A Comparison of Infant Directed Speech and Adult Directed Speech in Thai*

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Abstract

Past studies in language acquisition have focused on child's language development. However, a good deal of recent research work has been devoted to investigating the relationship between language acquisition and the kind of speech that is addressed to young children, that is Infant Directed Speech (IDS) or Motherese. The linguistic characteristics of IDS appear to be very distinctive and these characteristics of IDS seem to have a great impact on the development of linguistic communicative competence in child language.

IDS differs from adult directed speech (ADS). For instance, IDS has certain phonetic characteristics as well as a more simplified syntactic structure and a more restricted vocabulary. This paper investigates the characteristics of Thai IDS at two different ages of the child, at birth and at 3 months, and compares this with ADS in terms of prosody, i.e. pitch and tempo and communicative speech acts. The report attempts to illustrate the differences between IDS and ADS.

1. Introduction

In the 1970's there was a proliferation of studies on mother-child linguistic interaction. It was claimed that the speech of the mother had an important influence on how children's language develops and that the characteristics of speech directed to children were different from speech directed to adults. This speech style is now viewed as the most important source of speech input to the child from the environment (Snow, 1977). Such speech is often called "Motherese". Some other terms can also be found such as Parentese, Baby Talk, Caretaker Speech and Infant Directed Speech (IDS). A good deal of past research has been devoted to investigating the phonetic aspects of IDS. It has been proposed that IDS may be regarded as derived from adult speech by linguistic processes (Ferguson, 1977).

Cruttenden (1994:136) summarizes many studies on the phonetic aspects of IDS in various languages. Similar changes occur both within and across different languages such as consonant substitutions, consonant simplification, consonant harmony, simpler consonant-vowel type of syllable structure, and phonetic amplification of particular types of segments. He states that little is known about the phonetic aspects of IDS especially regarding consonants. However, there have been some contradictory reports on the treatment of vowels. Cruttenden (1994:139) also reports some major characteristics of IDS prosody in past research such as the use of

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higher pitch and wider pitch range (Garnica, 1977), frequent use of whispered speech (Garnica, 1977; Fernald and Simon, 1984; Pye 1986), more use of rising intonations, more junctural pauses, longer pauses, and lengthening of final syllables.

Although a good deal of work has been done on the phonetic and prosodic aspects of IDS, no research has been devoted to the analysis of communicative speech acts in IDS. Investigation on this area of IDS will aid the formulation of a hypothesis dealing with the acquisition of communicative competence.

The purpose of the present research is to investigate the linguistic characteristics of IDS- (newborns IDS (NB IDS), and three-months-old IDS (3MO IDS))- and compare them with those of ADS.

2. Method

The data in this research are part of an extensive collaborative research program on mother-infant interactions between the School of Psychology at the University of UNSW and the Linguistics Research Unit at Chulalongkorn University.

2.1 Subjects

The subjects were three mothers of infants. All were middle class and spoke only standard Thai.

2.2 Recording Procedure

The speech samples of IDS were collected from three mothers of newborns and again from the same mothers when their children were three months. Additionally, recordings were taken of the same mothers speaking to adults. At the newborn stage, samples were recorded in the Chareonkrung and Piyavate hospital by using a Sony Professional Walkman tape recorder. The researcher went to see the mothers at the hospital to instruct them how to use the tape recorder and ask them to do a 20 minutes recording when talking to their children during play time or changing diapers. The tapes were then collected at a later appointment. Samples at three months were collected using the same procedure as that with newborns but recordings were conducted in the home of the subjects. Samples of ADS were collected from interviews with the mothers by the researcher for about 20 minutes.

2.3 Selection of Utterances

A total speech sample of 60 minutes for each of the three mothers was collected (20 minutes each of NB IDS, 3MO IDS, and ADS). They were transcribed into utterances by using auditory pauses as a marker to delimit the utterances.

For prosodic analysis, a subsample of the total samples, the first 20 speech utterances of NB IDS, 3MO IDS, and ADS (20*3*3=180) was used. Thus a total of 180 utterances were analyzed.

For speech acts analysis, the whole 20 minutes sample from each subject was investigated, a total of 2486 utterances.

Presentation of the results is divided into two major parts. The first part is an analysis of prosodic features (pitch and tempo) of IDS and ADS; the second is an analysis of communicative speech acts of IDS and ADS.

3. Prosodic Analysis

One aspect of the language used to address children which is particularly important concerns the prosodic or suprasegmental features, that is features whose arrangement in contrastive patterns in the time dimension is not restricted to single segments (Lehiste, 1970). The prosodic aspects of speech include pitch and tempo. Pitch is an auditory property of sound which may be placed on a scale from low to high. It corresponds to the acoustic feature of fundamental frequency. Tempo refers to speed of speaking. It is possible to speed up or slow down the rate at which syllables, words, and sentences are produced to convey several kinds of meaning.

Past research on prosody in IDS has mainly focused on investigating pitch level and pitch range. Other aspect, tempo, have hardly been studied. Therefore, in this research we will explore whether the presence and distribution of these prosodic aspects of IDS differ systematically from their presence and distribution in ADS.

3.1 Method of Measurement of Utterances

The speech samples were analyzed acoustically using WinCECIL which is a speech analysis system produced by the Summer Institute of Linguistics (SIL) for the measurement of fundamental frequency and duration. The measurement of fundamental frequency and duration were made for each syllable in each utterance. Firstly, the fundamental frequency of the beginning point and the end point of each syllable was measured. Then the measurement of the duration from beginning to the end point of each syllable was done. The total number of syllables analyzed was 1057. The distribution of syllables in each utterance was also investigated by counting the number of syllables in each utterance.

3.2 Results

Pitch

In past research Garnica (1977) found differences between twelve mothers' speech to their two-year-old children and their speech to other adults; and twelve mothers' speech to their five-year-olds and their speech to other adults. Garnica found clear use of higher pitch and wider pitch range to the two-year olds but much less evidence of this to five-year-olds. Although Garnica found that the pitch and pitch range of IDS decreased with the increasing age of child, no such differences were found in a study by Kitamura (1992) the comparing pitch characteristics of speech directed both 5- and 12- months old infants.

In this study, the beginning and end point of each syllable of 180 utterances were analyzed acoustically using WinCECIL. The total number of measurements made was 6526 and the average fundamental frequency is given in Table 1.

Table 1 Mean fundamental frequency of NB IDS, 3MO IDS and ADS

	NB IDS (Hz)	3MO IDS (Hz)	ADS (Hz)
MEAN	197.87	244.63	231.31
S.D.	83.56	151.06	97.01
RANGE	385.85	407.50	402.95

It can be seen that the mean fundamental frequency at 3MO IDS was higher than newborn and ADS. It could be suggested that the higher mean pitch at the three months is a result of mothers learning IDS from their children over the first 3 months of the child's life.

Tempo

In the tempo analysis, the duration of each syllable and the distribution of syllables in each utterance were investigated. In terms of duration, it was expected that the articulation rate would be much slower by mothers in NB IDS than 3 MO IDS. It was also expected that IDS would be slower than ADS. The average durations millisecond per syllable (ms/syll) is given in Table 2.

Table 2 Mean duration of NB IDS, 3MO IDS and ADS

	NB IDS (ms/syll) (N= 269)	3MO IDS (ms/syll) (N= 250)	ADS (ms/syll) (N= 538)
MEAN	289	281	176
S.D.	254	223	93
RANGE	1301	1205	675

The average duration of syllables was 289 ms. in NB IDS, 281 ms. in 3MO IDS, and 176 ms. in ADS. The results showed that mothers used slightly longer duration syllables to their newborns than to their 3-month-olds and much larger syllable duration at both child ages than to adults. That is to say, the articulatory rate is much slower in IDS than ADS which confirms the above hypothesis.

In terms of the distribution of syllables in one utterance, it was assumed that the average number of syllables per utterance should be less in IDS than ADS. The mean values of these are shown in Table 3.

Table 3 Mean distribution of syllables of NB IDS, 3MO IDS and ADS

	NB IDS (syll/utt)	3MO IDS (syll/utt)	ADS (syll/utt)
MEAN	4	4	8
S.D.	1	1	4
RANGE	9	9	24

The results show that the average distribution of syllables of IDS- to both NB IDS and 3MO IDS were equal at 4 syllables per utterance. In contrast, the distribution of syllables in ADS was higher at 8 syllables per utterance which was the same result found by Luksaneeyanawin (1988) in her study of pauses in reading of adults ($\overline{X}$ = 8, SD = 4).

4. Communicative Speech Acts Analysis

J.L. Austin (1962) was the first to draw attention to the many performative functions of utterances as part of interpersonal communication. He pointed out that many utterances were not used to communicate information but were used to perform actions. When someone says "I apologize...", "I promise...", "I will...", or "I name this ship...", the utterances immediately play some social function. Austin called these utterances performatives. There were 188 kinds of verbs of utterance proposed by Austin. In Thai there are also many types of verbs of utterances. Supathra (1993) collected and classified these verbs into a small number of types by using their semantic features. The total number of collected verbs of utterances in Thai was 360.

The most significant work in speech act theory after J.L. Austin was that of J.R. Searle (1969). He proposed the analysis model of speech acts to discover what conditions are necessary and sufficient for the illocutionary acts to have been sucessfully and non-defectively performed in the utterance of a given sentence. This conditions were called felicity conditions which can classified into four types of rules - prepositional content, preparatory, sincerity and essential.

In this research, IDS will be analyzed in terms of speech acts whether the speech acts of IDS are quite distinct from those of ADS or not.

4.1 Method in the Analysis of Speech Acts

We investigated the 2486 speech utterances of three subjects, classifying them into the different verbs of utterances derived by Supathra (1993). These utterances were analyzed into speech acts using speech act theory proposed by Searle (1969). First, we looked for the performative verbs of utterance, which can be defined as verbs that can be used to perform the acts they name. For example, we have an order, with the performative verb, "order" followed by the specific command "open the door"- "I order you to open the door.". If we could not find the verb of utterance, we judged each speech act by using intuition. Using fecility conditions proposed by Searle mentioned above. There were 19 verbs of utterances:

1	*inform*	- to give somebody knowledge of something
2	*describe*	- to say what somebody or something is like
3	*explain*	- to make something plain or clear
4	*count*	- to say or name numbers in order
5	*sing*	- to make musical sounds with the voice
6	*exclaim*	- to cry out suddenly and loudly from pain, anger, surprise, etc.
7	*tease*	- to make fun of somebody in a playful or unkind way
8	*comfort*	- to help somebody, to console
9	*persuade*	- to cause somebody to do something by arguing or reasoning with them
10	*call*	- to say something loudly to attract somebody's attention

11 *blame*	-to consider or say that somebody is responsible for something done (badly or wrongly) or not done
12 *warn*	- to give somebody notice of something consequences
13 *complain*	- to say that one is dissatisfied, unhappy
14 *calm*	- to cause somebody to become quiet, less excited, or untroubled
15 *praise*	- to express approval or admiration for somebody or something
16 *greet*	- to give a conventional sigh or word of welcome or pleasure when meeting somebody or receiving a guest
17 *respond*	- to give a verbal answer, to make responses
18 *question*	- to ask somebody something
19 *command*	- to tell somebody that they must do something

These verbs of utterance could be classified into three major classes - assertion (no.1-17), question (no.18), and command (no.19).

4.2 Results

In the newborn data we found 17 verbs of utterance: *inform, describe, explain, count, sing, exclaim, tease, comfort, persuade, call, blame, warn, calm, praise, greet, question,* and *order*

Compared with NB IDS, at 3MO IDS, 16 verbs of utterance were the same as found in NB IDS, *complain* was one extra verb of utterance found in 3MO IDS, and two verbs of utterance, *count* and *sing*, were not found in 3MO IDS.

ADS had the smallest number of verbs of utterance. They were *inform, respond* and *question.*

The number of each type of verbs of utterance are given in Table 4 below.

Table 4   The number of each type of verbs of utterance of NB IDS, 3MO IDS and ADS

Types of verbs of utterance	NB IDS	3MO IDS	ADS
Inform	158	152	329
Describe	109	112	-
Explain	22	19	-
Count	12	-	-
Sing	7	-	-
Exclaim	7	2	-
Tease	201	88	-
Comfort	18	7	-
Persuade	6	7	-
Call	49	25	-
Blame	58	44	-
Warn	37	25	-
Complain	-	7	-
Calm	2	8	-
Praise	41	2	-
Greet	1	4	-
Respond	-	-	110
Question	211	295	81
Command	199	31	-
Total	1138	828	520

These verbs of utterance were classified into the three major types of speech acts - assertion, question, and command as explained in 4.1.

Table 5   Percentages of the types of speech acts of NB IDS, 3MO IDS and ADS

Types of speech acts	NB IDS	3MO IDS	ADS
1. Assertion	64	60	84
2. Question	19	36	16
3. Command	17	4	-
Total	100%	100%	100%

When we looked at the verbs of utterances of each kind of speech act, we found that some of them had features in common and could be classified into two major classes - non-interactive class and interactive class as shown below:
1. Non-interactive class of speech acts were non-interactive assertion (inform, describe, explain, count, sing, exclaim)

2. Interactive class of speech acts were interactive assertion (tease, comfort, persuade, call, blame, warn, complain, calm, praise, greet, respond), interactive question (question), and interactive command (command).

Table 6   Percentages of classes and types of speech acts of NB IDS, 3MO IDS and ADS

Classes of speech acts	Types of speech acts	NB IDS	3MO IDS	ADS
Non-interactive	Non-interactive assertion	28	34	63
Interactive	Interactive assertion	36	26	21
	Question	19	36	16
	Command	17	4	-
Total		100%	100%	100%

The percentages of non-interactive and interactive speech acts are given in table 7.

Table 7   Percentages of non-interactive and interactive classes of speech acts of NB IDS, 3MO IDS and ADS

Classes of speech acts	NB IDS	3MO IDS	ADS
Non-interactive	28	34	63
Interactive	72	66	37
Total	100%	100%	100%

From these results it can be seen that interactive speech acts were found most in newborns (72%) and at 3 months (66%) and found least in ADS (37%). It could thus be said that mothers showed a greater intimacy when talking to their infants than when talking to the experimenter. These interactive class of speech acts presumably helped mothers to accommodate to the child's manner of interaction, thus improving communication.

5. Conclusion

Three prosodic analyses (pitch and tempo) were performed on samples of speech directed to infant listeners - newborns and 3 months, and to adult listeners. Speech to infant listeners differed from that to adult listeners. The results indicated that the mothers of 3 months used higher pitch than when they spoke to adults. However, this was not found for newborns. And IDS used longer syllable duration, and less syllables per utterance than ADS.

In the communicative speech acts analysis, we found that IDS used more interactive class of speech acts than ADS. This interactive class of speech acts may have been used to help reinforcing the communicative interaction between mothers and their children. In this research, it was found that IDS in Thai shares patterns and

features with other languages. For example, the use of higher pitch, slower tempo and shorter utterances. It appears that these features have a great impact on the development of linguistic and communicative competence in child language.

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