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 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

<table>
<thead>
<tr>
<th></th>
<th>NB IDS (Hz)</th>
<th>3MO IDS (Hz)</th>
<th>ADS (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>197.87</td>
<td>244.63</td>
<td>231.31</td>
</tr>
<tr>
<td>S.D.</td>
<td>83.56</td>
<td>151.06</td>
<td>97.01</td>
</tr>
<tr>
<td>RANGE</td>
<td>385.85</td>
<td>407.50</td>
<td>402.95</td>
</tr>
</tbody>
</table>
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**

<table>
<thead>
<tr>
<th></th>
<th>NB IDS (ms/syll) (N= 269)</th>
<th>3MO IDS (ms/syll) (N= 250)</th>
<th>ADS (ms/syll) (N= 538)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>289</td>
<td>281</td>
<td>176</td>
</tr>
<tr>
<td>S.D.</td>
<td>254</td>
<td>223</td>
<td>93</td>
</tr>
<tr>
<td>RANGE</td>
<td>1301</td>
<td>1205</td>
<td>675</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th></th>
<th>NB IDS (syl/utt)</th>
<th>3MO IDS (syl/utt)</th>
<th>ADS (syl/utt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>S.D.</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>RANGE</td>
<td>9</td>
<td>9</td>
<td>24</td>
</tr>
</tbody>
</table>

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 (X = 8, SD = 4).