

SPEECH DEVELOPMENT AND INTERACTION

IN THE FIRST YEARS OF LIFE OF NORMAL AND CLEFT-PALATE BABIES

Florien J. Koopmans-van Beinum, Jeannette M. van der Stelt,

and

Kino Jansonius-Schultheiss

1. INTRODUCTION

The vocal communication between infants and their parents, for which we will use the term 'proto-conversation', has been the subject of scientific research since about only a decade. Until then it was generally accepted that speech started as soon as the child produced a meaningful, understandable word. Normally the so-called 'pre-linguistic' period was left out of consideration. Bullowa (1979) however, in a well-documented overview, shows that in the present studies on pre-linguistic communication a number of research lines from various disciplines meet.

Initially the infant was considered to be an isolated organism. By studying and describing the changes of that organism it was believed the essence of the developmental process was explained. This kind of research yielded the often-used developmental scales. Afterwards research mainly concerned the mother-child-dyad in which the observation by the mother played an important role. For instance, by asking the mother to identify the sounds of her own infant amongst the sounds of others, it was thought possible to get insight in processes within the dyad that an outsider cannot perceive. Because of disappointing results, the conclusion was arrived at that the individual as well as the mutual behaviour of mother and child ought to be studied: mother and child together determine the developmental direc-

tion of their interaction, although the role of both partners does not always weigh equally. This shift in approach can be seen in medical as well as in psychological and linguistic research (Bullock, 1979).

Psychologists, as Bruner (1975b), remark that the actions and utterances of the child evoke specific re-actions of the caretakers: the adult attaches a meaning to the behaviour of the child. Because of the consistency of the reactions of the adult, the child gets conditioned to the relation between its own behaviour and that of the adult. Since the child cannot come to speech but in interaction, it is important to study this mother-child communication system from the very beginning to understand the development of speech (Bruner, 1975a; Bullock, 1979).

Moreover, the study of deviant learning processes may reveal essentially important aspects of the normal learning process. Since cleft-palate babies pass through a different sensory-motor development of the speech mechanism (e.g. differently ruled sucking, swallowing, chewing) in comparison to normal babies, it is obvious that this may have consequences for the proto-conversations with the mother. Possibly the mother adapts her communication system to other aspects in the sound productions of her baby so that the direction into which their communication process develops, might deviate from the one of normal babies and their mothers. This may influence later speech behaviour: cleft-palate children often contract compensatory articulation habits that are very difficult to 'unlearn' even with the help of speech therapy (Vieregge, 1978).

The aim of our planned cleft-palate research project* is to analyse and compare longitudinally the development of the proto-conversations between mothers and normal children, and between mothers and cleft-palate babies, in order to arrive at an optimal treatment and guidance for these latter babies.

2. SPECIFICATION OF THE RESEARCH PROBLEM

In literature on speech development, repetition and imitation are

often mentioned as regulating factors in the development of speech. As far as we know, however, this has never been subject of any longitudinal, quantifying study yet, although the interest in turn-taking in conversation also implies attention to imitations. Kaye (1979) discerns a number of aspects in this turn-taking behaviour, such as 'timing' (the mother is waiting for the suitable moments to respond to the child) and 'arousal' (the mother tries to keep the baby optimally communicative). A third aspect concerns the permanent interaction of the mother and the child: the mother imitates her infant's sounds, smiles, mimicry, tongue movements, etc., whereas it is known that even very young infants on their part are able to imitate mimicry and tongue movements as well (Meltzoff and Moore, 1977). Which aspects of the sound productions are imitated is not known, neither the systematics within those imitations. We may assume that in normal babies the imitations pursue a developing system, whereas cleft-palate babies will develop a different system, since several articulatory movements cause difficulties or even are impossible to make for them.

Apart from answering questions concerning the systematics in the proto-conversations of normal and of cleft-palate babies and their mothers, a number of aspects concerning cleft-palate babies will be studied as well in this project, e.g.:

- Will early placing of a palatal obturator yield any positive effect on the development of speech, both for the speech motor system and for the speech interaction? (Up to now a palatal obturator is placed only when the upper jaw threatens to collapse or in case of severe sucking and swallowing problems.)
- How far will a normal development of speech be approached in case of early placing of a palatal obturator, apart from the usual surgical treatments (closing of the lip at about 3 months, closing of the velum at about 9 months) ?
- Are there any negative side-effects in the early placing of a palatal obturator?
- In what way will we have to instruct the parents of cleft palate infants in order to make the speech development of their children an optimal one?

3. METHODS TO BE USED

For the analysis of proto-conversations a selection will be made of at least eight cleft palate infants, half of whom will be provided with an obturator, and of at least four normal infants. During the first two years of life video-recordings of 20 minutes each will be made of the proto-conversations of mother and child at home at intervals of four weeks for the cleft-palate children, and in order to obtain a fine-meshed control system at two-week intervals during the first year for the normal children and in their second year at four-week intervals. Apart from the audiovisual recordings inspiration and expiration movements of mother and child will be recorded. With respect to the analysis of sound productions we shall make use of the transcription system as developed by Van der Stelt and Koopmans-van Beinum (1981). This system, based on the anatomical and physiological possibilities of the infant's sound production mechanism is suitable for the description of sound productions from birth onwards. As segmentation unit it makes use of the respiration cycle, which provides natural boundaries to the sound stream. In this way segmentation is not arbitrary or a priori based on any linguistic system. Within this system a number of aspects of phonation and articulation can be indicated, revealing a clear developmental system in the infant's sound productions, comparable to other developmental processes (Koopmans-van Beinum and Van der Stelt, 1979; Van der Stelt and Koopmans-van Beinum, 1984). With respect to imitations use will be made of the categories as indicated by Snow (1981), viz. 'reduced', 'exact', and 'expanded'.

Apart from the analyses of the proto-conversations a large range of sensory-motor and cognitive developmental data will be collected, not only of the twelve children concerned, but also of a control group of normal and cleft-palate children. The range of this group depends on the number of cleft-palate children available at the moment.

By interpreting the results of the analyses of proto-conversations in connection with medical and developmental data we will construct an instrument for the instruction of parents of cleft-palate children. Furthermore we hope to provide cleft palate teams with scientific ar-

guments to determine an optimal medical treatment for cleft-palate children in connection with possibilities for an optimal speech development.

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