

NOT IN TOUCH: A COMMUNICATION DISORDER IN DEVELOPMENT

Kino Jansonius-Schultheiss

1. INTRODUCTION

Nowadays we consider speech development as a process in which the mother (most of the time the caregiver) and the child contribute equally. At birth the child is not ready to express itself in a very sophisticated way, although it can make itself perfectly clear: by reacting on mother's voice, crying, in search for eye contact and other communicative sensory-motor patterns. Although the infant is not able to utter language, it speaks already in total communication patterns to its mother. Given the infant's neurobiological possibilities at a certain stage, it is the environment, especially the mother, who has the power to facilitate or block the communicative development of the child and herewith the learning process (Bullowa, 1979; Schaffer, 1975; Snow & Ferguson, 1977). Plooij-van der Rijt (1982) states in her dissertation that the mother-child pair in the first years of the infant's life has to be considered as a symbiotic system in which at each stage in the child's neurological development a new homeostasis has to be established by gradual adaptation of mother's behaviour to the new behaviour of the child. If the mother is sensitive to new behaviours and responsive, the system with its intrinsic possibilities to regulate itself, will find a new homeostasis at a more complex behavioural level. When mother and child are tuned in adequately to each other, sensitive to ascertain meaningful behaviours, and when they are responsive enough to react upon them, the progress into more and more advanced behaviours and learning possibilities in the child will be stimulated further. When they mirror each other's speech behaviour (e.g. by exact or expanded or even reduced imitations) or talk about it (in a semantically related way) the speech learning process will be enhanced (Snow, 1977; Cross, 1977).

2. OUR RESEARCH

In our longitudinal research studying the speech development of six normal born and twelve cleft lip and palate babies in interaction (Koopmans-Van Beinum, et.al., 1984), all the cleft palate children were videotaped monthly from their second month until the second year during twenty minutes in a free play situation with their mothers at home. In order to study speech communication five minutes of videotape were transcribed according to a manual of well defined codes of all kind of patterns in the for communication relevant sensory-motor channels: the visual, mimic, tactile, kinetic, speech and proximity mode. Based on this manual the interactive communicative behaviours of mother and child were analysed by use of a for our research-project developed computer program for time-series event analyses.

Although the stage of these analyses of the infants, videotaped monthly until their second year, is not finished yet, the speech development of one little boy with a complete unilateral cleft could already be traced, although not all the data of his first two years could be studied yet. Because of the fact that he gradually exposed a serious

language and speech retardation at the age of two, expressive as well as receptive according to standard language test procedures, it was very important to look back in time, in order to study which factors might have contributed to this speech problem. At the age of two he had only three meaningful and functionally adequate words at his disposal according to his mother. To make himself understandable he screamed or used pre-linguistic laryngeal sounds (stage 1 or 2 sounds as 'uh' or 'uh-uh') to make himself clear. Thanks to mimics, pointing at, or reaching to objects, he could express his will and could be understood. During the last video recording session at the age of two years he did not speak at all.

In search for causes of this well-known speech and language problem in the clinical population of language disturbed children, (but not known as a common pattern in the cleft palate group), we looked into our longitudinal data more carefully.

A lot of questions did arise such as:

- what was the course of speech development as analysed from the video-tapes in month 2, 4, 5, 6, 9, 12, 15, 18, 21;
- which communicative intents could we find in mother's speech towards him in the play situations. Did she like to speak in a communicative positive way about the phonatory and articulatory effects, the body behaviour, or the mimics of her son? Did she like to talk about persons, objects, situations, or was the topic of her speech more self-directed, e.g. did she talk about her own feelings and handling? Perhaps there was a developmental trend to ascertain over time bound to the neurological possibilities her son exposed;
- in our opinion it was also important to analyse the positive communicative maternal utterances (yes, no, so, oh etc.). Because of the fact that according to McDonald and Pien (1982) a prohibitive mother, severely controlling a child's physical behaviour, significantly can slow down the language development and communicative exchanges, we decided to look also to maternal utterances with a negative communicative intent;
- given a speech turn initiated by the child, how was this turn rewarded by the mother (verbal and non-verbal) and how was the child triggered or invited again to speak? If the child was rewarded verbally, how fast did the mother respond and with what communicative content? How was the child non-verbally rewarded for its communication: e.g. did the mother (continue to) look at the boy, smile at him?

If we consider in advance speech development as only one intrinsic part of the total communicative expressions in which speech gradually gets more and more value e.g. to serve communication at a distance from each other, we have to study the developmental course of all the total communicative exchanges that mother and child are exposed to in their interactions. It is important to find developmental lines in all the sensory-motor communication channels, to trace at which moment in the child's development one sensory-motor channel is more open for communicative exchanges than other and at which moment the speech channel becomes more and more dominant. As soon as the child gets more and more self-directed (walking away from the mother, playing with objects alone, fixated on handling real objects to explore its direct world) the two communicators in the mother-child system are forced to use the speech channel as the most suitable way for communication. At that time they must have built up together such an affective and communicative bond, that psychologically they keep in touch and do not lose contact between them, even if they are out of sight.

3. DATA ANALYSIS

This child, without a negative history concerning maternal pregnancy, or peri- or postnatal circumstances (e.g. there were no feeding problems), was treated orally from

the first month on with an orthopedic plate covering the upper jaw and hard palate. He got three surgical interventions in his first two years: lip closure at the age of 26 weeks, soft palate closure in week 47 and the placement of ear tubes in week 70. Hearing evaluation in week 44 and 63 showed a moderate conduction loss with problems in location of noise source direction. There was no marked history of illness. Based on the mother's descriptions of overall motor and sensory development, a mild delay in motor patterns such as sitting without support of the hands, standing and walking could be ascertained (still within the normal range however) with a very good performance in fine motor skills of the fingers. Neurologic examinations by a child neurologist revealed also no significant delay or disorders. The parents were counseled by a social worker and by speech pathologists (partly by means of advices concerning speech and language development) at the age of 6 months, one year and 18 months.

Although the child was very communicative from birth onward, the onset of pre-linguistic infant speech sound stages, well defined in the work of Koopmans-Van Beinum and Van der Stelt (1979, 1986), Koopmans-Van Beinum (1987) and Dore et al. (1976) was moderately delayed, however it was to be within the normal ranges. Since at the moment we have no data about the mean, standard deviations and ranges concerning frequencies of certain speech sound productions in a certain developmental stage, we cannot make conclusions whether the amount of utterances is to be considered as sufficient or not. To analyse infant speech sounds, we used the model described by Koopmans-Van Beinum & Van der Stelt, 1979, 1986; Koopmans-Van Beinum (1987) and Dore et al. (1976):

stage 1:- phonatory laryngeal expressions (hyper- and hypokinetic) such as 'uh' or 'huh' (with aspiration) during one respiration cycle

stage 2 : phonatory laryngeal expressions (hyper- and hypokinetic) such as 'uh-uh' (interrupted by glottal stops) or 'huh-huh' (with aspirated phonation) within one respiration cycle

stage 3 : phonation interrupted or combined with an articulatory movement such as 'aRa, xra' within one respiration cycle; first posterior articulated sounds, later on anterior ones are heard

stage 4 : a stage in which phonatory (prosodic) variations are heard within one respiration cycle; intonation as well as loudness variations dominate

stage 5 : phonation interrupted or combined with reduplicated articulatory movements such as 'wawa, mama' within one respiration cycle; first anterior articulated sounds, later on posterior or varied (posterior and anterior articulated sounds) are heard. This stage is called the (canonical) babbling stage

stage 6 : within one respiration cycle the child uses phonetically consistent short (one-syllable) wordlike units in a referential way (associated with looking at, pointing to) without a clear linguistic meaning for its environment; the target word is not recognizable (Dore et al., 1976)

stage 7 : within one respiration cycle word-like phonetic units are expressed, which are recognized as words belonging to the mother tongue.

The frequencies of speech utterances, the child made, dropped dramatically from month 9 on and reached zero during the video registrations of month 24, as already is said.

Since we were interested in the mother's speech also, especially in the intentions transmitted in her speech, all the mother utterances were analysed divided in categories, asking whether positively or neutrally loaded communicative expressions did appear or not, whether the maternal utterances consisted of content words with a clear referential value or not (such as minors, (symbolic) noises, game rituals etc.) and whether the maternal utterances were just comments on the child's behaviour or were intended to provoke something in the child.

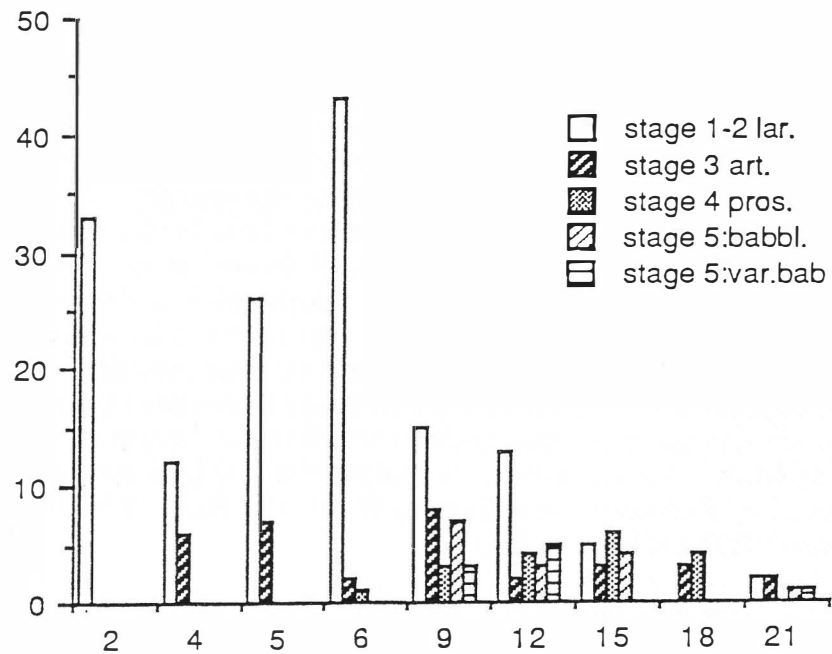


Fig.1. Overview of the onset of the above mentioned speech stages and frequencies of child utterances (absolute numbers) of the cleft lip and palate boy under study from month 2 to 21 (no speech production in the 24th month)

As fig. 2 shows, the mother did talk frequently about the body behaviour of her son (less in month 9 and 12) and her own feelings and handling, especially from month 15 on. She did not talk much about baby's sound productions (fig. 2 and 5: only in month 4) or the act of talking together. It was a surprising fact, that she scarcely imitated the speech sounds of her child, which means that she did not mirror its verbal expressions. As fig. 5 shows, she focused on speech, especially in month 12, but only to provoke it, not to comment upon. The linguistic use of minors (fig. 3), was strikingly present in the maternal speech during the first year of life, did drop significantly afterwards with an increase of more referentially loaded remarks such as talking about the situation, objects, toys or pictures in a picture book in month 15 and 24. The use of utterances to draw attention and verbal rituals used in games were strikingly present in the first months. As fig. 4 shows, we could already in the first months hear some prohibitions, with an increase in month 9, 21 and 24. She did so especially in the period, in which the child used to put its thumb and toys in its mouth and later on, when it started to walk away, exploring the room. In those instances where she responded verbally to the verbal output of her son, she did it most of the time within a second of time or within the time-period of one to three seconds (fig. 6).

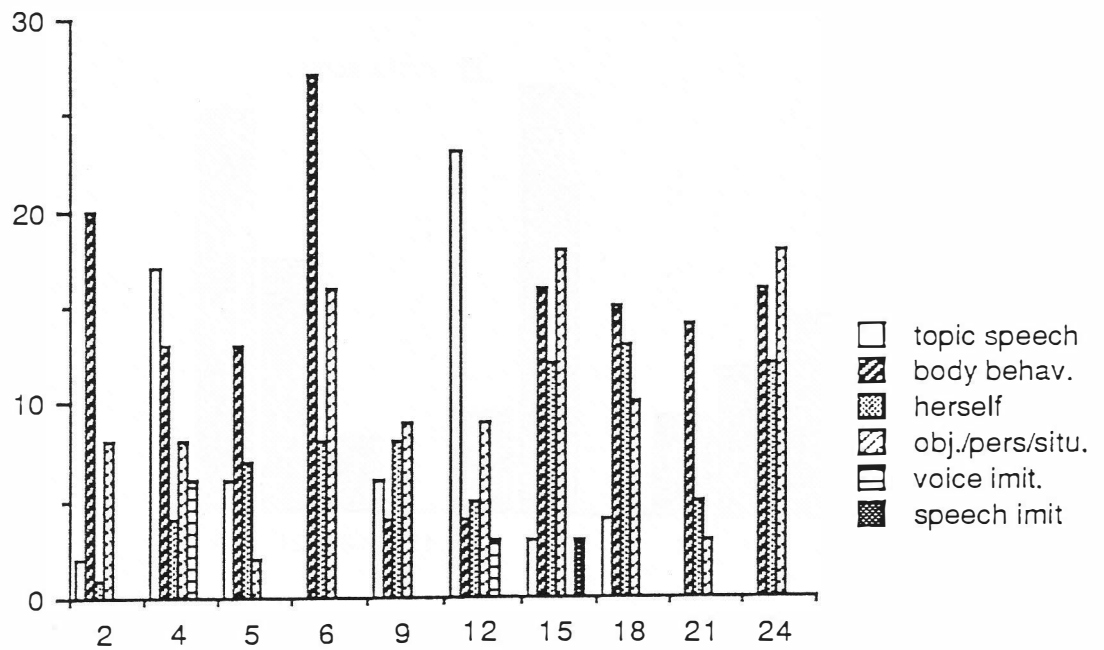


Fig.2. Overview of mother's speech intents: the absolute number of positive communicative utterances with a clear referential meaning (month 2 to 24)

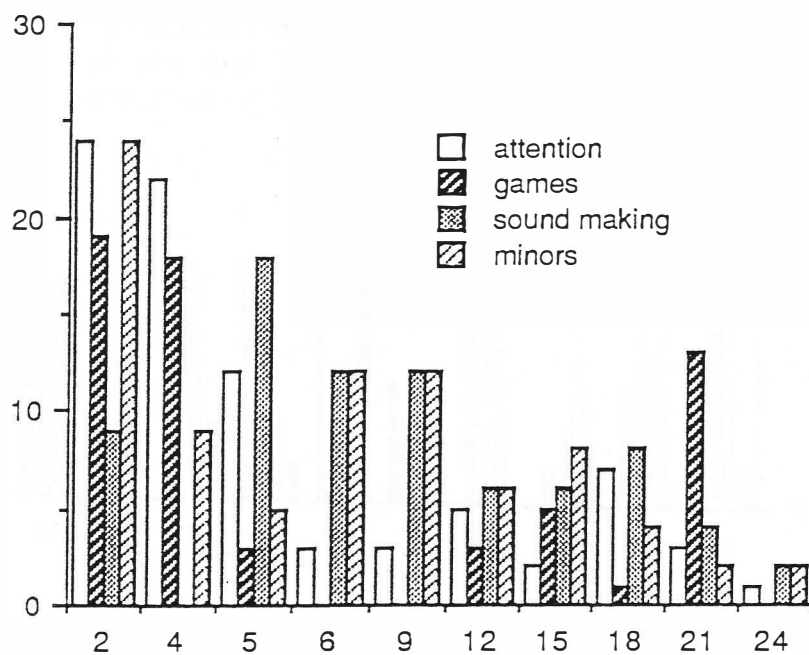


Fig.3. Overview of mother's speech intents: the absolute number of positive communications without a referential meaning (month 2 to 24)

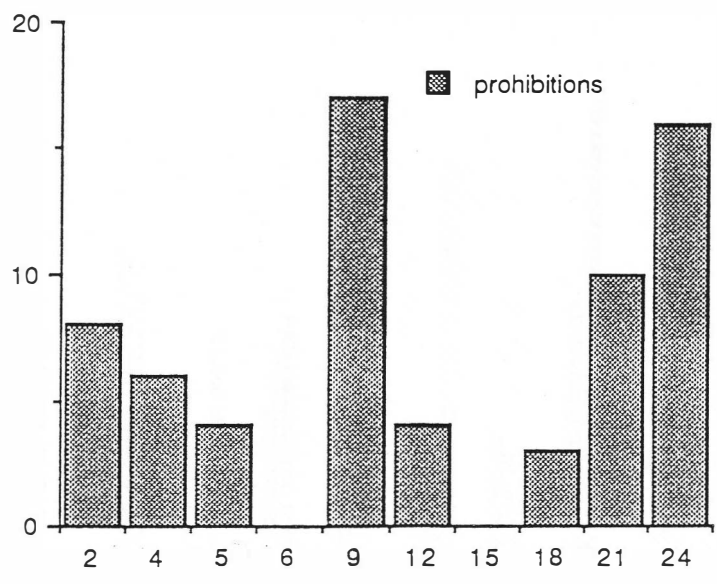


Fig. 4. Overview of mother's speech intents: the number of prohibitions and utterances with a severe controlling intention (month 2 to 24)

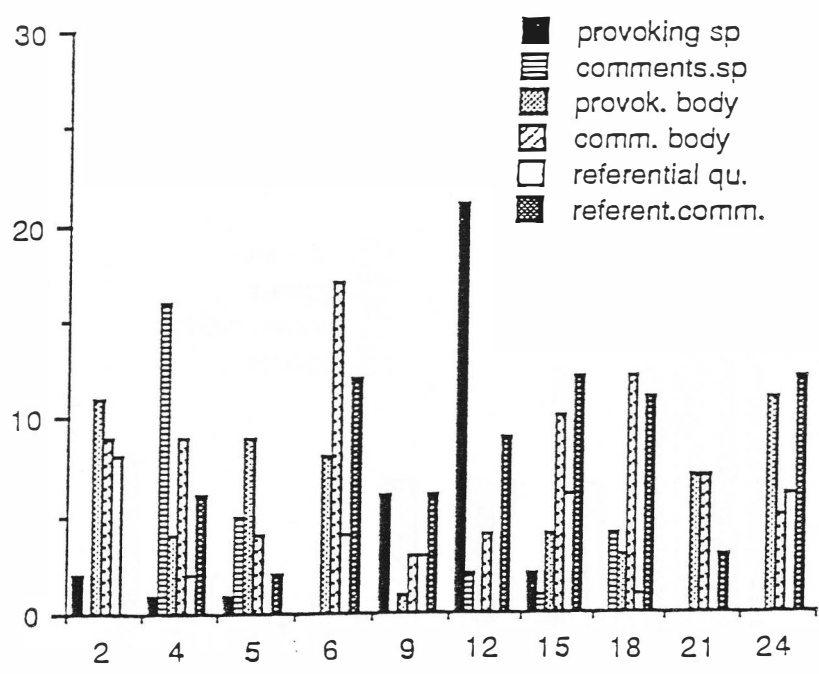


Fig. 5. Overview of mother's speech intents: the number of utterances with a speech or bodily action provoking or commenting character (provoking speech behaviour or a verbal respons, body activity or commenting upon it) from month 2 to 24

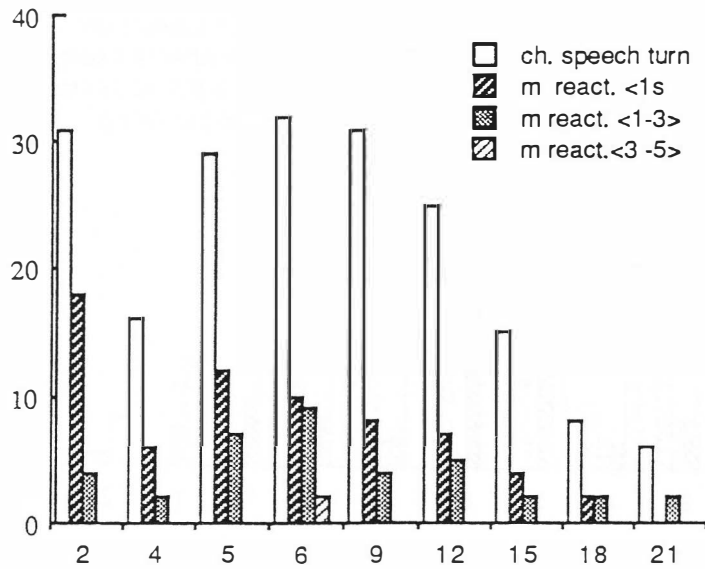


Fig. 6. Overview of absolute frequencies in respons latency in mother's speech after the child spoke (within five sec.); month 2 to 21

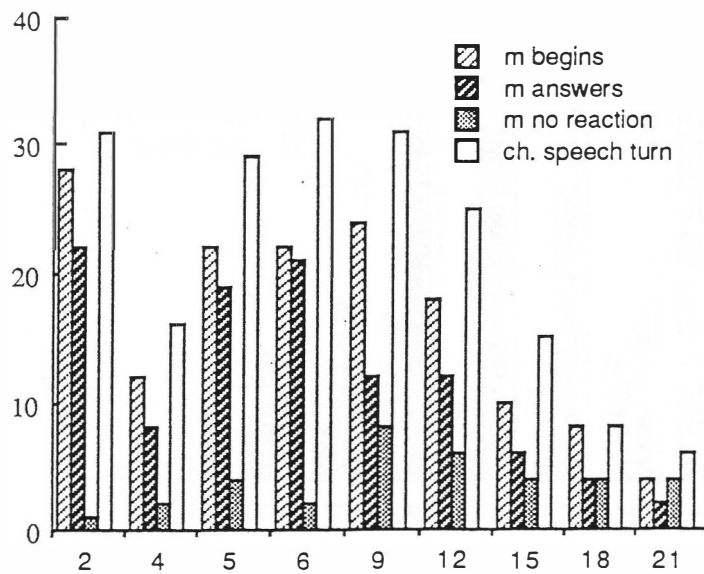


Fig. 7. Overview of the mother's verbal behaviour in absolute frequencies just before and after the child spoke (within five sec.) from month 2 to 21

The child responded often to mother's speech as the white bars in fig. 7 show. However, verbally he was scarcely rewarded for his speech as we can see from the other bars in fig. 7. When she reacted however, it was even in a negative way as fig. 8 shows. The infant's speech was not consistently rewarded in a positive referential way by means of content words.

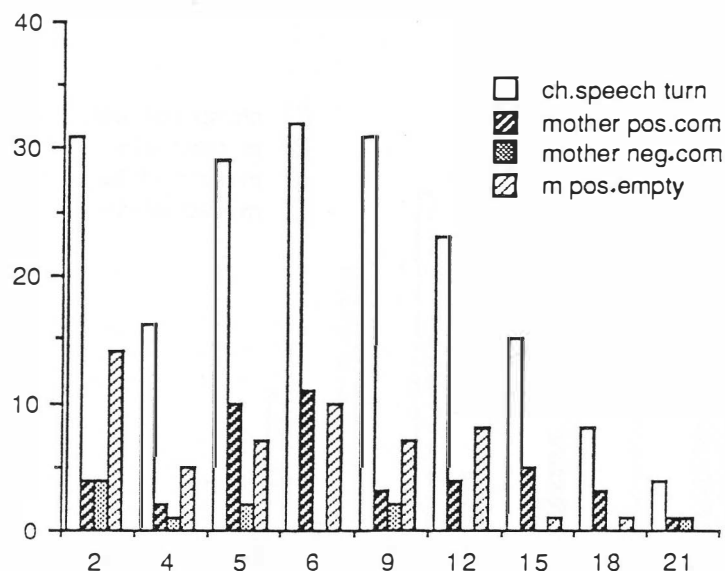


Fig. 8. Overview of the mother's verbal intents responding to her son's speech (within five sec.) in absolute frequencies from month 2 to 21

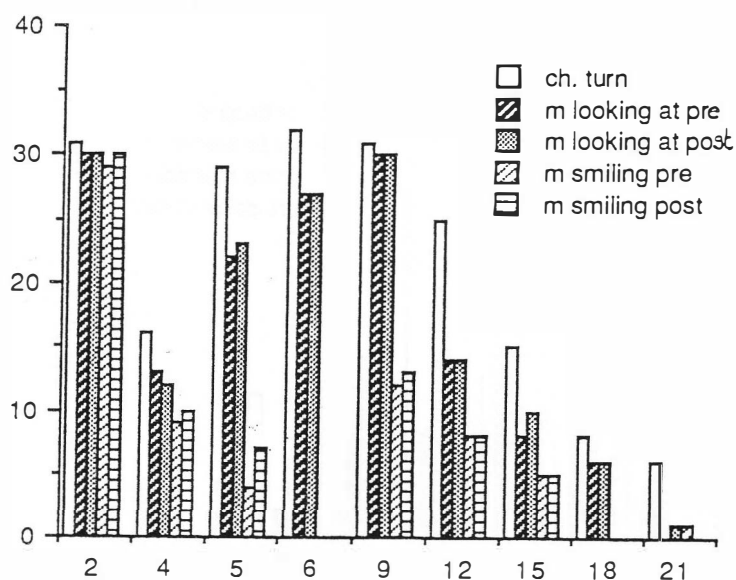


Fig. 9. Overview of reactions of the mother in the visual and mimic channel directly after the child spoke (within five sec.) in absolute frequencies from month 2 to 21

Also in the visual and mimic channels there were no significant positive changes (fig. 9). Although we could not analyse her mimics in month 6 (her hair covered her face), in month 18 and 21 she did not smile at all during the verbal communication of her child. In our opinion the child learned at a very early time that speech did not serve the game of turn taking in a playful and enjoyable communicative setting in which social and cognitive meanings are transferred.

4. DISCUSSION

Although we focused at this moment our analysis more at the adaptations made by the mother to the exposed communicative behaviours of the infant, there may also be infant-bound factors by which her insensitivity to react upon speech could be explained. We want to make clear, that we must not look only at the mother as stimulating and responding partner in the mother-child system, but also at the influence the baby exerts on her. If a baby does not express itself sufficiently in the communicative interaction, or perhaps continues to express itself at a too low stage in the pre-linguistic speech sound productions, a mother has too few possibilities to react upon. How does the child reward her speech and in which communicative ways does the child trigger her to specific communicative behaviour? At these effects we did not look yet. We have also to wait for a computer program for the clustering of maternal and infant/toddler's communicative behaviours in the various communicative channels, which is in preparation and not at our disposal yet. Based on the figures showed above it is clear that in the course of the overall development of this child (especially in the first months, when the child and his mother were sitting at arm's length), the child did react sufficiently, non-verbally as well as verbally. In his first year he was communicatively a vivid boy, always in for joyful play. In our opinion the homeostasis in this mother-child system got more and more disturbed over a period of time: in due course the system could not regulate itself any more to better interactive communicative behaviours. Communicatively they lost each other completely.

Although there was a pathological condition present at birth (the cleft palate) and associated negative factors for a prosperous speech development could be determined (hospitalisation during surgical interventions; moderate hearing problems; intensive oral treatment by means of the pre-surgical orthopedic therapy), it is obvious that the most pathological condition for this kind of speech retardation is bound to the fact that the maternal communicative behaviour was sparsely tuned in adequately to the speech productions the child made. This insensitivity for the acoustics the child produced, can not be explained easily. The reason why is still hidden in the complex way human behaviour functions. Was the insensitivity, in general, for communicative expressions the child gave her, bound to the cleft palate condition? Does it relate to an insufficiency of the mother not being sensitive enough to acoustic input, perhaps more to visual information? Does the maternal behaviour to control the child's behaviour severely root in a family bound predisposition and her strict opinions about child rearing practices? The answer cannot easily be found.

We hope to detect in the near future which interactive communicative factors contribute mostly to a prosperous communicative development and specifically an optimal speech and language development in the earliest years of children. To examine at an early time mother-child communicative behaviours in a play situation seems to us a prerequisite to detect at an early age of the child which mother-child pairs are at risk for a communication disorder which - in our opinion- is bound to lead also to a speech and language delay in the child.

5. REFERENCES

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