this Dissertation entitled *CHILD DIRECTED SPEECH : A COMPARISON BETWEEN NORMAL AND HEARING IMPAIRED CHILDREN* is the bonafide work in part fulfilment for the degree of Master of Science (Speech and Hearing) of the student with Register No.M9605

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May, 1998



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CERTIFICATE

This is to certify that this Dissertation entitled *CHILD DIRECTED SPEECH . A COMPARISON BETWEEN NORMAL AND HEARING IMPAIRED CHILDREN* has been prepared under my supervision and guidance.

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DECLARATION

This Disertation entitled **CHILD DIRECTED SPEECH : A COMPARISON BETWEEN NORMAL AND HEARING IMPAIRED CHILDREN** is the result of my own study under the guidance of Dr.Shyamala, ICC, Reader and HOD..Department of Speech pathology, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier at any University for any other diploma or degree.

Mysore

May, 1998

Reg. No.M9605

ACKNOWLEDGEMENT

I would like to convey my sincere regards to *Dr. Shyamala, K.C*, Reader and HOD, Department of Speech Pathology, All India Institute of Speech and Hearing, Mysore, for her invaluable guidance in enabling me to complete this work successfully.

I would like to thank Dr.(Miss) S.Nikam, Director, All India Institute of Speech and Hearing, Mysore, for permitting me to carryout this study.

I would like to thank all the TINY-TOTS AND THEIR MOTHERS who participated in the study.

I would like to express my gratitude to *Dr. Balakrishna Acharya and Dr. Prakash* for their advice on the correct use of statistical procedures.

I would like to thank all my classmates, and all my juniors, who have directly or indirectly helped me in completing this work.

I would also like to express my deepest gratitude to all my family members for their strong support and love.

And finally, I would like to thank Rajalakshmi akka for her neat, quick and efficient typing.

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INTRODUCTION

One of the great accomplishments of infancy and early childhood is the acquisition of conventional communicative and linguistic competence. Although researchers are still attempting to describe and understand the processes involved in this acquisition, it appears to be increasingly emphasized that interactions between young children and their parents or caretakers are crucial factors in the child language acquisition. Early social interactions provide the vehicle through which the child acquires the linguistic structures, the semantic content and the social uses of language. Thus, the nature of every day interactions between the caregiver and the child is of vital interest and importance to those who wish to understand the nature of early language development.

Research on the linguistic input to language learning children dates back to the 1950's and 1960 s. Since then, it has been well established that there are systematic differences between speech to children and speech among adults. When adults speak to infants, they tend to modify their style of speaking. This modified language spoken to young children has been termed as 'motherese', although it is spoken not only by mothers, but also by fathers, by other

adults and by older children. The other terms like 'parentese' or 'child directed speech' are also widely used synonymously in the recent times.

Child-directed speech (CDS) is much simpler in its structure and contains short-formed utterances, fewer complex sentences is highly redundant and consistent; is much more closely tied to the immediate context, and employs a number of special discourse features (Snow, 1972). It is also characteristically higher in pitch, more exaggerated in intonation and slower in tempo (Garnica, 1977). These modifications of mother's speech are reported to aid the child's language learning process, although the exact relationship between child-directed speech and the child's acquisition of language is much less straight forward.

Over the recent years, the pattern of speech addressed to the language impaired children and the hearing-impaired children is also being researched upon. However, these studies are very limited and somewhat controversial. While a few studies have suggested that the linguistic environment of hearing-impaired is different from that of normal children; (Cross, 1970; Weddel-Monnig and Lumley, 1980; Cheskin, 1982; Schlesinger and Meadow, 1972; Meadow, Greenberg, Erling and

Carmichael, 1981). Other studies have failed to find significant differences between normal and hearing-impaired children (Tanksley, 1993; Nienhuys, Cross and Horsborough, 1984). This suggests an extensive need to study the CDS in normal and the hearing-impaired children.

Also the research on CDS indicates that the information regarding the nature of the interaction between hearing-impaired children and their parents can have a direct implication for intervention programmes by suggesting suitable modifications, if necessary, in their communicative behaviours.

Further, review of literature suggests that little work has been done in the area of discourse communicative functions of CDS in Indian context. Hence the present study was attempted to investigate the communicative functions of CDS in normal and hearing-impaired children. Such a study would serve as a basis for further research in Indian context and would enhance our understanding on the influence of CDS in the language acquisition.

PURPOSE OF THE STUDY

The purpose of the study was -

- a) To examine the communicative functions in the child-directed speech of mothers with normal hearing children in the age range of 12-24 months.
- b) To examine the communicative functions in the child-directed speech of mothers with hearing-impaired children, whose language age ranged from 12-24 months.
- c) To compare the child-directed speech of the two groups to determine if any significant differences existed in terms of the communicative functions.

REVIEW OF LITERATURE

In the famous story of the Egyptian King Psammetichus, told first by Herodotus and frequently cited in introductory linguistic courses, pre-linguistic infants were kept from hearing human speech in order to see what language they would produce. According to the story, the young children produced the Phrygian word for bread, thus proving that Phrygians were the oldest race of human kind. Over the centuries, it has been shown that this tale is probably apocryphal. Isolated children do not talk at all (Gleason and Weintraub, 1976).

Language is a social phenomenon and in the absence of society, it fails to bloom. The pre-verbal child is a social being. Even within the first several days of life, infants have been shown to enjoy listening to and responding to speech events (Morse, 1972; 1974; Turnure, 1971). During the different stages of language acquisition, the infant is not merely a passive receptor who is simply absorbing the language information, but is actively processing the information from his environment and is learning much more about language than was previously believed.

The pre-requisites to language development include cognitive and social schemes that are gradually combined into complex communicative sequences during the stages of sensorimotor development (Sugarman, 1978). The importance of the early social interactions between infants, young children and their parents or guardians has become a key issue in the discussion of language and in particular, child language acquisition. Early social interactions provide the vehicle through which the child acquires the linguistic structures, much of the semantic content, and the social uses of language (McLean and Snyder-McLean, 1978).

INPUT LANGUAGE IN HISTORICAL PERSPECTIVE

Theories of language development range all the way from the strongly innatist views, which see the child as relying on innate mechanisms to work out the language on the basis of mere exposure to the adult model (Chomsky, 1965), to theories which hold that the language of the parent, the input language, contains all that is necessary to explain language development (Moerk, 1975). Like the nature-nurture controversy in its other incarnations, this one, too, presses us toward oversimplification at either end of the continuum. Language acquisition and the acquisition of the social rules

for language use clearly rely upon innate mechanisms that makes acquisition possible in humans and also upon input from competent speakers in the surrounding community.

In this section, the significance of the linguistic environment, as viewed from different theories of language acquisition, is considered.

BEHAVIORIST VIEWS - According the behaviorists, the acquisition of language is seen as a gradual, additive process in which a repertoire is built up, a repertoire which, over time, comes closer and closer to the adult standard. Skinner (1957) views language behaviour as emerging according to the principles of operant conditioning and reinforcement. The role of the parents in the very early stages of language development is to shape the child's linguistic productions. Through reinforcement, sounds are shaped into words and words are shaped into functional response units.

Thus, the role of parental input language in behaviorists theory is to provide positive reinforcement for the baby's successive approximations of the target language. This theory does not assume that adult child speech has any unique structural or semantic characteristics. Features such

as parental babbling to infants are seen as merely imitative of the child's behaviour, occurring during a very limited period of time.

SOCIAL LEARNING THEORY - Social learning theorists (Aiiport, 1924; Bandura and Harris, 1966; Miller and Doilard, 1941) posited imitation as the explanation for the mechanism underlying the acquisition of behaviour, including linguistic behaviour. Behaviour is acquired as a result of imitating the behaviour of a model. From this perspective, the parental input language is viewed as a model to be copied by the children, but it is not a model that has been modified for children.

PSYCHOLINGUISTIC THEORY - Chomsky (1965) viewed that children were born with a set of transformational rules in their innate Language Acquisition Device (LAD) and the children evolve through stages of language learning through the genetic preprogramming. The role of input in innatist - psycholinguistic theory was seen as necessary but not sufficient to explain the acquisition of language. The input determines what language the child will learn, but the major responsibility for the acquisition of language was attributed to the genetically prewired LAD.

Nativists argued that because adult talk is very complex, is often ungrammatical and contains deep structure regularities not manifest in surface talk, beginning language learners cannot learn language simply by listening to the language that goes on around them.

To counter the nativist view, researchers began studying the structure of language find out whether it was, indeed, too complex too grammatical and too opaque for young children to learn. What ensued was a spate of research studies which showed that language spoken to children was different from that which the nativists were hearing in their conversation with adults (Newport, 1977; Snow and Ferguson, 1977; Broen, 1972; Snow, 1972; Drach, 1969).

This paved the way for the socio-cultural theory or the interaction theory.

SOCIOCULTURAL THEORY - The socio-cultural theorists reject Chomsky's hypothesis by emphasizing that the development of language is attributable to a child's interaction with other members of the society.

MOTHER'S SPEECH

Observations of mother-child interaction in laboratory and naturalistic settings have provided the data for most input language studies. The general procedure for collecting data consists of observing and taping mothers in verbal interaction with children of different ages and with other adults. Structured situations, for example, block building, story-telling and playing with puzzles, as well as unstructured situations have provided contexts for eliciting mother-child speech. The speech samples collected in this manner are then subjected to analysis. Mother's speech to children has been found to contain modifications in suprasegmental, phonological, syntactic, semantic and interactional features.

PROSODIC ASPECTS OF CHILD DIRECTED SPEECH

PITCH : - Almost every researcher who has described the speech addressed to babies and young children has mentioned that adults seem to use overall a higher pitch and a wider pitch range. These studies have included a wide variety of languages (Ferguson, [1964] for Arabic, Spanish and English;

Kelkar ([1964] for Marathi and Sachs, Brown and Salerno [1976] for English).

Remick (1971) measured the fundamental frequencies in adult's speech to young children (between 16-30 months) and found that the average fundamental frequency correlates highly with the age of the child being spoken to, with younger children hearing higher pitched vocalizations.

Garnica (1977) compared twelve mother's speech to their own two-year-old child with their speech to other adults (Group I) and twelve mother's speech to their own five-year olds with their speech to other adults. And found clear use of higher pitch and wider frequency range to the two-year olds.

PITCH CONTOURS OR SPECIAL INTONATION PATTERNS

In addition to higher pitch, special intonations have been reported for a large variety of languages whose child-directed speech has been studied (Ferguson, 1964; Kelkar, 1964; Drachman, 1973).

Kelkar (1964), in describing Marathi Baby talk refers to these special intonation contours as 'colorful' intonations,

and others have claimed that they seem 'exaggerated'. However, the evidence concerning mother's use of particular intonations contours to infants is difficult to interpret.

Garnica (1977) reports more use of terminal rises, particularly on imperatives. Ryan (1978) found frequent use of rises on declaratives. Reports on particular contours often concern the function to which the tune is put.

Ryan (1978) suggests that rises encourage attention and interaction from the child; Stern, Spieker and MacKain (1982) report the use of rises for attention and coaxing, and fall-rise for encouragement and maintaining attention. Fernaid (1994) notes rise-fall for approval and low level for prohibition. Stern et al. (1982) report mother's use of rises for getting attention and eye-contact while O'Connor and Arnold (1961) describe the meaning of high rise on statements as "questioning, trying to elicit and repetition, but lacking any sense of disapproval or puzzlement.

Ryan (1978) noted that frequent use of terminal rises in speech to infants may also help in another way. They may help the child to segment the stream of speech i.e. if a

terminal rise is heard, it signals the end of a grammatical chunk'.

Till late seventies little systematic work has been done as yet describing the intonational features. And it was not known for example, whether the intonation patterns in Baby talk are very similar across cultures, or whether they are simply in each case different from the adult patterns. Recent research confirms the universality of at least some aspects of child-directed prosody.

Rhythm and Temporal Patterning : Sachs (1977) noted that all cultures seem to have certain songs, rhymes, games, and language routines that are used for interacting with babies. These routines generally have definite rhythmic structure, rhymes and sound duplications. Moerk (1972) has suggested that this is a universal characteristic of language use.

Other aspects of prosody that assist in the function of boundary marking is the use of pauses. In adult-to-adult interactions; the pauses may be of two types, junctural pauses and hesitation pauses. The former used as a marker of boundaries between grammatical constituents and the latter occurring at points of uncertainty and are likely to be a filled or unfilled pause. Evidence shows that pauses in

child-directed are almost entirely junctural and that pauses in child-directed speech are longer than in adult-to-adult interaction.

Broen (1972) found that pauses are a far more reliable cue to sentence boundaries in baby talk (children aged 1.6 - 2.2) than in adult-directed speech and occurred primarily between sentences. This was confirmed by Fernald and Simon (1984); who also found such pauses to be longer than in adult speech.

Bernstein Ratner (1986) showed that a final syllable lengthening, which is a common clue to clause boundaries in human languages; occurred more regularly in child-directed speech than in adult-directed speech.

Garnica (1977) observed that the duration of content words in child-directed speech was longer than in adult-directed speech. Also, the child directed utterances contained double primary stress. Finally, several observers (Broen, 1972; Drach, 1969; Remick, 1971) have noted that adults speak more slowly to children, containing fewer disfluencies than they do to other adults.

PHONOLOGICAL ASPECTS OF CHILD - DIRECTED SPEECH

Ferguson (1964) reported that certain speech sounds which are not present in the adult standard language may be present in the baby talk register. This phenomenon has been observed in Lathian, Polish, Russian and Serbo-Croatian Baby Talk (Ruke-Dravina, 1974).

Palatalized sounds, for instance may be used in baby talk. In addition, there may be simplification of phonological features (as in the English baby talk word for stomach, 'tummy', which results from the simplification of the initial /st/ consonant cluster to /t/) or reduplication of phonological units (as in peepee) (Ferguson, 1974). Rao (1983) reported that adult speakers of Telugu, particularly the mothers used a modified speech when speaking to young children, which involved certain phonological processes.

Cruttenden (1994) reported the following phonological processes

- (a) there are recurrent consonantal substitutions (For example, liquids are often replaced, either by stop or by an approximant
- (b) Consonantal clusters are liable to be reduced to a single consonant (eg.drink-> [dinki]

- (c) Consonant harmony may apply between consonants across an intervening vowel (for eg. dog -> [dogii
- (d) reduplication and a simple consonant vowel type of syllable structure predominates.

In terms of phonetic properties of mother's speech, Moslin and Nigro (1976) and Malsheen (1980) showed a reduction of overlap in the voice onset time (VOT) between voiceless and voiced stops in the speech of adults to children.

SYNTACTIC ASPECTS OF CHILD-DIRECTED SPEECH

As early as 1964; Brown and Bellugi pointed out that the utterances of parents to young children were short, syntactically and semantically simple, well formed and repetitive. Subsequent research has not only confirmed but also extended these findings.

Drach (1969); Newport (1975); Sach, et al. (1972); Shatz and Gelman (1973); Snow (1971); Vorster (1974) and Cross (1977) have found that the mean length of utterance in adult-child speech; measured in either words or morphemes, is considerably shorter than in adult-adult speech. In fact, a

mother's utterance becomes even shorter when her child first begins to produce intelligible words (Philips, 1973; Lord, 1975). Mothers usually speak to eight-month-old children to catch and maintain their attention, or for their own amusement, and so the MLU of their speech is as long as it is to 28-months old. However, once the child starts to respond with a word or two; much of the mother's speech is concerned with eliciting a verbal response from the child. The speech of a mother to an eighteen month old thus has a shorter MLU, with more single names and phrases.

As well as being short, parental speech is remarkably well formed and intelligible and grammatical. Newport (1975) studied the speech of fifteen mothers to their children and found the incidence of ungrammatical errors to be only one in 1,500 utterances. Moreover, their speech was highly repetitive, 34% of their utterances being full or partial repetitions of one of the previous utterances. These features of brevity, completeness, and repetitiveness narrow the gap between the adult knowledge and performance that cause difficulties for language learning. The sentences uttered are transformationally less complex with fewer verbs per utterance, fewer coordinate or sub-ordinate clauses, and fewer embeddings (Drach, 1969; Pfuderer, 1969; Newport, 1975;

Phillips, 1970; Shatz and Gelman, 1973; Snow, 1971; Vorster, 1974).

Newport (1975) and Phillips (1970) report that child-directed speech contains more content words and fewer function words with rarity of modifiers and pronouns.

Remick (1971) and Newport (1975) report deletion of subject nouns or pronouns and auxiliary in yes-no questions.

With regards to the sentence types, Blount (1972); Brown, Cazden, Bellugi (1969), Drach (1969), Gelman and Shatz (1975) and Newport (1975) maintain that more imperatives and questions are addressed to young children, particularly occasional questions.

Brown and Hanlon (1976), Newport (1975) also reported of increasing number of declaratives with increasing age of child.

Mothers tend to use single proposition sentences in highly redundant conversational forms (Hoizman, 1974; Snow, 1972). Lexical items are generally consistent from exchange to exchange with some simplification of phonological and

morphological aspects (Ferguson, 1977). This simplification results in the use of so-called baby words and phrases. The assumption apparently made by most mothers while talking to very young children is that unless there is some change in propositional and syntactic levels, the child will fail to understand what is being said. This may or may not be a valid assumption, but descriptions of mother's talk certainly discredit the traditional notion that the language provided to children is highly complex, disorganized and replete with hesitation, rewordings, false-starts and syntactic inaccuracies.

How general is this phenomenon of the modification of speech directed at young children. Similar findings come from studies of black (Brach, 1969) or white (Snow, 1974) mothers, of different social classes (Snow et al. 1974) and even of different language communities and cultures (Blount, 1972). Furthermore, parents and non-parents perform similarly (Sachs et al. 1972). Mothers being only slightly better at predicting the linguistic needs of their children than women without children.

However, linguistic input to children who are pre-verbal does seem to differ in character from motherese used with verbal children.

Phillips (1973) found that speech addressed to children of about eight months showed a greater variability in utterance length, ratio of function to content words, number of verbs per utterance, and percentage of weak verbs than speech addressed to older children. Phillips interpreted her findings as support for the notion that mothers adjust their speech to their children's linguistic level; but that no adjustment is considered to be called for before the child has language.

Other research supports this diversity in adjusting language input to children's presumed levels of understanding (Cross, 1977; Newport, Gleitman, Gleitman, 1977).

In contrast, Snow (1977) accounts for the change not on the basis of presence or absence of language in the child, but as a reflection of mother's confidence in their children's growing ability to function as conversation partners, to show communication competence. This argument seems to be reasonable particularly because researchers do not report dramatic changes in motherese when children begin to produce actual speech, a time when it would seem appropriate for parents to alter their input if they were

concerned exclusively with adjustment of their language on the basis of the linguistic sophistication of their children.

SEMANTIC ASPECTS OF CHILD-DIRECTED SPEECH

Pinker (1979), Wexler and Culicover (1980) viewed that children figure out the rules underlying syntactic structures by using the cues provided by the meaning of an adult's utterance. On the analysis of maternal speech; it was found that the semantic content of speech addressed to young children is indeed, severely restricted; and contains more limited range of semantic relations (Snow, 1974). Blount, (1972), Drach (1969), Ferguson (1977), Philips (1970) also report of more limited vocabulary use a fact which is reflected in low type token rates for vocabulary but with unique words for objects and many diminutives.

Philips (1973) and Snow et al. (1976) report that the reference in child-directed speech is invariably to the 'here and now'. Mothers limit their utterances to the present tense, to concrete nouns, to comments on what the child is doing and on what is happening around the child.

Mothers make statements and ask questions about what things are called, what noises they make, what color they

are, what actions they are engaging in, who they belong to, where they are located and very little else (Snow, 1977). This is a very restricted set of semantic contents, when one considers that older children and adults also discuss past and future events, necessity, possibility, probability, consequence, implication, comparison and many other semantic subtleties. This limitation on the semantic content of maternal speech can to a large extent explain the syntactic simplicity commented on above. Propositions of name, place, state and action can be expressed in short utterances without sub-ordination or other syntactic complexities. It may, then, be the case that syntactic simplicity in CDS is an artifact of semantic simplicity.

Wills (1974) examined the use of pronouns by parents of five children who were between the ages of nine and fifteen months. Unusual pronoun usage occurred consistently and was taken to constitute a baby talk system. Some of the categories of unusual pronoun usage were : the use of kin terms in place of 'I' (eg. where are mommy's eyes), the use of 'we' by the speaker in cases where it does not clearly function as the first person plural (eg. Let us get you some mittens); use of the third person to replace 'you' when addressing the hearer (eg. Did Adam eat it?); and the use of

'we' when the speaker appears to be referring to the hearer only (eg. 'We don't want to put any more mud on the floor'). This clearly indicated that pronouns seemed to be used in ways that differ from the adult standard usage. Thus, there are certain lexical items that are typical of and serve to mark the baby talk register (Ferguson, 1984).

DISCOURSE ASPECTS CHILD DIRECTED SPEECH

Mothers and children carry on conversations with one another. These are, in fact, very special kinds of conversations, in that the partners are unequal. The mother can speak the language much better, but the child nonetheless, can dominate the conversation, because the mothers follow the child's lead in deciding what to talk about. A very common pattern is for the child to introduce a topic and for the mother to make a comment on that topic, or for the child to introduce a topic and make a comment and for the mother to then expand that comment.

Thus, at the discourse level, the mothers' speech is very much shaped by the child's linguistic abilities, his cognitive abilities, his ideas and interests (Snow, 1986).

Interestingly, the above description of CDS discourse accounts for the occurrence of expansions, the characteristic of maternal speech which was first commented upon by Brown and Bellugi (1964). Expansions are full, correct expressions of the meanings encapsulated in children's telegraphic utterances. They are, thus, the ultimate example of a maternal utterance which is semantically related to the preceding child utterance.

Shugar (1978) refers to mothers and children interacting dyadically to 'create text'. She has described how mothers produce utterances which create context within which very simple child utterances become meaningful parts of the rather complex whole. For example, if the mother says, 'who's first coming in?' and the child answers 'Dada', then the child utterance can be interpreted semantically as referring to an agent of a presently occurring action, whereas the same utterance without the linguistic context might be uninterpretable.

Cross (1977), Barnes et al. (1983) have found that the percentage of maternal utterances which are semantically related to preceding child's utterances is the best predictor of the child's linguistic ability. Snow, Dubber and DeBlaw

(1982) found a high correlation between the percentage of adult speech related to child activities and the child's vocabulary. This implies that children who learn to talk quickly and well have considerable access to semantically related maternal utterances.

It was also found the kind of semantically relevant and interpretable speech described above begins long before the children themselves begin to talk. This indicates that it is not produced purely in response to utterances from the child. Mothers talking to babies as young as five months show many of the same characteristics of CDS as one present in speech to two year olds. Some of the characteristics, such as questions, occur with even greater frequency in speech to younger children. The most striking similarity between speech to very young babies and speech to children aged 18-36 months is the extent to which the mother's speech is directed by the child's activities. Infants behaviours such as reaching for something, changing gaze direction, laughing, smiling, vocalizing even burping, coughing and sneezing can evoke specific relevant responses from the mother. At three months the majority of maternal utterances refer only to the child. By the time, the baby is 6-8 months old, and is showing many clear signs of interest in objects and activities about him, the maternal utterances also refer to

those objects and activities (Snow, 1977). Thus, the semantic steering of maternal speech by the child begins very early, and may be the basis for the child's discovery of some predictable relationship between utterances and events.

Newport, Gleitman and Gleitman (1977) reported three properties of maternal speech that might serve a teaching function : Deixis, expansion and repetition.

A deictic utterance is one which names a referent by means of a variable whose identification depends on the speakers and their situations (That's your nose, there is a ball), what 'that' refers to depends on what is around and focussed on at the moment. Newport, Gleitman and Gleitman (1977) also report that sixteen percent of the motherese utterances involve deixis, compared to only two percentage of the adult-directed utterances.

Expansion, as already mentioned, is the case where the mother provides an adult version in response to the child's for shortened or distorted attempt. Six percent of motherese utterances are expansions and obviously no adult-directed utterances are expansions. Repetitions are the case when the mother follows her own utterance with one or more exact or

partial renditions of the same content. Twenty three percent of the mother's utterances involve some repetition of this sort. Plausibly, deictic usage might help build vocabulary, expansions might help build syntax and repetition might influence both to the extent that it could allow rehearsal or comparison among forms.

Budwig and Chaudhary (1996) studied the Hindi-speaking mothers use of person deixis when interacting with their infants and found that mothers used three categories of person deixis - (a) Control moves, used generally with null forms (b) Interactional functions, used with endearment terms (c) Informational functions, used with both names and endearment terms. All mothers produced similar range of forms, but the less-educated mothers produced a higher proportion of null forms and lower proportion of names. The less educated mothers also used more control moves and less informational function.

Pan, Imben-bailey, Winner and Snow (1996) conducted a longitudinal study of communicative intents used by parents in interaction dyads with their children at ages 1.2, 1.8 and 2.6 and found that, with children aged 1.2, parents used a small core set of communicative intents that grew in size and sophistication with increasing child age. As the children

grew older, parental use of directive intents declined and child-centered acts increased. These findings suggest that child-directed parental speech is simplified pragmatically as well as grammatically and semantically

Bernicot, Josie, Judith and Helga (1993) studied how psychological, social and cultural factors simultaneously affect the nature and linguistic form of the speech acts produced in a parent-child situation. The psychological variable refers to the mother's inductive or coercive child-raising style, the social variable indicates the parent or child role played by the speaker and cultural variable refers to the cultural origin of the subjects. Findings indicated that mothers seem to be attentive to all the three factors. Assertive, directive, expressive and commissive speech acts varied in frequency of occurrence, linguistic form and reaction to the psychological, social characteristics of the communication situation. However, for children of six years of age group the production of speech acts is governed primarily by the social factors of communication setting.

Brown, Cazden and Bellugi (1969) viewed that there are certain features of mother's language which seem 'designed' to promote verbal interaction. They described mother's use

of 'occasional questions' to elicit verbal behaviour from children. One strategy they found frequently used by mothers was what they labelled constituent prompting. This strategy was used when the mothers asked a question to which the child did not respond (eg.), 1 What does the doggie say? (silence from the child). The doggie says what? A slight variation of this strategy occurs when the mother has missed part of the child's preceding utterance and asks him to supply only the missing part, eg. child: 'I saw a dog'. Mother : A what? Child : A dogi. Brown et al. called this strategy say constituent again strategy.

Broen (1972), Kobashigawa (1969) and Remick (1971) reported that repetition, which is very frequent in mother's speech to young children, may serve the function of giving the child several chances' to grasp what is being said. Repetition would increase the probability that the child will associate non-linguistic events with their syntactic realization by counteracting the disadvantages posed by a rapidly fading acoustic signal.

OTHER SOURCES OF INPUT

While studies of input language have concentrated on the speech of mothers, mother's speech is not the only source of

input to child. Language learning children also spend their time, with other adults like father, with siblings and with groups of other children, who tend to become important aspects of the child's linguistic environment. Therefore, the members of the family other than the mother were also being investigated.

FATHERS SPEECH

Gleason (1975) proposed that fathers are more challenging communicative partners for young children; because they are less knowledgeable than primary caregiver mothers about their child's experience, knowledge and competencies. Fathers facilitate the development of their children's conversational skills by forcing them to take into account the point of view of a less knowledgeable and perhaps less accommodating listener. Berko Gleason further proposed that fathers serve as a kind of 'Linguistic bridge' to the wider community of adult speaker with whom children will eventually need to communicate effectively.

The results of a number of studies indicated relatively few differences between mother's and father's speech to young children, with a variety of characteristics of motherese

being evident in paternal speech as well (Lipscomb and Coon, 1983; Kavanaugh and Jen, 1981; Lewis and Gregory, 1987).

Kriedberg (1975) reported that father's speech at home shared features of simplicity and immediacy with the speech of mothers, but had a different qualitative 'feel' because of the increased number of imperatives, the jocular names and the treats.

Gleason (1975) reported that fathers produced 42% wh questions while mothers produced only 28%; which implied that fathers placed a greater conversational burden on their children and were not so well attended to their children.

Interestingly, it is in the area of pragmatics that important differences between primary caregiver mothers and secondary caregiver father's verbal interactions have emerged.

Killarney and McCluskey (1981) reported that fathers, in their study, had shorter dialogues with their children than did mothers.

Golinkoff and Ames (1979) and Rondal (1980) found that fathers took few turns in conversation with their children,

than did mothers. Hladek and Edwards (1984) reported that fathers of the two-to-three-year old responded less to their children's utterances than did the mothers.

Other studies of pragmatics have identified particular qualitative aspects of father's speech style that call for adjustments or greater effort on the child's part. Malone and Guy (1982) found that fathers were more controlling of conversations with their children; and used more imperatives and directives and fewer conversation eliciting questions than did the mothers.

McLaughlin, White, McDevitt and Raskin (1983) found that fathers have a more demanding style of interactions, and were less able to adjust their speech to their children's linguistic levels.

Tamasello, Conti-Ramsden and Ewert (1990) found that fathers and their children experienced more conversational breakdowns than did mothers and their children. Fathers also failed to acknowledge their children's utterances more often than did the mothers, and failed to return to the topic after the breakdown more often than did the mothers.

Taken together, the results of these studies imply that in the case of the secondary care-giver father; the role appears to complement that of the primary caregiver mother, such that fathers offer new communicative challenges to their children.

SIBLINGS

Mannle and Tomasello (1987) proposed the Sibling Bridge Hypothesis and viewed that siblings also play the role of linguistic bridges. Because young children (pre-schoolers are both limited by their own developmental level and are less familiar with the younger child's communicative devices than are mothers, the preschool age siblings also require language-learning children to make communicative adjustments in order to convey their messages.

The initial studies of sibling's CDS indicated that preschool age children made the same systematic adjustments as mothers' and resembled adults as conversational partners with younger children (Shatz and Gelman, 1973; Sachs and Devin, 1976; Dunn and Kendrick, 1982).

Additional research on siblings speech which began to focus on pragmatics, proved to be the area where the greatest

adult-child differences were seen. Tomasello and Mannle (1985) compared three to five year old children's conversations with their twelve to eighteen month old infant siblings to those of their mothers with the infants and found that pre-schoolers provided less nonlinguistic scaffolding i.e. fewer object references and joint attentional episodes and had fewer and shorter conversations with the infants.

Mannle, Barton and Tomasello (1991) replicated the study using older infants : 22 to 28 months old and found that compared to mothers; with infants, siblings; with infants had fewer and shorter conversations. In addition, siblings were more unresponsive and directive in the few short conversations that did occur than were the mothers and infants. Also, the siblings failed to repair breakdowns in their conversations with the infants almost twice as often as did the mothers. Finally; the infant's responses did not differ as a function of partner, thus ruling out the possibility that the observed mother-sibling differences could be attributed to differential behaviour on the part of the infants.

Taken together; the results of these studies indicate clear differences between pre-school age siblings' and

mothers' linguistic interactions with infants although they do use some features of motherese speech.

The pre-schoolers are not as adept as mothers at making pragmatic adjustments that provide scaffolding for infants in their early conversational exchanges. Also, unfortunately, there is no data available to date, to address the issue of whether sibling - infant interactions have any identifiable relation to the infants' process of language development.

WHY IS CDS USED?

Having addressed the various modifications made in the speech of adults to their young children in the previous section the question that arises is whether this change in adult talk is necessary or even a facilitating condition for a child's acquisition of language. In order to address this question, it is first necessary to examine what causes adults to change the way they talk to children. Two hypothetical models were put-forth. These were the conversational model and comprehension model or the feedback model.

CONVERSATIONAL MODEL -

According to the conversational model, the child-directed speech modifications are based upon the non-verbal cognitive understanding of the child (Newport, 1976; Newport, Gleitman and Gleitman, 1977; Shartz and Creiman, 1977; Snow, 1977). Adults are interested in maintaining social contact with the children; and the interactions between the mothers and babies can best be described as conversational in nature and the changes in the maternal speech result from the development of the baby's ability to take her turns in the conversation. This hypothesis that the mothers were using a conversational model rests on two crucial assumptions : that they were trying to communicate specific information to the babies; and that they were receiving (or trying to receive) specific information from them. The conversational mode differs from other communicationai modes precisely in that it is reciprocal i.e. information is exchanged between the partners in both directions. According to this model, the mother's attempts to maintain a conversation despite the inadequacies of their conversational partners account for the most striking characteristics of the maternal speech style- its repetitiveness, the high frequency of questions etc.

The main criticism to this conversational model is that, it does not support the hypothesis that CDS plays a strong role in facilitating the child's acquisition of language structure (Kleeck and Carpenter, 1980). If the CDS is not tuned to a child's knowledge of language structure, the discrepancy between what the child knows and what he hears may be very large.

COMPREHENSION MODEL OR THE FEEDBACK MODEL

The alternate explanation of the CDS modifications is often referred to as the comprehension model or feedback model (Bohannon and Marquis, 1977; Cross, 1977; Ervin-Tripp, 1971; Clanzer and Dodd, 1975; Lord, 1975; Wedell-Monnig and Westerman, 1977). According to this model, the CDS is adjusted to the language comprehension level of the child. The adult's goal is to produce language the child can understand. Hence, adults use the child's apparent comprehension of language as feedback in shaping their CDS. This means that children exercise control over their own linguistic environment. For example, by giving more comprehension cues to structurally simpler utterances, the child shapes the structural complexity of the linguistic input he receives. By giving more comprehension cues to the CDS with greater redundancy, the child shapes the redundancy

aspect of CDS pragmatics. Other structural and pragmatic aspects of the linguistic environment are shaped in a similar fashion. In short, mother's speech is tailored to meet the linguistic and comprehension level of the child.

The comprehension model supports a relatively strong role for the linguistic environment in the child's acquisition of language structure. Because the structural complexity of CDS is tuned to the child's apparent comprehension of language structure, the discrepancy between what the child knows and what he hears is minimized. To the extent that CDS is organized by the adult to match the child's existing knowledge of language, the child is helped in analyzing incoming linguistic data, in determining generalities and in further building his knowledge of language structure.

FINE TUNING OF CDS

Research on motherese during the 1980's moved from its original emphasis on finding evidence for the existence of a motherese register to determining whether the adult gears the motherese to fit different children's capabilities and interests.

This is called as the fine-tuning focus. Fine tuning is the term used to describe how adults alter what they say to children in response to what the child is presumed to be thinking or doing. One assumption in the literature on fine tuning, as already discussed in the earlier section, has been that the closer the match between the language input and the child's thinking, the better the conditions are for the child to understand and learn about language (Duchan, 1986; Shatz, 1982).

Several researchers gathered evidence for adult fine tuning to infant's understanding. Murray, Johnson and Peters (1990), Stern et al. (1983), Sherrod and others (1977) have found a decrease in the length of mother's utterances to their nine month old children. Prior to the child's arrival at nine months, mother's MLU averages 3.6 to 4.0 and at the time of nine months, the average MLU dropped to 2.8. The shift in MLU coincides with the children's first understanding of individual words (Benefict, 1979), the onset of intentionality as evidenced by use of gestures (Bates and others, 1977) and the beginning of object play (Snow, 1977). It is as if the mother is responding and fine tuning, to the child's new interests in the world.

Fine-tuning one's syntax to fit the child's language learning needs has been the most studied and the most controversial area in the motherese literature. There are studies that say adults do adjust their syntax to the children's language level and others which say they do not.

Newport, Gleitman and Gleitman (1977) found in their investigation that mothers of two year-olds are not particularly, finely tuned to changes in the child's linguistic capacities. These researchers were looking for whether adults seemed to provide particular syntactic structures in their language to their children which aided the child in learning those structures. They concluded that while adults use shorter sentences, they do not necessarily use less complicated ones. For example, the adults frequently asked the children questions which contain difficult-to-learn syntactic structures such as auxiliaries.

Chapman (1981) found a match between the MLU spoken to the children and the child's utterance length. This correlation between adult and child MLU was especially strong for children between eighteen months and twenty-four months. Mothers of children at that age tended to talk to children using utterances two to three morphemes longer than their

offspring (Furrow, Nelson and Benedict, 1979; Cross, 1977; Seitz and Steward, 1975). Judging from these results, adults seem to be doing some fine-tuning at the level of syntax, where they shorten their sentences to be slightly longer than the sentences spoken by the child to whom they are talking.

Examination of the match between motherese and the children's utterances has shown more fine tuning going on in the area of semantics than in syntactic structure (Snow, 1986; Cross, 1977). Snow (1977) and van der Creest (1977), in their study of the relationship between semantic relations expressed by caregivers and children, found that the majority of mother's utterances express only those semantic relations that the children have in their linguistic repertoire.

The most recent work in fine tuning has been in the area of discourse. Cross (1977) and Snow (1977) have found that adults often comment on what the child is saying or doing. This feature of motherese is called as semantic contingency. When Cross (1977) examined the language of mothers of linguistically advanced children, she found an abundance of semantic contingencies such as expansions and extensions.

Garvey (1977) noted that the contingent queries or questions about what the child has first said, often find

their way into adult-child discourse. This form of discourse structure has been viewed as a way to provide feedback to the child as to the success or correctness of his communication.

FUNCTIONS OF CDS

Parent's language serve different major functions during each period of the child's development. In infancy, parent's language is not directed at teaching the formal aspects of language, but rather serves the pre-linguistic function. Speech to young infants is marked by exaggerated intonation verbal play, nonsense sounds and high pitch. These features may serve to attract and hold the infant's attention and to help establish a warm bond between the infant and the caretaker. Such speech may accompany more primitive forms of communication, such as mutual gaze and contact comfort and lay the motivational base for later language acquisition.

Careful observation of interchanges between parents and prelinguistic children reveal that there were many occasions on which the mothers repeated themselves. Some kinds of repetition seemed to occur because the child was not paying attention or failed to comply with the mother's request for action. Since these children were all basically pre-

linguistic, the parents' language serves the directive function, directive and guiding their behaviour from the outside (Gleason, 1974).

Adults, in addition to providing the child with directive language, also provide a feedback about the acceptability of utterances and in turn provide a language model which can be defined as providing examples of correct utterances and correct conversational structure, either in its own right or as a part of the feedback process.

The features of input language associated with conveying the referential and directive functions are subtle and are not easily identifiable as explicit language-teaching lessons. Now do parents consciously include such features as repetition in their speech in an attempt to teach language. By contrast, the social function of language is one area where parents consciously instruct and drill their children in the production of appropriate forms.

As the children acquire linguistic competence, the focus of the parent's language shifts once again. By the time children speak and understand well, features like repetition and expansion drop out of parental language. And speech to young children learning language has many features of

teaching language. These include the explicit teaching of social routines (such as say bye-bye, say thank you). This feature may be less directly connected with the acquisition of the linguistic system, but it provides a way into the appropriate use of language.

Facilitating conversational participation is yet another potentially facilitative functions of CDS. It is achieved by various conversation-sustaining and scaffolding strategies such as contingent responding, giving encouraging feedback and using turn-eliciting and turn-ceding devices. These include clarification questions and comprehension checks and repair.

Ferguson (1977) attributed simplifying, clarifying and expressive functions to CDS. Simplification results in the reduction of processing demands on the learners. This may be achieved by features such as repetition, routine, memory priming, provision of scaffolding, transparency of meaning, pauses and rate of deliver and decomposition of task.

Specific forms of clarification are achieved by increasing the salience of features which would be otherwise unstressed, contracted or phonologically reduced (Cruttenden,

1986). Other features facilitate form function mapping or clarify by aiding segmentation. Modification of timing and intonation may assist with the identification of word, sentence and major constituent boundaries. Using repeated sentence frames and recaste can also achieve this function. The expressive features of CDS may be determined by the need to express affection or solidarity with the child.

Richards and Gallaway (1993) have identified and listed the following potentially facilitative functions of child-directed speech : managing attention, promoting positive affect, improving intelligibility, facilitating segmentation, providing feedback, provision of correct models, reducing processing load, encouraging conversational participation and explicit teaching of social routines.

Richards and Gailaway (1993) also maintained that it is important to remember that almost all of these functions occur as part of the normal conversational behaviour amongst adults. What is crucial, therefore, is the way in which they mesh with the structure of discourse and with the child's current linguistic systems. Richard and Gailaway also noted that the functions described are not independent. Features which are described as semantically contingent frequently may act to keep the conversation going, and segmentation through

partial or expanded repetition, promote positive effect, clarify and provide negative feedback and correct models. The child directed utterances are, therefore, multifunctional in nature.

EFFECTS OF MOTHERESE ON CHILD'S LANGUAGE LEARNING

The previous sections outlined some features of motherese and examined whether these features are tuned to the child's language and cognitive level. It did not address the question of whether motherese, even finely tuned motherese, helps move children along their way to learning the adult language. Researchers who study motherese hold varying opinions as to its effect on language learning. Those who believe motherese aids in language learning are proponents of what has been called as the 'motherese hypothesis'. In its strongest version, the motherese hypothesis claims that language to children plays an essential role in their language acquisition (Furrow, Nelson and Benedict, 1979). A weaker version of motherese hypothesis contends that listening to motherese helps, but that the child also determines what is to be learned (Barnes and others, 1983; Shatz, 1982). Finally, there is an 'antimotherese hypothesis' which gives little importance to

language input as a source for children's language learning (Pye, 1986; Gleitman, Newport and Gleitman, 1984; White and White, 1984).

Impressive research evidence is accumulating in favour of the strong version of the motherese hypothesis. Underlying most of the research supporting the strong version is the assumption that the influence of motherese is direct in that children pick up particular language forms from the language they hear. Direct learning is supported by the literature which shows that the child learns best those language forms which occur frequently and which are most salient.

Motherese may also influence children's language learning indirectly by providing the child with rich source of information to draw from contexts which encourage the child to communicate. In this second kind of learning, adults respond to what a child says by recasting it in a different form, or they provide the positive acknowledgement of the child's communicative attempts and thus help the child better express what he or she was trying to say.

Direct Learning From Motherese

There is some evidence in recent work on motherese that the frequency of occurrence of the language form can influence children's order of acquisition. When mothers ask their children a lot of yes-no questions, their children learn auxiliaries earlier (Furrow, Nelson and Benedict, 1979; Newport, Gleitman and Gleitman, 1977). The same was true for information question (Hoff-Ginsberg, 1990; Yoder and Kaiser, 1989). Similarly, Brown, Cazden and Bellugi (1973) found a relationship between the frequency of wh-question in motherese and the children's later development of the ability to answer these questions. They were asked where, why, how, and when in that order of frequency, and the children learned to answer in the same order.

Farrar (1990) found that the more frequent morphemes in the input language to the child were learned first.

Retherford, Schwartz and Chapman (1981) studied frequency of occurrence in relation to the acquisition of semantic relations. They studied six mothers with their children and analyzed changes in the semantic relations expressed by mothers and children before and after six months.

interval. The researchers found that the mothers expressed the semantic relations which have been found to occur in the speech of all young children and did not change the relative frequency of these relations during the six-month period. However, the children changed in two ways : They increased the number of semantic relations expressed, with their additions being dependent of the mother's frequency of expression; and they decreased their expression of the relations which were infrequently used by their mothers.

Carole and Alyssa (1992) studied the effects of parental styles of narrative elicitation on the children's narrative structure and content. The two groups of mothers differed substantially in the types of questions they asked; one focussing on the context and the other on even elaboration. Results indicated that the former child was more likely to spontaneously include contextual orientation but showed less sophisticated plot structure. In contrast, the narratives of the second child showed better structural organization but used less contextual information.

Emiddia (1992) reported that tutoring and Didactic communicative functions were used by mothers with significantly higher frequency during play with familiar toys and found a positive relationship between these communicative

functions and the indices of linguistic development in children between 1.4 and 1.8 years. A scaffolding role of these communicative functions in the language development was suggested.

Goldfield (1993) reported a significant correlation between the frequency of noun types and tokens during toy play and the proportion of nouns in the children's first fifty words.

Indirect Learning From Motherese

One of the more consistent findings about how adult-talk impacts on child language learning is the positive effect of semantic contingency. Children's language seems to develop faster when their language input consists of adults frequently commenting on what the children are thinking (Barnes, et al. 1983; Cross, 1978). It has also been suggested that semantically contingent speech to pre-linguistic infants is crucial to the infant's discovery of his own potential for communicative intentionality.

Trevarthen (1977) has suggested that attribution of intention to infants is pre-requisite to infants intentional

action and furthermore, that infants cannot discover their own capacity for intentionality without the demonstration by adults that their behaviour can be interpreted as intentional.

Barns and others (1983) studied the language development of two-year olds as a function of motherese and found that the children who progressed most over a nine-month interval were those whose mother's frequently expanded on the child's meanings. Not surprisingly, the major area in which the semantic contingency affected language development was in the child's progressing from one to two word semantic relations.

In accord with the findings that semantically contingent utterances promote language development, Bates (1975) has suggested that second children, twins and institutionalized children may learn language more slowly than children whose input comes mainly from adults, because egocentric peers do not provide enough interpretable, semantically relevant messages.

Scherer and Olswang (1984) found that two year old boys at the one word stage initiated their mother's expansions more than the rest of their mothers' speech. Further, when the researchers had the mother's participate in a controlled

experiment in which they expanded certain semantic relations in a picture description task, they found that the children first imitated and then spontaneously produced the two word semantic relations which had been expanded. Interestingly, the children also spontaneously produced two word relations which had not been expanded in the controlled experiment, suggesting that the learning going on had to do 'with forming two word utterances rather than particular meaning relations'.

Masure (1982) in a study of the effect of child gesturing on mother's subsequent behaviour, followed the development of four children through their infancy. The study began when the children were three months old and ended at one and one-half years after they had learned their first words. Mascue identified three gestural types having to do with objects : pointing at an object, extending an object toward the mother as in a give and open-handed reaching toward an object. She looked to see what the others did in response. All of the mother tended to label the objects in response to the pointing gestures more than to the giving and reaching gestures the mother's labeling of objects increased for giving and reaching after the children had learned their first words. Once the children learned words, they tended to

name objects more often when they pointed than when they gave or reached for them. Masure takes this pattern evidence that children learn from the adults contingent responding that points go with naming.

Semantic contingency has been studied as a general phenomenon, each adult utterance classified as being either contingent or non-contingent with the child's last utterance.

Recent research has revealed sub-types of contingency, with different contingent types having differential effects on children's language learning.

Farrar (1990) distinguished three-types of contingent responses :

- a) Recasts, where the adult reformulates the child's preceding utterance by adding a grammatical morpheme :(C : phoning ; M : the phone is ringing), substituting one morpheme for another (C : I can move , M: You will move), or moving a morpheme to another place in the sentence (C : It is raining , M : Is it raining).
- b) Expansions, where the adult uses some of the same words as the child, but does not recast them (C : The ball ; M : The ball is rolling').

c) Topic continuation, where the adult maintain the child's topic, but does not use the same morphemes (C : Truck in garage', M : "Are you packing it).

Farrar found that children's learning of different morphological inflections related to different types of contingent responses; their acquisition of plurals and progressives were associated with maternal recasts, and their learning of regular past tense and copulas were associated with maternal expansions and topic continuations.

Conti-Ramsden (1990) also sub-classified, semantically contingent responses of adults into different types. Her systems was similar to that of Farrar (1990) except that she distinguished simple recasts, which alter only one component of the child's previous utterance (C : Big ? M : Too big), and complex recasts which involve changes in two or more of the main components of the child's preceding utterance (C: It fell , M: The barrel fell off the wagon). The author reported that the mothers were finely tuned to their children, responding to their need to receive an easy-to-process input. Conti-Ramsden says that simple recasts provide the child with a simple informative, and easy-to-process reply that helps the child to find out new ways of

forming utterances. Complex recasts; on the other hand, are more informative and thus are not so easy to process.

Adult responses to children's errors provide another source of feedback. There have been a set of studies, looking at the effects of correction on language learning.

Studies by Gruendel (1977) and Mervis (1984) have been directed to examining how mothers respond to children's errors of over extended word meanings (eg. the child says 'car' for 'truck').

Gruendel (1977) found the following three feedback strategies among the responses of her mothers :

Correction - That's a truck.

Negative acceptance -That's not a car.

Negative acceptance plus correction - That's not a car, it is a truck.

Mervis (1984) found parents not only providing a new label but also pointing out the feature which distinguishes the new label from the child's incorrect classification.

Correction plus expansion - That's a truck, see, it has a place to put things on.

Chapman, Leonard and Mervis (1986) designed an experimental study to determine which of these varieties of feedback lead the children to the best learning they found that all five of their one-year-olds benefitted most from the correction plus explanation condition, second best from the negative acceptance, plus correction condition, and least well from simple acceptance with information about the incorrectness of the response.

Parents accept and correct their children's talk when they understand it. But what do they do when they fail to understand what their children have said. The adults have been found to respond to such breakdowns by guessing what the child meant to say (eg. child It but . M : A hat ?, by requesting the child to repeat the whole thing (hut ? or by requesting the part that was not understood (You're going where?). These forms of feedback from adults have been studied under the category of contingent queries (Garvey, 1977) as requests for classification (Brinton and others, 1986; Corsaro, 1976).

Although, there is a developing literature on children's ability to answer contingent queries and their revision strategies for making their language more acceptable (eg.

Anseimi, Tomasello and Acunzo, 1986; Gallagher, 1977, 1981). There is none which examines the long-term language learning effect of such exchanges.

Though it seems clear that the provision of much semantically relevant speech is advantageous for language acquisition it has not been proven that access to such speech is crucial to normal language acquisition.

Lieven (1978) has described one mother-child pair where well-constructed dyadic texts were extremely rare; a high proportion of child's utterances were not responded to by the mother at all, and the responses which did occur were very often semantically unrelated to the child utterance. Despite receiving very little semantically relevant speech from her mother; the child in question did eventually learn to talk normally, though her speech at the time. Lieven was studying her was highly repetitive, uninformative and difficult to interpret.

The mechanism by which semantically contingent speech contributes to language during later stages of development is unclear. The finding that semantically contingent adult speech facilitates language acquisition is a powerful and robust one, but its importance is limited, unless it can be

linked to an explanation of precisely how and why semantically contingent speech has its facilitative effect.

Hoff-Ginsberg (1986) conducted studies in which she attempted to sort out the relative contributions of direct and indirect learning on children's acquisition of auxiliaries and verb phrases. She found that certain types of utterances from twenty-two mothers were predictive of later learning in their two and a half year old offsprings. Children whose mothers used more real question had more auxiliaries in their language four months later.

Hof-Ginsberg in 1990 studied whether the children in the earlier study responded better because of indirect influences which she calls as conversational providing function, or because of direct learning, which she calls data providing function for Hoff-Ginsberg found both positive and negative evidences the indirect influences of motherese. In the positive vein, she found that children responded more often to certain utterances types such as real questions, than to others such as declarative utterances. She argued that children who hear more of these beneficial utterances get more practice in using language structures. This effect can indirectly lead to improved language learning. The negative

evidence for indirect influences was that the average length and complexity of the children's responses to adult utterances was not correlated with the degree to which the adult's utterance type was beneficial.

To summarise, though it is clear that the speech which children hear does have implications for the way in which they acquire language, the exact relationship between the maternal speech characteristics and its effect on child language acquisition is far from being properly understood. This suggests a challenge for future research to provide a more detailed account of these effects in terms of specific relationships between particular features of the input and the acquisition of particular aspects of the language system.

CDS IN ATYPICAL POPULATIONS

The notion that the environmental input and social interaction are key ingredients to language learning is discussed, in this section, from the view point of atypical language learners. A child with the language handicap presents - potential conflict for the adults with whom he interacts. Therefore one of the most prevalent questions in the area of interaction with atypical language learners has been whether these children receive input which is similar to

that received by normal language learners. That is, do parents of atypical language learners provide parentese to their children like parents of young, normally developing children do.

Though the research with impaired populations has typically lagged behind that of normal populations and is limited, our understanding of parent-child interaction with atypical language learners clearly indicate that parents do use parentese when addressing their atypical language learners (Conti-Ramsden, 1985). The parentese they use appears to be similar, although not identical, to that used by parents of normally developing children. However, there may be variations in specific aspects of parentese which might be related to the characteristics of the atypical language learner.

One of the most consistent themes in the literature on parent-child interaction with atypical language learners has been the parent's directive style.

Davis, Stroud and Green (1988) reported that mothers of children with language delay tend to talk less and used proportionally more commands. Marshall, Hegrenes and

Goldstein (1973) also reported of increased demands, commands and requisites in the motherese of language impaired children.

Cheseldine and McConkey (1979) suggested that many parents of language-delayed children tend to use language mainly to make demands or to ask questions and make limited use of statements.

Petersen and Sherrod (1982) found that mothers of children with a language delay made fewer interpretations of the child's activities, gave less approval to the child's verbal behaviour and made more semantically unrelated utterances.

Harris, Jones, Brookes and Grant (1986) found that mothers of slower language developing children made fewer references to the object that was the current focus of the child's attention and used fewer specific object labels. They also initiated more verbal interactions.

Schodorf and Edwards (1983) found that parents of language disordered produced more imperatives and fewer declarative sentences.

Conti-Ramsden and Friel-Patti (1983, 1984) and Conti-Ramsden (1990) also reported similar findings of increased use of imperatives and increased initiations by the mothers during the dialogue.

Possible reasons for these findings emerge from both partners involved in the dyads. From the point of view of parental involvement, Newhoff and Browning (1983) have suggested that parent's knowledge that their child is atypical may affect their interaction in various ways. For example, the parents may no longer be able to gauge the linguistic level and needs of their children, as the normal pattern of development has been disrupted and can no longer be used as a model.

From the angle of the child's characteristics there appears to be two possible explanations for the increased directiveness and control of parents of atypical language learners. First, the literature has consistently shown that atypical language learners are more passive in conversational interaction than their normal language-learning counterparts (Conti-Ramsden and Friel-Patti, 1983, 1984; Bryan, 1986). that is, they do not actively engage in conversational turn taking nor do they initiate as often as normal language

learners. Thus, it may be the case that in order to maintain a conversation with their atypical language-learning child, parents adjust their conversational style to be more directive and controlling and thus initiate more. A second possible explanation comes from the attentional abilities of the atypical language learners. Parents of atypical language learners may have to consciously direct their children's attention to their own as well as to their parent's activities in order to achieve some level of involvement in the interaction.

Moseley (1990) examined the discourse skills of mothers and their language delayed children in terms of how the participants opened and responded to each other in conversation. The four language delayed children were matched to the four normal children on the MLU. The results indicated that the types of utterances used to open and respond were similar, though the flow of dialogue was different for the two groups in the use of imitations, initiations, sustaining and non-sustaining responses. In the language delayed children, the flow of information was interrupted by the necessity to clarify and lack of definitive control of the turn taking structure.

It has been reported in the literature that the directiveness and control have negative interpretation and have been associated with a slower rate of language acquisition. Newport, Gleitman and Gleitman (1977) and Furrow, Nelson and Benedict (1979) found in their longitudinal studies of one-year olds that frequency of maternal imperatives was negatively correlated with children's gain in the syntactic development. Cross (1978) and Demos (1982) also found this trend.

However, the results of studies with language impaired have not only been limited, but also somewhat controversial. On the one hand while some investigators have argued that parental speech to atypical language learners is different from that of normally developing children, on the other hand, other researchers have suggested that parental speech to atypical language learners is similar to that of normally developing children.

Lasky and Klopp (1982) reported of no significant differences between language impaired and normal children.

Schodaf and Edward (1983) reported that during the free play, the directive style of parents with a linguistically

deviant child becomes less containing and the parents used similar proportions of all sentence types as the other group of normal children. Other researchers have also supported the view that parental speech to atypical language learners is similar to that of normally developing children (Rondai, 1977; MacPherson and Weber-Olsen, 1980; Conti-Ramsden and Friel-Patti, 1983; Fischer, 1987).

Thus, currently, little is known about the ways the parents of language disordered children alter their language in attempts to provide comprehensible input for the child. Moreover, it is also not known whether these attempts function to ameliorate or to maintain the language disability.

CDS IN THE HEARING-IMPAIRED CHILDREN

The study of language acquisition in deaf children is one in which the questions of input take on a unique importance. Acquiring a first language effectively is a task which often moves elusive for deaf children when that language is the spoken one. The conditions in which the deaf children of hearing parents strive to acquire the spoken language of their parents are substantially different from and more difficult than - the situation where they are all

hearing. For children with a severe to profound hearing loss, the use of hearing aids cannot restore normal perception of speech. Therefore, much less language is available through the speech directed at the child and, in addition, incidentally perceived language is far less accessible to deaf children. In other words, the existence of a hearing loss leads to definably difficult conditions for the acquisition of spoken language. Language experience is likely to be qualitatively and quantitatively inferior to that of the hearing child. Over the last decade, a number of studies have been concerned with the linguistic context of language acquisition in young deaf children. Investigating the relationships between maternal language characteristics and language advance seemed to offer great promise to those concerned with spoken language acquisition in the prelingually deaf.

Goss (1970) comparing maternal language to deaf and hearing preschool children, found that the mothers of deaf children used less verbal praise and more verbal antagonism. Mothers of deaf children were also observed to use more atypical intonation contours than mothers of normal hearing children. Goss saw these results as indicating an

expression of frustration encountered by mothers in communicating with their hearing-impaired children.

Schlesinger and Meadow (1972) described the maternal language of deaf as inflexible, controlling, didactic, intrusive and disapproving.

Brinich (1980), in a study with five and six-year-olds, found an emphasis on maternal control with the deaf children and suggested that control takes over where reciprocal interaction breaks down.

Wedell-Monnig and Lumley (1986) compared six hearing mother deaf child dyads with six hearing child-hearing mother dyads on two occasions two months apart. Found that although the mothers and their deaf children were in fact highly responsive to one another, they noted that the mothers were more dominant in their interactions and more of their utterances functioned to control or direct behaviour.

Gregory, Mogford and Bishop (1979) examined mother's speech to the same deaf and hearing children at 18 and 24 months in a spontaneous play situation. On the second occasion, language used to the hearing children was more complex, whereas the language addressed to the deaf children

was less complex. Also, the deaf children's mothers used more imperatives and fewer declaratives and commented less often on the child's vocalizations.

Mogford, Gregory and Kaey (1979) reports picture-book reading with the same groups of children at 18 and 24 months. Again, deaf children's mothers did not use more complex language on the second occasion and the deaf children's language had not developed.

Cheskin (1981) made a quantitative and qualitative analysis of the speech directed by hearing mothers to their young deaf children and reported that each mother spoke in short sentences, that were usually grammatically complete. There was a high incidence of declarative sentences which could be due to the mothers intense desire to teach their children the oral speech and the declaratives were used primarily to provide verbal labels for the objects and events in the immediate environment. Mothers also used a repetitions and restrictive vocabulary, and repeated her own utterances far more frequently than do mothers of hearing children. All mothers verbalized their conviction that repetition is a valuable aid for the language learning child. Cheskin also reported that mothers of deaf children missed

opportunities that could have been conducive to involving their children in verbal interaction. Some of these were -

- (a) The simple wh-questions could have provided the children with many opportunities to take an active role in verbal intercourse. Unfortunately, the effect of questions is diminished because the mothers quickly supplied the correct answers rather than allowing the children to engage in verbal searching behaviour. Cheskin also maintained that the rapidity with which the mothers provided the answers seemed to indicate that the primary purpose of their questions was to direct their child's attention to a verbal label rather than to involve them in verbal interaction.

- b) Another opportunity for actively involving the children in verbal interaction could have been the times when the child initiated 'conversation with a verbalization. Though, it has been well documented that young children's holo-phrastic utterances can reflect a number of communicative intents, besides labelling, the mothers of hearing-impaired automatically interpreted their child's verbalization as attempt at labelling rather than as conversational starters due to unintelligibility. The

author, therefore, stresses the importance of examining the context in which such utterances occur.

Mother's speech to deaf children included more repetitions than that of mothers with normal hearing infants (Wedell-Monig and Westerman, 1977). Speech to hearing-impaired infants was also reported to be less complex in terms of MLU and syntactic constructions (Cross, et al. 1980; Wedeil-Monnig and Westerman, 1977). Differences were also found regarding mother's style of reference. Mothers of hearing-impaired children refer less to absent object and restrict their references more to the immediate context (Wedell-Monig and Westerman, 1977).

Collins (1969) found that mothers of deaf children communicated mainly to direct the activities of their children, whereas their children's main purpose for communication seemed to be to inform their mothers about things or events in their environment. Collins found that what the mothers wanted from the communication situation did not necessarily correspond to or match with what their children wanted from communication.

Beckwith (1977) maintained that, if mothers use language primarily to control their children's behaviour, the result maybe less interest on the part of the children in attaining speech as a tool for controlling their environment. Weddel-Monnig and Lumley (1980) suggested that a mother initially may engulf her deaf children with language stimulation to compensate for the sensory loss and in doing so, eventually and inadvertently begin to control the interactions until the child makes no independent attempts to continue the communication. Hiddleson and Schum (1989) also revealed that mothers of hearing-impaired children used more directives than the mothers of normal hearing children.

Subsequent questioning of chronological age as an appropriate basis for comparing deaf and hearing children was a major step forward. Cross, Johnson-Morris and Xienhuys (1980) studied three groups of six children hearing two-year olds who were similar in expressive language level to the hearing two-year olds. The receptive language scores of the hearing-impaired groups were lower, with the deaf five-year olds having similar scores to the hearing two-year olds and the deaf two-year olds not scoring at all on the receptive tests. Language to the two-year olds hearing children differed from that to the other groups. Cross et al. concluded that children's receptive linguistic ability is the

major determinant of the CDS features several other studies (Nienhuys, Cross and Horsborough, 1984; Hughes, 1983; Gallaway, Hostler and Recues, 1990) also indicated that a hearing-impaired child's language level was the most important factor in determining quantitative and syntactic characteristics.

Lyon (1985) reported that it maybe neither possible nor appropriate for mothers of deaf children to adapt their speech in the same ways that mothers of hearing children do. It may not be possible because lack of skill in a conversational partner restricts the possible level of interaction, for example, responses to the child's utterances are obviously limited by the quantity and quality of those utterance. It may not be appropriate because the atypical acquisition situation may require different types of adjustment.

Power, Wood and MacDougall (1990) examined in particular the features 'control' and 'conversational repair' by mothers of deaf children and confirmed that children's linguistic skill is the primary determinant of maternal speech characteristics and claimed that correlations between measures of maternal control and repair and the child's

language level seem to indicate that these features are helpful at the preverbal level but less so when children being to speak.

Henggeler, Watson and Cooper (1989) investigated 'verbal' and 'non-verbal' controls in hearing mother-deaf child and hearing dyads and found that deaf children's mothers did exercise more control, but this varied across tasks, and this might simply reflect appropriate attempts to provide structure for a child with limited communicative ability.

Henggeler and Cooper (1983) further reported that interactions were quantitatively similar but qualitatively different. Deaf children's mothers used fewer indirect commands than the others; and the deaf children were less responsive to their mother's requests.

Lyon (1985) studied seven deaf children and their mothers on two occasions, twelve months apart and found measures of maternal control and dominance of the conversation had negative correlations with the child language gain by the second occasion. However, both measures were correlated with hearing loss, in other words, a mother

trying to communicate with a very deaf child would initiate more as the child would initiate less.

Spencer (1993) studied the communication behaviour of hearing mothers with their hearing-impaired infants at 12 and 18 months and found that the mothers of hearing-infants did not differ from the mothers of hearing infants in the frequency of production of language which suggested that the mothers of infants with hearing loss had not 'given up' trying to communicate with them and were continuing to interact with their infants in verbal as well as non-verbal ways.

Significant differences were however, seen in the mother's production of non-verbal communication behaviour providing evidence that mothers of hearing-impaired infants were attempting to accommodate to the infant's difficulty in processing the auditory based communication.

The mothers of hearing-impaired infants used more gestures with objects like showing objects, moving them to direct the infant's attention, demonstrating actions with objects. Mother's gestures with objects may serve communication in terms of attention getting and attention

maintaining purpose but not language stimulation purposes. Spencer maintained that such maternal behaviours serve to support and maintain the pre-linguistic communication, but were of limited long-term value for the infant's language development.

In studies where the hearing-impaired children were matched to normal children on the basis of chronological age, a higher frequency of directives has consistently been noted among mothers of hearing-impaired than among mothers of normally developing children (Brinich, 1980; Matey and Kretschmer, 1985). On the other hand, studies which have matched the hearing-impaired to the normally developing children on the basis of language age, have observed that speech addressed to the impaired populations was highly similar to those addressed to normal children with similar language abilities (Conti-Ramsden and Friel-Patti, 1983; Matey and Kretschmer, 1985; Nienhuys, Cross and Horsborough, 1984).

Tanksley (1993) studied whether pattern of interaction between mothers and their hearing-impaired children varied with the extent of hearing-impairments. He studied mild-moderately severe hearing-impaired children with language age of 2-5 years and found no significant differences.

Caissie and Cole (1993) investigated the role that maternal directiveness plays in discourse rather than linguistic achievements. Results showed that mother's directives were more frequently expressed during interaction with children exhibiting less advanced language abilities. All the normally hearing and hearing-impaired children were more likely to produce topically related responses to their mother's directives rather than non-directive behaviours. Caissie and Cole viewed that maternal directiveness may act as a facilitator of conversational turn-taking at least during the early stages of communication development by providing a strategy for framing the communicative event, thereby keeping the child involved in the conversational interaction.

One source of confusion is that 'control' and 'responsivity' are not always well-defined and may variously relate to the conversation, behaviour, or both. These distinctions are crucial for interpretation and implications, claiming that mothers control their children's behaviour (for eg. by telling them what to do frequently) is different from claiming they control the conversational interaction and example, by initiating exchanges frequently and thus dominating the conversation). This lack of clarity in

literature means that specifically linguistic insights are few.

Anderson (1979) found that the conversational strategies of three mothers with their deaf children were comparable to mothers of hearing children in the use of various turn-ceding and conversational repair strategies, but they tended to respond less rather than more as the children got older. Nienhuys, Horborough and Cross (1985) concluded that deaf children were involved in more "restricted" and mother dominated interaction than hearing children. However, control of conversation does not necessarily imply lack of responsiveness to child initiations, as Wedell-Monnig and Lumley (1980) found, their mothers, though dominant in the interaction were highly responsive to their children's initiating moves. Chadderton, Tucker and Hostler (1985) and Lyon (1985) found that only a small proportion of child's initiatives went unanswered. However, a number of studies have reported hearing mothers of deaf children being less responsive than hearing mothers with hearing children. Mothers were less likely to respond to their deaf children vocalizations (Gregory, et al. 1979), likely to misinterpret them (Cheskin, 1981), less likely to expand their children's utterance (Nienhuys, et al. 1984) and less likely to be

semantically contingent (Kenworthy, 1986). However, some of the variations may stem from the quantity and type of parent guidance offered (Gallaway and Woll, 1994).

Plapinger and Kretschmer (1991) investigated the effects of context on the interactions between an hearing mother and her young hearing-impaired child and identified two main distinct maternal interaction styles.

- a) Labelling style which is very didactic, more controlling. The labelling context was similar to the communication patterns identified during lesson times in schools, i.e. there was an initial request for information by the teacher, followed by a reply from the child.
- b) The second style was dialoguing in which though the mother dominated the conversation in terms of amount of talk, the discourse style was very different. In these contexts, both mother and child initiated topics. The authors concluded that mothers interactional styles varied with the context.

Spencer and Gutfreund (1990) found that hearing-impaired infants produced fewer potential topic initiating behaviours

than did normal hearing infants. Mothers of hearing-impaired infants contributed a greater percent of dyadic topic initiations. Spencer and Gutfreund suggest that when mother's are confronted with infants who are relatively passive and do not spontaneously offer topic initiations, tend to automatically take the lead in order to assure, an active interaction. As a result, mothers of hearing-impaired infants produce so much language and stay on topics so long that thus infants have very little time to direct their attention on a new object. The authors viewed that in their earnest efforts to provide maximum language input, these mothers were providing them too few opportunities to take the conversational lead.

Musselman, Carol and Churchill (1993) examined the effects of maternal conversational control. The dyads were divided into high and low levels of maternal conversational control and high and low levels of children's communicative competence. Analysis of children's gain indicated that a low level of turn control was associated with greater expressive gains in both the low and high competence groups and the turn control had no relationship to receptive gains. It was found that the maternal response control interacted with communication level and communication mode to predict the differential gain.

Review of literature reveals that there is a lack of strong evidence for the facilitative/unfacilitative effects of the speech directed to the hearing-impaired children and research lag behind in this area. Understanding which functions are likely to be achieved by different features of CDS is likely to be a valuable asset to future research.

CDS AND INTERVENTION

The use of parent-child conversational interaction as therapy is constantly gaining impetus, based on the more robust findings of the literature in this area. The ideas behind the parentese approach consist of taking the normal, natural environment for language learning and helping parents of atypical language learners to replicate it. Parents play a primary role in facilitating language to their young hearing-impaired children. As the child learns language, parents must constantly change the complexity of their language input to help him/her learn more advanced vocabulary and grammar. A mismatch between the child's needs and parental input results in the child's slow progress. Helping the parents make adjustments or modifications in the quality and quantity of parent language is one of the major goals of the parent communication training program. Since parents of

atypical language learners have been thought to be more directive and controlling and less semantically contingent than parents of normal language-learning; the parentese therapy, naturally aims at making the parents less directive and controlling and more semantically contingent (Cross, 1984; Watkins and Pemberton, 1987; Weistuch and Byers, 1987).

The effectiveness of parentese therapy has been well documented in a variety of studies. Parental conversational behaviours to their atypical language-learning children has been found to be amenable to change in terms of increased responsiveness and decreased directiveness (Cheseidine and McConkey, 1979; Mahoney and Powell, 1986; Tannock, Girolametto and Siegel, 1992), more equal balance in turn taking (Seitz, 1975; Mahoney and Powell, 1986) and more child centered speech (McConkey and O'Connor, 1982; Girolametto, 1988).

In all cases, the studies have also reported favourable outcomes to their programs. Changes in parental behaviour produced concomitant changes in the children's language development. Thus, parentese therapy has been thought to affect the children's MLU (Price, 1984), to increase the number of verbal utterances (Seitz, 1975; Giralometto, 1988), to increase their lexicon (McConkey and O'Connor, 1982), to

improve scores on standardized tests of language development (Mahoney and Powell, 1981) and to improve social-conversational skills (Girolametto, 1988, 1992).

Although parentese as therapy has been shown to be effective in a number of studies, there is also evidence which suggests that parental conversational styles are difficult to change. Tiegermann and Siperstein (1984) found in their intervention study with SLI children that individual maternal patterns of interaction were not amenable to change. Although all mothers in their study broadened their use of communicative behaviours and became more responsive, mothers who used a great deal of initiations and guided the interaction continued to do so. Attempts to monitor and change the parental conversational behaviours implied that parents have somehow failed to provide what their children need and even worse, they have exacerbated their children's problem in some way. Thus, it is essential that parents are told clearly that their conversational interaction are in no way 'wrong' or 'poor' nor are they the cause of their children's problems. Instead, the non-normal rationale can be applied and one can be guided that special children have special needs and therefore that changes are necessary in order to improve language acquisition. This is very

important and not always understood by parents participating in this type of intervention (Conti-Ramsden, 1985).

Interestingly, some investigators have argued, particularly with respect to parentese intervention, that normal, adequate linguistic interaction may not be enough to help language learners to acquire language more successfully. That is, to apply the normal model may be insufficient, and McConachie and Mitchell (1985) advocate non-normal modes of intervention with atypical language-learning children and their parents. The normal model is not only used but enriched to maximize the chances of children learning language. This use of parentese as a 'super-normal' model carries with it implications for research.

It is necessary not only to have comparative studies with language impaired and non-impaired children, but investigations which remain within the populations of atypical language learners, identifying and comparing different interactional styles in parent-child dyads are also essential. Research has yet to tap this source of information more fully, especially with respect to intervention.

CONCLUDING REMARKS

To conclude; the current state of our knowledge in CDS suggests that normal language-learning children are exposed to a variety of interactive environments; that different characteristics of parental language are likely to change depending on what aspects of the child the parent focuses on, what situation the parent-child dyad is engaged in and what language stage the child is at. These facts, taken together lead us to conclude that no language environment is better than any other for language learning.

Research with atypical language learners has pointed to various complicating factors. First, atypical language learners may not be as skilled as normal language learners in their ability to extract, filter, organize and use linguistic information and this in turn appears to affect parental input language. Second, features which have been thought of as possibly hindering language growth, such as rejection, directiveness and ill-tuning, may all be circumvented by the normal language-learning child, but the atypical language learner may not be able to do so.

Although, it has been shown that there are both similarities to, and differences from the interaction of adults with normally developing children, the significance and possible outcomes of these similarities and difference with atypical children need sensitive reevaluation in the light of current views. Finally, features of parental language appear to be highly dependent on the language stage and other characteristics of the child. Atypical language learners present a mismatch of characteristics to their parents in terms of their physical and cognitive maturity, age, and language ability which may have stronger effects than we have so far contemplated. Also, parental language style may be a factor in the atypical language learner's rate of language development. Therefore, future research needs to address this array of important variables.

METHODOLOGY

The study investigated the mother's communicative functions in the child directed speech of normal hearing children and hearing-impaired children.

SUBJECTS

Two groups of subjects participated in the study. The first group included ten normal hearing children (5 males and 5 females) in the age range of 12-24 months and their mothers. The normal hearing children selected did not have any past history of speech, language or hearing deficits. Parental report, observation of the child's general behaviour and social interaction were used to confirm that the hearing children were developing normally in all aspects.

The second group comprised of ten linguistically matched hearing-impaired children (7 boys and 3 girls) and their mothers. All the hearing-impaired children exhibited severe-profound sensori-neural hearing loss bilaterally of pre-lingual onset. No additional handicaps were present. All the hearing-impaired children were using amplification consistently and had been enrolled in an auditory - oral intervention programme for at least 6 months. The

chronological age of hearing-impaired children ranged from 3-5 years (Mean = 3.6 years). The combined language ages of the hearing-impaired children ranged from 12-24 months, as measured by Receptive Expressive - Emergent Language Scale (REEL) by Bzoch and League (1970) in terms of both reception and expression. Thus, both the hearing impaired children and the normal hearing children had similar language ages, ranging from 12-24 months.

The adult subjects participating in the study consisted of the mothers of the children in both the groups. All the mothers were literate and were of middle socio-economic background. They were native speakers of Kannada language. The age range of the mothers was from 22-30 years (mean- 27 years).

PROCEDURE

EXPERIMENTAL ENVIRONMENT

A familiar environment, such as the clinic room or the child's home was selected as the venue for the audiotaping. No person other than the child, the mother and the investigator were present in the room while the taping was taking place. The room contained various toys. Sometimes,

the child's own toys rather than a standard set of toys were used. The familiarity of both participants with the toys was ensured to enhance the probability of capturing mother-child interaction truly representative of their, usual ways of behaving with each other.

EXPERIMENTAL INSTRUCTIONS

The mothers were given the following instructions. Play with your child as you would at home. I will be recording you for 20 minutes. The mothers were told that the purpose of recording was to observe the way the child played with the toys and how the mother played with the child; rather than to observe the mother's style of speech. These directions were chosen in order to minimize any pressure the mothers may have felt to optimize their own interactive style (still the possibility that the mother's interaction styles were affected in some way by the nature of observation cannot be entirely dismissed).

DATA COLLECTION AND CODING

The subjects were audiotaped for about 20 minutes using a portable taperecorder and cassette. A ten-minute segment was randomly selected from the twenty-minute sample. The

mother-child utterances were transcribed. The data was scored separately for each mother-child dyad using an adapted form from Cole and St.Clair-Stokes (1984). Seventeen caregiver communicative functions and MLU were analyzed. Explanations for these categories of caregiver communicative functions are given below:

Speech Act Features

1. Invitation to Vocalize : a caregiver utterance that seeks to have the child vocalize; includes attempts to get the child to imitate specific sounds, words, or sentences (Mogford, Gregory and Bishop, 1979).
2. Accompaniment : a caregiver utterance that narrates obvious, ongoing events without an apparent attempt to seek a child response, and without adding new information (Cole/Strokes category).
3. Self-Repetitions and Repair Devices : caregiver repeats his or her own previous utterance(s), answers his or her own question, or supplies child's turn (Snow, 1977).

4. Imitation : partial or full repetition of child's preceding utterance (Cross, 1977).
5. Expansion : elaboration of any preceding contribution of the child to form a semantically or grammatically complete sentence (Cross, 1977).
6. Continues : caregiver utterance that maintains and continues conversation by acknowledging the child's contribution with no new information added; includes yes, head nodding; provides focus for child's continued attention and action (Cole/Stokes category based on Tronick, Als and Adamson, 1979).
7. Yes/No Reply : expressing affirmation or negation of a preceding contribution of the child (Cross, 1977).
8. Other Replay : caregiver response to preceding verbal or nonverbal question or request from the child; other than yes/no replies (Cole/Stokes category).
9. Informatives : caregiver utterance that adds new information to the situation; describing, explaining, expressing emotions and judgements, reporting beliefs about another's internal state; stating reasons

(Coie/Stokes category based on Dore, Gearhart and Newman, 1978).

10. Closed questions : caregiver question requiring a yes/no labeling response (Cross, 1977).
11. Open questions : caregiver question of any other type (Cross, 1977).
12. Directives Imperative Form : caregiver utterance with imperative syntax, with or without subject (Bellinger, 1979; Newport, Gleitman and Gleitman, 1977).
13. Directives : Interrogative Form : caregiver directive with interrogative syntax (Bellinger, 1979; Newport, Gleitman and Gleitman, 1977).

Referential Features

14. Child-Controlled Events : utterance by caregiver referring to activity, object child is/was doing, holding or manipulating (Cross, 1977).

15. Caregiver-Controlled Events : utterance by caregiver referring to activity, object caregiver is/was doing, holding or manipulating (Cross, 1977).
16. People or Objects Present: utterance by caregiver referring to any person or object in the immediate situation, but not the child or the mother (Cross, 1977).
17. Nonimmediate : utterance by caregiver referring to events, people or objects removed in space and time from the present situation (Cross, 1977).

An interaction meeting the description for more than one communicative function was counted under each appropriate communicative function. The Mean Length of Utterance (MLU) in words was computed (following Brown's rules, 1973) for 100 utterances from the transcribed data for each mother-child dyad. The following formula was used.

$$\text{Mean length of utterances} = \frac{\text{Total no. of morphemes/words}}{\text{Total no. of utterances}}$$

The rules for computing the MLU are given in the Appendix A.

INTRA-JUDGE RELIABILITY

For the intra-judge reliability, ten percent of the mother-child interactions were scored twice by a researcher. This consisted of randomly selecting one tape containing a hearing-impaired child and his mother's interaction and one normal hearing child interacting with his or her mother. The same ten-minute segments that had been analyzed in the original scoring were re-analyzed.

INTER-JUDGE RELIABILITY

In order to establish the inter-judge reliability, another trained speech-language pathologist was familiarized with the definitions of terms by Cole and St.Clair-Stokes (1984). The trained speech-language pathologist then analyzed ten percent of the mother-child interactions. This involved one normal hearing child and his/her mothers interaction and one hearing-impaired subject and his/her mother's interaction.

DATA ANALYSIS

The data collected was then analyzed by using appropriate statistical measures. The pearson product moment

correlation coefficient was used to compute the inter-judge reliability and intra-judge reliability.

The frequency of the communicative functions studied was converted to percentages by using the formula -

$$\text{Percentage} = \frac{\text{Frequency of communicative function under study}}{\text{Total no. of utterances}} \times 100$$

As the communicative functions were not mutually exclusive, the same communicative function was counted in two or more categories. As a result the percentage figures totalled for all the communicative functions may be more than 100.

The mean and the standard deviation for the 17 communicative functions and MLU were calculated for both the groups. The 't' test was used to study the significance of differences between the means of two groups.

RESULTS AND DISCUSSION

The purpose of the study was to examine the child directed speech of the normally hearing and the linguistically matched hearing impaired children and to find out whether any significant difference existed between the groups in terms of the discourse communicative functions.

The data collected was statistically treated. The descriptive statistics consisting of the mean and standard deviation (SD) were obtained for the parameters analyzed. The t' test was used to determine the significance of difference between the mean and the SD values for the normal and the hearing-impaired group.

The Pearson Product Moment correlation was used for the intra-judge and inter-judge reliability. For the intra-judge reliability, the correlation coefficient was computed to be .99 for the interactions involving a hearing-impaired child and 0.97 for the interactions involving a normal hearing child over the two scoring trials. For the inter-judge reliability, the Pearson product moment correlation coefficient was computed to be .97 for the interactions which involved a hearing impaired child and .98 for the interactions which involved a normal hearing child.

The results are discussed under 3 sections : (1) Child directed speech in normal hearing children. (2) Child directed speech in hearing impaired children. (3) Comparison between normal and hearing impaired children.

CHILD DIRECTED SPEECH IN NORMAL HEARING CHILDREN :

Table-A shows the mean and SD values for the maternal communicative functions studied in the normal hearing children.

Table-A : Mean percentage and standard deviations of the maternal communicative functions in normal hearing children.

	Mean	SD
1. Invitation to vocalize	5.29	1.84
2. Accompaniment	5.40	3.80
3. Self repetitions and repair devices	29.09	6.57
4. Imitation	5.71	3.05
5. Expansion	9.27	3.49
6. Continuates	5.40	2.02
7. Yes/No reply	3.13	1.82
8. Other reply	2.74	1.31
9. Informatives	17.99	4.06
10. Closed questions	9.99	4.50
11. Open questions	15.12	6.41
12. Directives:imperative form	18.42	7.46
13. Directives : interrogative form	3.70	2.14
14. Child controlled events	8.67	3.02
15. Caregiver controlled events	5.09	2.03
16. People or objects present	8.90	2.33
17. Non-immediate	0.90	0.94

As seen in the table above, the speech act feature of invitation to vocalize occurred with a mean percentage of 5.29 and a SD of 1.84 in the CDS of normal hearing children, It included the mothers utterances that seeked to have the child vocalize or attempted to get the child to imitate specific sounds, words or sentences.

The communicative function of accompaniment occurred with a mean percentage of 5.40 and the SD of 3.80. In accompaniment, the mother narrated the ongoing events without an apparent attempt to seek the child's response.

Self-repetitions and repair devices occurred with a mean percentage of 29.09 and SD of 6.57. Self-repetitions and repair devices are the communicative functions, where the mother repeated her own previous utterance with a more exact or partial retention of the same content, and answered her own questions. The self repetitions and repair devices generally occurred when the child was not paying attention or failed to comply with the mother's request for action. Newport, Gleitman and Gleitman (1977) reported 23 percent of the mother's utterances involved self-repetitions.

Imitation, where the mother either partially or fully repeated the child's preceding utterance, occurred with a

mean percentage of 5.71 and SD of 3.05, while expansion occurred with a mean percentage of 9.27 and SD of 3.49. These results are in agreement with the results reported by Newport, Gleitman and Gleitman (1977). Their study indicated that 6% of motherese utterances were expansions. The expansions and imitations serve the function of providing a feedback about the acceptability of utterances and in turn also provide a language model, by providing examples of correct utterances and correct conversational structure.

The communicative function of continuates included those utterances which served to maintain or continue the conversation by acknowledging the child's contribution. Results indicated that 5.40 percent of mothers utterances were continuates with a S.D. of 2.02.

The Yes/No reply and other replies occurred with mean percentages of 3.13 (SD =1.82) and 2.74 (SD=1.3) respectively. This indicated that mothers were responsive to their children's communicative needs.

The informatives occurred with a mean percentage of 17.99 and SD of 4.06 in the CDS of normal hearing children. Mothers of normal hearing children provided new information

to their children by describing and explaining the situations or events and by starting the reasons.

The mothers of normal hearing children also used both closed questions and open questions with mean percentages of 9.99 (SD of 4.5) and 15.12 (SD of 6.41) respectively. The directive imperatives and directive interrogative forms occurred with the mean percentages of 18.42 (SD=7.46) and 3.70 (SD of 2.14) respectively. Similar results were obtained by Blount (1972), Brown, Cazden and Bellugi (1969) who reported that more questions and more imperatives were addressed to young children. The directive language of the mothers served the purpose of guiding the infants behaviour.

With respect to the referential features, 8.67 percent of mothers utterances referred to child-controlled events while 5.09 percent of the mothers utterances referred to the caregiver controlled utterances. The utterances referring to the people/objectives present in the environment occurred with a greater percentage of 8.90. However, the utterances referring to the non-immediate events or people or objects removed in space and time from the present situation occurred infrequently with a mean percentage of 0.90 only. Philips (1973) and Snow et al. (1976) also reported that the reference in the child-directed speech is invariably to the

'here and now'. Mothers limit their utterances to the present tense, to concrete nouns, to comments on what the child is doing and on what is happening around the child. They reported that mothers make statements and ask questions about what things are called, what noises they make, what color they are, what actions they are engaging in, who they belong to, where they are located and very little else.

Thus, the analysis of the maternal communicative functions in the CDS of normal hearing children indicated that mothers of normal hearing children used significantly greater percentage of self-repetitions and repair devices, directive imperatives, informatives, open-question and closed questions followed by expansions, referential features of people/objects present, child-controlled events in that order.

The communicative functions which occurred with a lesser percentage included imitation, continuates, accompaniments, speech act features of invitation to vocalize and referential features of caregiver controlled events, followed by directive interrogatives, yes/no reply and other reply and the non-immediate referential features.

Table B shows the mean and SD values for the MLU in normal hearing children

Table-B : Mean and SD values for MLU in normal hearing children	
Mean	SD
2.0	0.13

The mother's Mean Length of Utterance (MLU) was found to be 2.0 words and the SD was 0.13. This indicated that the MLU in the child directed speech of normal hearing children was considerably shorter. The utterances were simpler with more single names and phrases. This is in agreement with results obtained by Drach (1969); Newport (1975); Sach et al. (1992); Shatz and Gelman (1973); Snow (1971); and Vorster (1974); Cross (1977); who have also reported of shorter MLU in the CDS.

CHILD DIRECTED SPEECH IN HEARING IMPAIRED CHILDREN

Table-C shows the mean percentages and SD values for the maternal communicative functions studied in the CDS of hearing-impaired children.

Table-C: Mean percentage and standard deviations of the maternal communicative functions in hearing impaired children.

	Mean	SD
1. Invitation to vocalize	7.44	1.28
2. Accompaniment	3.08	1.76
3. Self repetitions and repair devices	32.04	5.04
4. Imitation	1.64	1.01
5. Expansion	1.41	1.18
6. Continuates	3.08	1.73
7. Yes/No reply	1.72	0.68
8. Other reply	1.67	0.66
9. Informatives	15.16	4.76
10. Closed questions	8.91	2.90
11. Open questions	14.12	5.28
12. Directives : imperative form	22.27	5.83
13. Directive : interrogative form	8.66	2.57
14. Child controlled events	4.19	1.73
15. Caregiver controlled eventl	2.30	1.40
16. People or objects present	7.58	2.99
17. Non-immediate	0.93	1.15

The speech act feature of invitation to vocalize occurred with a greater mean percentage of 7.44 and a standard deviation of 1.28; while accompaniments occurred with a mean percentage of only 3.08 and standard deviation of 1.76.

The self-repetitions and repair devices were found to occur with a greater percentage when compared to the other communicative functions. The mean values obtained were 32.04 with a standard deviation of 5.04. Similar findings were

reported by Wedell-Monnig and Westerman (1977) and Cheskin (1981) who found that the child directed speech of hearing impaired children included more repetitions.

Imitations and expansions occurred less frequently with mean percentages of 1.64 and 1.41 respectively. The standard deviation values were found to be 1.01 and 1.18 for imitations and expansions respectively.

The continuates had a mean percentage of 3.08 and standard deviation of 1.73. The yes/no reply and other replies occurred in frequently with a mean of 1.72 and 1.67 respectively. Similar findings were reported by Hengeller and Cooper (1983).

The mean percentage of informatives used by mothers of hearing-impaired children was found to be 15.16 with a standard deviation of 4.76. Both closed questions and open questions were also used by the mothers of hearing-impaired children. Closed questions had a mean percentage of 8.91 with standard deviation of 2.90 while the open questions had a mean percentage of 14.12 with a standard deviation of 5.28.

The mother of hearing-impaired children used a significantly greater percentage of directive imperatives with a mean of 22.27 and SD of 5.83, while the directive interrogatives occurred less frequently with a mean of 8.66 and SD of 2.57. Several investigators have also reported a higher frequency of directives in the child directed speech of hearing impaired children (Brinich, 1988; Matey and Kretschmer, 1985; Spencer and Gutfreund, 1990; Caissie and Cole, 1993; Beckwith, 1977; Weddell-Monnig and Lumley, 1980).

Spencer and Gutfreund (1990) maintained that when mothers are confronted with hearing impaired infants who are relatively passive and do not spontaneously offer topic initiations, may automatically tend to take the lead in order to assure an active interaction. This could explain the patterns of maternal dominance. Caissie and Cole (1993) reported that the frequency of occurrence of directive behaviour ranged from 8% to 46% with an average of 26%. With regard to the conversational effect of maternal directives, earlier studies claimed that excessive expression of directives provided an impoverished input to the child and were negatively associated with language acquisition (Furrow, et al. 1979; Newport et al. 1977). However, the recent studies suggest that the use of directives by adults may play a positive discourse role by facilitating the child's

participation in the conversational turn taking (Barnes et al. 1983; Caissie and Cole, 1993). All the hearing-impaired children were more likely to take a turn in the conversation following a mother's directive behaviours than following a non-directive behaviour.

In terms of the referential features; the child controlled events had a mean percentage of 4.19 while the caregiver events had a mean percentage of only 2.30. The referential feature of people/object present had higher mean percentage of 7.58 with a SD of 2.99. The non-immediate referential feature occurred infrequently with a mean percentage of 0.93. This indicated that the mothers of hearing impaired children referred less to absent objects and restricted their references more to the immediate context. Similar findings were also reported by Weddeil-Monnig and Westerman, 1977).

Table-D shows the mean and SD values for the MLU used by mothers of hearing impaired children.

Table-D : Mean and SD values for MLU in i
hearing impaired children

Mean	SD
1.96	0.13

The mothers of hearing impaired children used short and simpler utterances with a mean MLU of 1.96 and standard deviation of 0.13. Several investigators have also reported that speech to hearing impaired children was less complex in terms of MLU and syntactic constructions (Cross et al. 1982; Weddel-Monnig and Westermann, 1977).

COMPARISON BETWEEN THE CDS OF NORMAL HEARING CHILDREN AND THE HEARING IMPAIRED CHILDREN

Table-E shows the significance of difference between the mean values for hearing-impaired and normal hearing children in terms of the speech act feature of invitation to vocalize.

Hearing impaired		Normal		t-score
Mean	SD	Mean	SD	
7.44	1.28	5.29	1.84	2.94*
* Significant at .01 levels.				

As shown in the table, the difference between the two means was found to be statistically significant, indicating that there was a difference between the mothers of normal hearing children and the hearing impaired children in their use of communicative function invitation to vocalize". Mothers of hearing impaired children used a greater

percentage of utterances which attempted to get the child imitate specific sounds, words or sentences when compared to normals. These differences could be attributed to the mothers intense desire to teach oral speech to their hearing impaired children and their knowledge of the child's disability. On the other hand, mothers of normal hearing children used speech mainly for the purpose of communicating with their children rather than teaching language, and hence the communicative function of invitation to vocalize did not occur with a greater percentage in their CDS.

Table-F shows the significance of difference between the mean values for hearing impaired and normal hearing children for the communicative function of accompaniments.

Table-F : Significance of difference between the mean values for accompaniments.

Hearing impaired		Normal		t-score
Mean	SD	Mean	SD	
3.08	1.76	5.40	3.80	1.69

The difference between the two means was not found to be statistically significant, indicating that the mothers in both the groups did not differ significantly in their usage of accompaniments; although the mean values were found to be more for the normal hearing children. Mothers of both normal

hearing and hearing impaired children narrated the ongoing events to their children without an apparent attempt to seek a child's response; and thus provided a constant language stimulation for their young language learning children.

Table-G shows the significance of difference between the mean values for the communicative function of self-repetitions and repair devices between normal hearing and hearing impaired children.

Table-G : Significance of difference between the mean values for self-repetitions and repair devices.

Hearing impaired Mean	SD	Normal Mean	SD	t-score
32.04	5.04	29.09	6.57	1.08

As shown in the table above, the difference between the two means was not significant. This clearly indicated that mothers of hearing impaired children did not differ significantly from the mothers of normal hearing children in the usage of self-repetitions and repair devices.

Cheskin (1981) and Weddell-Monnig and Westerman (1977) have, however, reported that mother's speech to deaf children included more repetitions than that of mothers with normal hearing children. Differences in the results of the current

study and by Cheskin (1981) and Weddell-Monnig and Westerman (1977) may be attributed to the differences in the subject selection criteria. The subjects were age matched with normal hearing children in the latter studies while the current study involved the linguistic matching, where the hearing-impaired children were matched with normal hearing children on receptive and expressive language abilities. The results obtained in the current study indicated that the mothers speech of hearing impaired children was directly influenced by the children's language levels. Cross (1977) further suggested that as the children gain in receptive ability and attend to most of the mother's utterances, the mother's need to repeat the utterances decreases.

Table-H : Significance of difference between the mean values for continuates.

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
5.40	2.02	3.08	1.73	2.66*

•Significant at 0.05 levels of significance.

Table-H indicates that a statistically significant difference existed between the child-directed speech of normal hearing and hearing-impaired children in terms of continuates. The mothers of normal hearing children acknowledged the child's contribution by saying yes or head

nodding and provided focus for the child's continued action and thus maintained the conversation. On the other hand, the mothers of hearing impaired children were less responsive to their child's contribution and this resulted in conversational breakdowns. Similar results were also reported by a number of investigators (Cross, 1970; Cheskin, 1981; Gregory et al. 1979; Nienhuys, et al. 1984; Kenworthy, 1986).

Tables I and J show the significance of difference between the mean values for the communicative functions of imitations and expansions between the normal hearing and hearing impaired children.

Table-I : Significance of difference between the mean values for imitation

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
5.71	3.05	1.64	1.01	3.87*

* Significant at 0.01 levels.

Table-J :: Significance of difference between the mean values for expansion				
Normal		Hearing impaired		t-score
Mean	SD	Mean	SD	
9.27	3.49	1.41	.81	6.49*

* Significant at 0.01 levels.

As indicated in the tables above, the difference between the mean values was found to be statistically significant for both imitations and expansions.

The mothers of the hearing-impaired group used a lesser percentage of imitations and expansions. This could be attributed to the following reasons. Firstly, the hearing impaired child may contribute very less during the conversations; such that the mothers were unable to imitate or expand on the utterances. Secondly, even if the hearing-impaired children did contribute a few utterances, the mothers might have misinterpreted their child's verbalization due to poor intelligibility of speech. Thirdly, the poor percentage of imitations and expansion may also reveal that the mothers were less responsive to their young children's vocalizations (Gregory, et al. 1979; Cheskin, 1981; Nienhuys, et al. 1984).

On the other hand, mothers of normal hearing children provide linguistically relevant information through the use of exact imitations and expansions. Snyder-McLean and McLean (1978) suggest that a child's imitation followed by a mother's expansion of that utterance may serve as a means for a child to rehearse the specific motor act for production in an appropriate context and also get a confirmation from the adult speaker. They further point out that imitation and expansions help in reinforcing and selective shaping of the child's utterances during the different stages of language acquisition.

Therefore, the lesser percentages of imitation and expansions in the CDS of hearing impaired child may have a negative effect on the language development.

Table-K: Significance of difference between the mean values for yes/no reply.					
Normal		Hearing Impaired		t-score	
Mean	SD	Mean	SD		
3.13	1.82	1.72	0.68	2.20*	
* significant at 0.05 levels of significance.					

Table-L : Significance of difference between the mean values for other reply.

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
2.74	1.31	1.67	0.66	2.22*

* Significant at 0.05 levels of significance.

Tables K and L indicate a statistically significant difference between the means values for both yes/no reply and other replies. These differences between the mothers of normal hearing children and the hearing-impaired children clearly indicate that the mothers of hearing impaired children are less responsive to their child's communicative needs. A finding which is also reported by Goss, 1970; Gregory, et al. 1979; Cheskin, 1981.

Table-M shows the significance of difference between the mean values obtained for the informatives between the hearing impaired and normal hearing group.

Table-M: Significance of difference between the mean values for informatives.

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
17.99	4.06	15.16	4.76	1.38

The table above indicates that there was no statistically significant difference between the mothers of hearing-impaired children and normal hearing children in terms of their use of informatives. Mothers in both the groups added new information to their children by describing and explaining about the events in the environment. This finding is in disagreement with Goss (1970) who reported that mothers spoke less to their hearing-impaired children.

The results obtained in this study may be attributed to the guidance and counselling received by the mothers during the initial phases of therapy, which emphasised on greater speech and language interaction with their hearing impaired children. In their earnest efforts to provide maximum language input, the mothers of hearing impaired children used greater number of informatives, comparable to that of normal children, in their conversation. Also, the comparable language levels between the two groups of children could also have influenced the mother's input qualitatively.

Table-N : Significance of difference between the mean values for closed questions.

Normal		Hearing Impaired		t-soore
Mean	SD	Mean	SD	
9.99	4.50	8.91	2.90	0.61

Table-0 : Significance of difference between the mean values for open questions.

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
15.12	6.41	14.12	5.28	0.36

Tables N and 0 indicated that the difference between the mean values for closed and open questions was not statistically significant. As earlier stated, this finding supported the view that when hearing-impaired children were linguistically matched with the normal hearing children, no significant difference existed between the mothers of both groups (Power, Wood, McDougal, 1990; Cross et al. 1984; Hughes, 1983; Gallaway, Hostler and Reeves, 1990).

Table P and Q show the significance of difference between the means for directive imperatives and directive interrogatives respectively.

Table-P: Significance of difference between the mean values for directives: imperative form.

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
18.42	7.46	22.27	5.83	1.24

Table-Q: Significance of difference between the mean values for directives: interrogative form.

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
3.70	2.14	8.66	2.57	4.48*

* Statistically significant at 0.01 levels.

As seen in the table-P no statistically significant differences existed between the two groups in terms of their usage of directive imperatives.

These results are in agreement with those studies which have matched the hearing-impaired children or language impaired children on the basis of the language levels to the normally developing children. Speech addressed to hearing-impaired/language impaired children was highly similar to the speech addressed to the normal children with similar language abilities. Mothers of hearing impaired/language impaired children were thus not directing or controlling the child's behaviour any more than were mothers of normal children with comparable language levels (Conti-Ramsden and Friel Patti, 1983; Matey and Kretschmer, 1985; Niehuys, Cross and Horborouh, 1984).

However, in terms of the directive interrogative form, hearing impaired mothers used a greater number of directive interrogatives than compared to mothers of normal hearing children. The difference between the mean values was found to be statistically significant. This could be attributed probably to the mothers increased efforts at gaining attention of the child towards their directives and in the child's understanding and compliance of the same.

Table R and S show the significance of difference between the mean values for child controlled events and care giver controlled events respectively.

Table R: Significance of difference between the mean values for child - controlled events.

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
8.67	3.02	4.19	1.73	3.92*

*Statistically significant at 0.01 levels of significance.

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
5.09	2.03	2.30	1.40	3.44*

* Significant at 0.01 levels of significance.

The tables above indicated that there was a significant difference between the mothers of hearing impaired children and the normal hearing children with respect to the referential features of child-controlled events and caregiver controlled events. The mothers of normal hearing children referred to the objects the child or the caregiver was holding or manipulating and spoke about the activities the child or the caregiver was engaged in. On the other hand, the mothers of hearing impaired children were less semantically contingent. That is, the mothers used mainly labels to teach the language to their hearing, impaired children rather than describing what the child was interested in. This could lead to loss of interest on the child's part and can have serious adverse effects in the child's language development.

Table T and U show the significance of difference between the mean values for the referential features of people/objects present and non-immediate features respectively.

Table T : Significance of difference between the mean values for people/object present

Normal Mean	SD	Hearing Impaired Mean	SD	t-score
8.90	2.33	7.58	2.99	1.06

Table U : Significance of difference between the mean values for non-immediate feature

Normal		Hearing Impaired		t-score
Mean	SD	Mean	SD	
0.90	0.94	0.93	1.15	0.06

The difference between the means were not statistically significant for both the referential features of people/objects present and non-immediate features respectively.

This indicated that mothers of both the hearing-impaired children and the normal hearing children restricted their references to the more immediate context and referred less to the absent objects. Similar findings were also reported by Wedell-Monnig and Westerman (1977).

The Table V shows the significance of difference between the values for MLU.

Table V: The significance of difference between the mean values for MLU.

Hearing impaired		Normal		t-score
Mean	SD	Mean	SD	
1.96	0.13	2.0	0.13	0.66

The table V shows the significance of difference between the mean values for hearing impaired group and the normal hearing children in terms of MLU. As seen in the table, no statistically significant difference existed between the 2 means. This indicated that the mothers of both normal hearing and hearing impaired groups did not differ significantly in their mean length of utterance. Both the mothers used shorter and simpler sentences and phrases to suit the language levels of their children. Cheskin (1981) and Wedell-Monnig and Westerman (1977) have also reported that speech to the hearing impaired infants was less complex in terms of the MLU; and did not differ significantly from the speech to the normal hearing group.

Thus, to summarize the results, it was found that when the hearing impaired children were linguistically matched with the normal hearing children, no significant differences existed between the two groups in terms of the communicative functions of accompaniments, self repetitions and repair devices, informatives, closed and open questions, directives imperative form, and referential features of people/object present and non-immediate referential feature. The MLU used by mothers in both the groups was also similar. These results suggested that hearing impaired children received speech input which is essentially similar to that

received by the normal children with comparable language abilities. The mothers of hearing impaired children adjusted their conversational style to suit the language levels of their children. These findings also provide evidence to support the comprehension model or the feedback model of child directed speech (Bohannon and Marquis, 1977; Cross, 1977; Ervin-Tripp, 1971; Clanzler and Dodd, 1975; Cord, 1975; Wedell-Monnig and Westerman, 1977).

Further the results indicated that significant difference existed between the two groups in terms of the occurrence of the imitations, expansions, invitation to vocalize, continues, directive interrogatives, yes/no reply, other reply, child-controlled events and caregiver controlled events. This clearly indicated that the presence of hearing impairment in the child adversely affected certain features of the child directed speech, inspite of counselling received during initiation of therapy. Henggeler and Cooper (1983) have also reported that the interactions of mothers with their hearing impaired children were quantitatively similar but qualitatively different from normal mothers. Lyon (1985) reported that it may be neither possible nor appropriate for others of deaf children to adapt their speech in the same ways that mothers of hearing children do.

It may not be possible because lack of skill in a conversational partner restricts the possible level of interaction, for example, responses to the child's utterances are obviously limited by the quantity and quality of those utterances. It may not be appropriate because the atypical acquisition situation may require different types of adjustment.

The generalization of these results to all speech situations must be, however, considered with caution, as the current study was restricted only to the play context. The occurrence of these discourse communicative features may vary depending on the linguistic context (Gregory, Mogford, and Bishop, 1979, Plapinger and Kretschmer, 1991). Also, the fact that all the mothers of the hearing impaired children in the present study had received counselling and advice regarding the speech and language stimulation could have also influenced their CDS, both qualitatively and quantitatively.

SUMMARY AND CONCLUSION

Child directed speech represents the modified language spoken by the adults to their young children. The various features of child directed speech in terms of phonology, prosody, syntax, semantics and discourse have been found to aid the language acquisition process in young children. The studies on the child directed speech in the hearing impaired children, however, have been limited and controversial. Hence, the present study was attempted with the aim of studying the child-directed speech in normal hearing and hearing-impaired children and to compare between the groups to determine any significant differences existed.

Ten normal hearing children and ten linguistically matched hearing impaired children and their mothers participated in the study. The mother child interactions were audio recorded during a play context. A ten minute sample was transcribed for each mother child interaction. The transcribed data was then coded and analyzed for the following communicative functions and the Mean Length of Utterance

- (i) Invitation to vocalize
- (ii) Accompaniments
- (iii) Self-repetitions and repair devices
- (iv) Imitations
- (v) expansion
- (vi) Continuates
- (vii) Yes/No reply
- (viii) Other reply
- (ix) Informatives
- (x) Closed questions
- (xi) Open questions
- (xii) Directives : imperative form
- (xiii) Directives : interrogative form
- (xiv) Child controlled events
- (xv) Care giver controlled events
- (xvi) People/objects present
- (xvii) Non-immediate

The statistical analysis was done to find out the mean and standard deviation values. The t-test was used to compare between the two groups. The results indicted that :

- a) The mothers of the normal hearing children used the following communicative functions in the decreasing order of their percentage occurrence : greater percentage of self-repetitions and repair devices, directive imperatives, informatives, open questions, closed questions, followed by expansions, referential features of people/objects present, child-controlled events and a lesser percentage of imitations, continuates, accompaniments, invitation to vocalize, caregiver controlled events, followed by directive interrogatives, yes/no reply, other reply and non-immediate referential features. The mothers of normal hearing children had MLU of 2.0.

(b) The mothers of the hearing impaired children used the following communicative functions in the decreasing order of their percentages. A greater percentage of self repetitions and repair devices, directive imperatives, informatives, open questions, closed questions, followed by people/objects present, invitation to vocalize, child controlled events, continues, accompaniment, care giver controlled events, and a lesser percentage of yes/no reply, other reply, imitations, expansions and non-immediate referential feature.

(c) On comparing between the two groups, no statistically significant difference was found for the communicative functions of accompaniment, self-repetitions and repair devices, informatives, closed and open questions, directive imperatives, people/object present and non-immediate referential feature.

In items of MLU also no significant difference existed between the two groups.

However, a significant difference existed in the occurrence of communicative functions like invitation to

vocalize, imitations, expansion, continues, directive interrogatives, yes/no reply and other reply, child controlled events, care giver controlled events.

These results indicated that though mothers of hearing-impaired children adjusted their conversational style to suit the child's language levels, the presence of hearing-impairment in the child did adversely affect the mother's discourse patterns, both quantitatively as well as qualitatively.

IMPLICATIONS OF THE STUDY

The findings of this study bear on the nature of intervention for the hearing-impaired children. Parents play a primary role in teaching language to their young hearing impaired children. The process, which is constantly evolving, is one in which a change in the communication habits of one partner dramatically affects the communication habits of the other. As the child learns language, parents must constantly change the complexity of their language input to help him/her learn more advanced vocabulary. Any mismatch between the child's needs and parental input results in the child's slow progress. Helping the parents make adjustments in the quality and quantity of parent language should be one

of the major goals of the communication training program. It would be, therefore, advantageous to include an analysis of the mother child interactions in the assessment battery for the hearing-impaired or the language impaired children. This emphasises the importance of clinicians role as an observer and analyzer of the parent-child interaction, before any intervention is initiated. The clinician should learn how the parent-child interact in different contexts and use this information to train the parents to provide effective and efficient language stimulation in the home environment. The parents need to be informed and educated regarding their conversational styles. The parent education strategies may include a rationale and a clear explanation; along with specific approaches to modify parental interaction styles if required. The parents may be trained :

- a) To encourage and reinforce any attempt by the child to communicate.
- b) To wait for a response from the child.
- c) To use expanded imitation and verbal mediation to describe on going activities.
- d) To clarify the non-verbal context and provide appropriate linguistic data.
- e) To be aware of the child's focus of attention and provide verbal input such as naming and other information along with non-verbal feedback.

- f) To encourage the child to imitate, to ask questions and to verbally describe actions and objects
- g) To facilitate a conversational style rather than a directive style of speaking.

Thus, it is important to evaluate parental styles of verbal interaction before counselling and to individually tailor the parent training programmes, by suggesting appropriate modifications in their interactions, if required.

LIMITATIONS OF THE STUDY

1. The small number of participants in this study limit the degree to which the findings can be generalized.
2. Only the audio recording of the mother child interactions, was employed as the video recording was not practically feasible.
3. The study was restricted only to the play situation which may not be a complete representative of the child's entire language environment. Hence, the generalization of the results must be considered with caution.
4. The possibility that the mother's interaction styles were affected in some way due to the nature of observation and recording cannot be entirely dismissed.

SUGGESTIONS FOR FURTHER RESEARCH

1. The study may be replicated using a larger sample.
2. A further study examining the differences between the interactional patterns of hearing-impaired children who are matched according to the chronological age with the normal hearing children may be attempted.
3. The effect of linguistic context on the child-directed speech may be explored by carrying out a similar study using various structured and unstructured contexts.
4. The effects of age, gender and socio-economic status of the hearing impaired children on the child directed speech may also be investigated.
5. The influence of therapy on CDS of hearing impaired children can be studied by comparing groups with or without any therapeutic intervention.
6. A comparison between father's and mother's styles of verbal interaction with hearing impaired and other groups can be investigated.
7. The influence of the degree of hearing impairment on the child directed speech may be investigated using mild, moderate, severe or profound hearing impaired children.
8. The study may also be extended to include the CDS of the other language impaired children like the mentally retarded, cerebral palsied children etc.

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APPENDIX A

Rules for Calculating MLU

Brown (1973) provided rules for calculating the Mean Length of Utterance and the rules may be summarized as follows:

1. Count as one morpheme all the compound words, phrases, diminutives, reduplicated words which occur as in separable linguistic units, irregular past tense, plurals which do not occur in singular form, grammatical morphemes that are whole words.
2. Count as separate morphemes all the inflected forms regular and irregular plural nouns, possessive nouns, third person singular verb, present participle and past participle, regular past tense verb, reflexive pronoun, comparative and superlative adverbs and adjectives.
3. Do not count fillers, and unintelligible utterances.
4. Computing MLU :
 - a) Count the number of morphemes in each utterance
 - b) Add total number of morphemes
 - c) Divide the total number of morphemes by the total number of utterances. Use at least fifty utterances in determining MLU.