

## SPEECH DIRECTED TO CHILDREN

Ulla Sundberg

DEPARTMENT OF LINGUISTICS

UNIVERSITY OF STOCKHOLM

In speech communication different modifications or changes are made in order to adapt the speech to the listener and to different conditions. The speech style used when talking to young children has not been thoroughly investigated and yet it is an important and interesting field as a potential in speech acquisition.

In this article I will present a short background and give some examples from the literature. I will also make a short presentation of a pilot study regarding fundamental frequency, pitch range, stress, duration, and tempo.

### Previous research

The earliest studies of child directed speech (CDS) were mostly descriptive and did not pay attention to what the child said or did. With these studies one wanted to refute the view that language acquisition was based on the child's innate capacity and almost independent of the language environment. Chomsky claimed at this time, i. e. the late sixties, that the utterances which the child hears are ill-formed, contain false starts and ungrammaticalities and that they break against rules. Later studies made quite opposite findings; the CDS is easily transcribed thanks to its clearness and well-formedness and that it is characterized by few hesitations, few disfluencies and that false starts only rarely occurred, to give some examples.

Bellinger points out the consistency and absence of variability in mother's speech to their children. He describes how children's ages very precisely could be predicted from the mothers' speech. The rate at which the mothers' speech changed was greatest when the children were between 1;8 (one year and eight months) and 2;3 and least when they were between 2;3 and 5;0.

According to Kaye (1980), CDS has some universal characteristics falling into five general classes:

1. Prosodic features - higher pitch, greater range of frequencies, more varied intonation.
2. Lexical features - special forms like *pippi* or *vovve* in Swedish.
3. Complexity features; shorter utterances, fewer embedded clauses, fewer verb auxiliaries etc.
4. Redundancy features; more immediate repetition and more repetition of the same words or phrases over a period of time.
5. Content features; restriction to topics in the child's world.

Some of these phenomena are verifications of findings earlier made by Ferguson (1984) in a cross-language study of Baby Talk.

He regards e. g. (1) repetition, (2) the exaggerated intonation-contours, and (3) reduplication of words and parts of words as probable universal features. He also claims that the most common phonological changes are simplifications of consonant clusters and replacement of /r/ by another consonant. Also, there seems to be a general tendency of using labial and apical stops and nasals in Baby Talk.

The modifications of speech directed to children must also be related to the age and sex of the addressee as well as the sex of the speaker himself.

Concerning the age of the addressed child Bellinger's study was mentioned

above. His findings are to some extent in coherence with results obtained by Garnica (1977) in an investigation of prosodic and paralinguistic features of speech to two - and five year old child listeners and adult listeners. She noticed, for example, that the average fundamental frequency was significantly higher in the speech directed to the two year old than to the five year old children. The frequency range of the speaker's voice was greater in speech directed to the smallest children. In the speech directed to the two year old listeners instances occurred of rising sentence final pitch terminals with no grammatical motivation.

Regarding the relationship between speech directed to children, the sex of the addressee, and the speaker Johansson (1982) found that the sex identity was reflected in the fundamental frequency as follows; men used higher FO and greater frequency range in their speech to six year old girls than to boys while women more often used high vocal pitch and extended pitch range in their speech to boys in comparison to girls.

There is a variety of explanations and more or less speculative theories concerning the function of the modifications in speech style that are being used when addressing young children. The speech lesson theory claims that the speech adjustments would make it easier for the child to learn language structure. This theory is based on a "fine-tuning" hypothesis meaning that the speech directed to children is perfectly and optimally adjusted to its capabilities in different aspects.

Fernald (1983) discussed an interesting theory on small children's perceptual and affective predispositions. In her opinion the expanded pitch range, the higher degree of tonal and temporal continuity contribute to make CDS suitable for the child from a perceptual point of view.

Garnica (1977) suggests the special features of CDS to have analytic and/or social functions. The former function is said to facilitate the child's analysis of linguistic material; for example the rising pitch terminals might help the child to locate sentence boundaries. The social function of certain features is to initiate and maintain communication between adult and child.

As we can see there is no commonly accepted explanation why the modifications in CDS occur. Also, similar changes of speech occur when people talk to flowers (Plant Talk) or to pets (Animal Talk) and even sometimes between adults in intimate situations.

#### Pilot study

From the recently closed Jollerprojektet at The Dept. of Linguistics SU, I chose typical utterances made by three mothers. They were addressing their 14 months old children. These utterances are called SV (spontaneous version). They were written down and presented to the mothers again. The women read, in a neutral way, their own utterances in an anechoic chamber. These utterances are called NV (neutral version). The recorded speech signal was fed into a computer programmed to analyze fundamental frequency and intensity in terms of means and standard deviations. The programme is from The department of Speech Communication and Music Acoustics at KTH (Royal Institute of Technology), Stockholm.

The syllables with primary stress have been underlined. Pause length is measured between main clause and "tag"-question.

The fundamental frequency was, as expected, higher in the SV: between 15 and 60 Hz. In one utterance, one of the mothers reached a top of about 400 Hz while in the NV the corresponding value was 280. Utterance K 6, however, is an exception. This phrase was pronounced in a slightly reproachful way.

Frequency range and standard deviations were greater in SV as compared to NV. The figures give examples of the exaggerated intonation contours, that many investigators have found in CDS. K 6 is an interesting example of fundamental frequency expansion in the lower parts of the frequency range.

Table 1. Results from computer analysis

UTTERANCES	MEAN FUNDAMENTAL FREQUENCIES Hz	PITCH RANGE Hz	STANDARD DEVIATION Hz	LENGTH OF UTTERANCES sec
J16	SV 260		(63)	3,3
	NV 220		(43)	2,5
J12	SV 270	250-440	(58)	0,9
	NV 207	150-280	(33)	0,7
K6	SV 140	100-200	22	4,5
	NV 185	160-240	32	3,9
K11	SV 210	170-280		3,1
	NV 190			3,9

UTTERANCES.

J 16: "Jätteduktig har du vart! Jaa!" ("You have been so good! Yes!")

J 12: "Tea time"

K 6: "Du får inte utveckla ett sånt där humör gumman, kan vi inte stå ut med, nä." ("You mustn't develop such a temper, girl, we can't put up with that, no.")

K 11: "Va är du ute på för äventyr? Ha?" ("What are you up to? Say?")

Figures in parenthesis are uncertain.

SV = spontaneous version, NV = neutral version

Table 2. Results from spectrogram/computer analysis

UTTERANCES	DURATION OF PRIMARY STRESSED SYLLABLE	PAUSE LENGTH	LENGTH OF "TAG"-QUESTION
K8	SV 45 csec	205 csec	40 csec
	NV 22	0	36
V4	SV 36	a) 80 b) 40	30
	NV 24	a) 32 b) 24	15
J16	SV 85	22	78
	NV 42	40	40
V10	SV 28		
	NV 39		

Utterances:

K 8: "Va håller du på med? Hörru!" ("What are you doing? Hey you!")

V 4: "Hur många magar har du egentligen va, säj? Ha?" ("Tell me, just how many tummies do you have? Hey!")

J 16: "Jätteduktig har du vart! Jaa!" ("You have been very good! Yes!")

V 10: "Inga fossingar i maten va!" ("No feet in the food, ha!")

Table 1 also shows that, in most cases, the speech was slower in SV than in NV. The primary stressed syllables had longer durations in SV as compared to NV; in two cases, K 8 and J 16, the difference was doubled. Utterance V 10 showed the opposite situation, which in my speculation might be due to this mother's elaborated attempt toward acting during the recording of the NV. These findings agree with those reported by Garnica, who argues that a prolonged duration of stressed words might help the child

in identify the "key" words in the sentence. She even found many cases of two primary stresses within a sentence, but only in speech directed to the two year old children and not to five year old children or adults.

The length of pauses and length of "tag"-questions were greater in SV compared to NV. The function of tag- questions is discussed in a paper by Blount and Padgug (1977). They believe that tag-questions in adult-directed speech have several purposes: confirmation, query for information or it may serve as a device for interaction. In child-directed speech, however, there is only one function; to initiate and/or maintain interaction. The "tag"-questions are often characterized by a final fundamental frequency rise, and, according to these authors children react very early to this phenomenon.

The observations presented in this pilot study should be taken with some caution as they were based on a rather small number of measurements. Also, the comparison between SV and NV may reflect not only the difference between speech child-directed and neutral speech but also the difference between spontaneous speech and loud reading. The advantage in this type of comparison is that the linguistic material is the same.

In summary, the results of this investigation seem promising as they, by and large, agree with previous observations, and hence the method should preferably be applied to a larger material. For instance, the issue of speech reduction would be interesting to apply to child-directed speech in future investigations. Also, cross-language studies may reveal further interesting similarities between child directed speech in different speech communities.

#### REFERENCES:

- Bellinger, D. (1980) Consistency in the pattern of change in mother's speech: some discriminant analyses. *Journal of Child Language* 7, pp 469-487.
- Blount, B. and Padgug, E. (1977): Prosodic, paralinguistic and interactional features in Parent-Child speech: English and Spanish. *Journal of Child Language*, nr 1, vol.4, pp 67-86
- Chomsky, N. (1967) The formal nature of language, in Lenneberg, E.H. (ed) *Biological Foundations of Language*, Appendix A, pp 397-442.
- Ferguson, C.A. (1964): Baby Talk in six languages. *American Anthropologist*, 66, pp 103-114.
- Fernald, A. (1983) The Perceptual and Affective Salience of Mother's speech to Infants. The Origin and Growth of Communication. Feagans et al.
- Garnica, O. (1977) Some prosodic and paralinguistic features of speech to young children, in Snow, C.E. and Ferguson C.A. (eds) *Talking to children: Language Input and Acquisition*, Cambridge: Cambridge University Press.
- Johansson, I. (1983) Sex-related and sex-directed features in questions of adults to sex-year-old children, in Dahlstedt, K-H, Hansson, Å, Hedquist, R. & Lindblom B. (eds) *From Sound to Words. Essays in Honor of Claes-Christian Elert*. Acta Universitatis Umensis 60, 1983, pp 169-178.