Bildungs[1]-moments in the early parent-child-dialog
Early childhood Bildungs-research on the basis of *Interact* analysis

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Research design

Our goal is to conduct comparative Bildung-research with children with and without disabilities. The research projects Babywatching – infant research (1999-2003), dialogical development in infants (Horsch et al. 2004-2008) as well as the research project early childhood Bildung in hearing impaired children that began in 2008 (Horsch et al. 2008-2011) pursue the questions of early childhood Bildung for the first time within a framework of extensive international studies. They study the connection between the development of relationship and dialog within early parent-child-interactions and the therein possible early Bildungs-processes in the age range of zero to two years. We have used the listening age as a basis for children with hearing loss. Therefore the age limit is elevated by up to two years (Horsch, Scheele, Roth, Schulze, Fürst 2009).

Research goal

The research goal is to study the correlation between early dialogical interactions and early Bildung-processes based on dialogical interactions between mother/father and the infant recorded in regular monthly intervals. The parents are able to choose what situations they would like to record. Important is a natural setting, meaning a recording within the typical home environment within frequently recurring formats.

Areas of research

The basal research interest is to analyze what the early dialogic interactions look like and what can be seen as the motor for early dialogs. A connected question is whether all parent-child-pairs show overall similarities in dialogic behaviors, which are not only observable in the necessary caretaking of the child, but can be evaluated beyond that as a general phenomenon of the early parent-child dialog. From this understanding it becomes clear that one fundamental research objective is to discover the inner and outer structure of the dialog and to tests its regularities. A pilot study (1998-1999, project cooperation UWM Olsztyn/Poland and University of Education Heidelberg/Germany) which studied more than 20 parent-child-pairs in Germany and Poland on an observational level alone, showed that a number of important elements of the dialog exist which ensure the beginning,

[1] The German term Bildung is used throughout this article. The term “Bildung” is often translated as “education”. However in this article the term “Bildung” encompasses more than the term “eduction” is able to express. Bildung in this context is understood as a modern concept based on Hegel’s definition of Bildung. Bildung refers to the formative self development of the mind or spirit as a social or historical process. This is achieved not primarily through teaching but through experience.

the sustenance and the continuation of the dialog. These dialogic elements have been rigorously analyzed via interact (Mangold international) in all research projects regarding their evidence. An interesting question was whether a connection exists between these dialogic elements which is not just coincidental but significant. We have therefore checked the collected data for correlations and significances and then tried to clarify if a connection exists that is relevant to Bildung.

Hence the following areas of research have resulted, which are evaluated in all research projects with different emphasis:

- Design and development of the early dialog
- Correlations and statistical significances
- Bildung-processes within the dialog

They should answer the following questions:
Which elements of the dialog are used by parents and infants respectively to establish contact? Do connections exist between independent dialogic variables and what are they? And finally are these dialogic elements relevant for Bildung?

Data collection and analysis

All projects are designed as longitudinal studies. Mother and/or father are recorded in dialogical interactions (formats) with their infant/toddler within the natural setting for 20 minutes monthly over the first 18 months of life. The dialogical interactions (formats) can be goal oriented or not.

754 recordings of 111 participants exist collectively within the project Horsch et al. (2004-2008), of which 33 couples have a child with a disability (n=227 video recordings, however these will not be discussed in this article). From the data pool of the parent-child-group without disability the participants with the most regular recordings were selected (n=20) and their data analyzed for the first year of life. The analysis is carried out in all projects with the computer software *Interact* (Mangold). The first four minutes are analyzed in this process regarding the most frequent dialogical elements. The established data is tested for correlations and statistical significance with SPSS (Horsch, Roth, Scheele, Werding 2008, Horsch, Roth, Scheele, Werding, *Göser 2008)* as well as compared to results from the developmental assessment ELFRA 2 and examined regarding its relevance for Bildung. The results of the different methodological approaches are presented below.

Results

To make the computerized interaction analysis via *Interact* transparent and comprehensible, a screenshot of a video analysis is provided in figure 1.

Interact-analysis – possibilities of a quantitative results analysis.

Figure 1: screenshot of an analysis via Interact/Mangold

On the left side the coding for the individual dialogical elements, here the vocalizations of the child and the specific language used by the father (fatherese), can be seen. In the middle is the control window with which the video can be operated, and on the right is a window, in which the currently analyzed video is shown. In the top toolbar different tools can be seen, among others the interpretation, with which different quantitative analysis can be performed or inter rater reliability can be verified.
The result of an *Interact* analysis regarding vocalization, eye contact, motherese, dialogical echo, greeting behavior (here in the dialog between father and child) is exemplified here (figure 2).

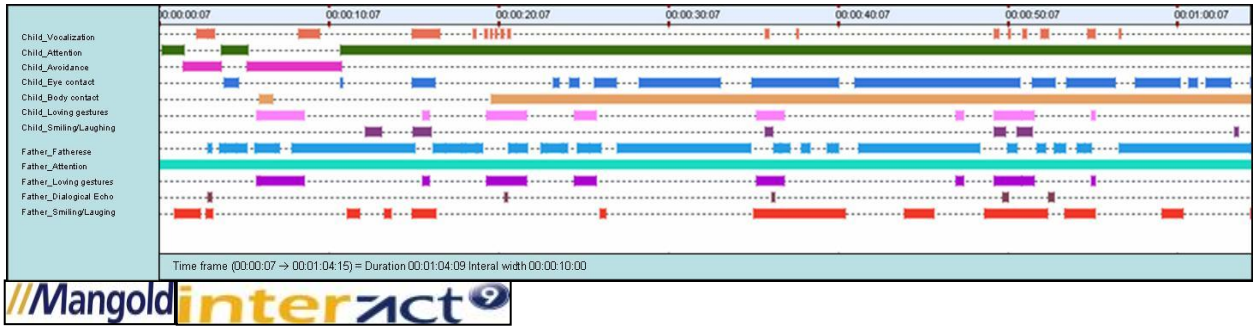

Figure 2: *Interact* analysis of the first minute of a father-child dialog in regard to the dialogic elements: vocalization, attention, avoidance, eye contact, body contact, loving gestures, smiling/laughing, fatherese, dialogical echo, greeting behavior.

The display via an Interact-graph (Mangold international) makes the dialog readable. As within the score of a piece of music the separate dialogical elements are arranged below each other and thus offer a view of the structure of the father-child-dialog. It can be seen for example that many vocalizations of the child are answered by the father with the dialogical echo, the high proportion of fatherly speech, fatherese, is also convincingly demonstrated. The father's attention to his daughter and the daughter's to her father define the entire dialog. Turn-taking as basic pattern of the dialog can be seen especially well with this kind of visualization. They document the dialogical relatedness to each other. By taking and responding to the child's dialogical offers or providing dialogical offers himself, the father keeps the child in the dialog. The individual fit between father and child, which we believe to be particularly important, can be demonstrated convincingly through the score of the dialog above.
The current aggregate analysis of the data (via *interact*) shows a number of dialogical elements which, through their frequency distribution, can be seen as basal for the dialogical parent-child-interaction and can be continuously observed to recur with varying frequency.. They are mainly: eye contact, motherse/fatherese, greeting behavior, child vocalizations, dialogical echo, loving gestures, attention, body contact as well as smiling and laughing and all within the dialogical turn-taking. These are almost all the elements that are shown in the *Interact* graph. This provides first results in the area of research that evaluates questions about the organization of the early dialogs.
For the continuative question of the correlations between dialogic elements the four most commonly used dialogical elements are analyzed. These are: greeting behavior, motherese/fatherese, vocalizations of the child, and the dialogic echo of the parents (for a definition of these elements please refer to Horsch 2003; 2004).

Correlations and significant interrelations/connections

In a next step these four dialog variables were analyzed regarding correlations that are not random but significant.
To this end a correlational analysis with SAS/SPPS was performed. The results of the early dialogs of children without disabilities and their parents reveal a negative correlation between greeting behaviors and the dialogical echo (r= -0.30) and the vocalizations of the child (r= 0.020*). This means: the less the children vocalize the more the parents use greeting behaviors and the less they use the dialogical echo. We theorize that the increased use of greeting behaviors from the parents occurs to encourage the child to take up the dialog again. This interpretation is further strengthened by the correlation between greeting behaviors and the use of motherese/fatherese (r=0.87). This correlation is highly significant (p=0.0051*). Another significant correlation can be found between the child's vocalization and the dialogical echo (r=0.82; p=0.0126*). This significant correlation can be seen as first empirical evidence of the connection between the quantity of speech offers (vocalizations) from the child and the corresponding spoken language response from the parent. A good view

of the dialogic relatedness of mother and child through the first year of life is provided by the following figure 3.

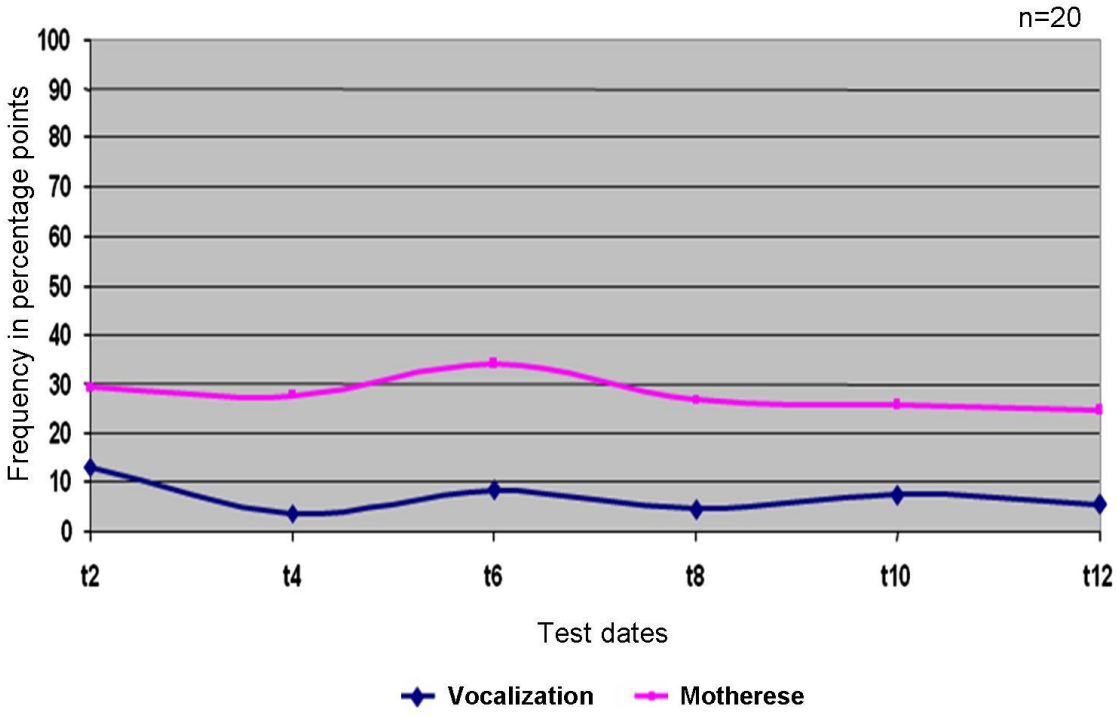

Figure 3: child's vocalizations and motherese in the dialogic interaction throughout the first year of life, analysis via *interact* (Mangold *international*)

The x-axis shows the test date in a bimonthly rhythm starting at t2 and ending at t12, the y-axis shows the frequency in percentage points for the entire duration of the analyzed videos. The bottom curve represents the frequency of child vocalizations, the top curve the frequency of motherese. It can be seen that motherese is quantitative above the child's vocalizations. That means that the mother repeats the child's vocalizations frequently and in that acknowledges the child's utterances, answers him in the dialog. Most notably it becomes clear that the two curves resonate with each other, that these two elements are related to each other and thereby a dialogic togetherness between child and mother becomes visible. The dialogic principle of early interactions is evident in these two curves. They demonstrate the individual fit between mother and child or, from an anthropological standpoint, the between (Zwischen) between mother and child (Buber 1964).

An important question is whether these findings prove true for children with a disability. In this article, first predictions, which should certainly be rated preliminary, can be made. We find that although the above introduced dialogic elements are apparent they show different correlations. We have found these results in children with Down-Syndrome but also with children with hearing loss.

They allow first predictions regarding the individual fit between parents and the child with a disability. Detailed studies on this are currently undertaken in the context of doctoral thesis for children with CHARGE-Syndrome (Scheele since 2006), for children with Down-Syndrom (*Werding* since 2007), and for children with hearing loss (*Bagan-Wajda* since 2007, *Göser since 2007*, *Horsch/Fürst* since 2008)

Assessment via standardized testing procedures

To be able to show direct evidence based proof of the connection between dialog and Bildung it was examined in a next step whether a connection between the frequency of the dialogic elements (evaluation via *interact*) and objectively gathered date through a test on childhood development can be substantiated. For that purpose the formerly mentioned test ELFRA-2 was used, a developmental assessment utilizing parent questionnaires, that allows for early identification of children at risk. As we are still in the process of data analysis we can to date only fall back on three examples of families with one child without disability. For these three families the two dialogic elements, the vocalizations of the child and the motherese / fatherese, were selected and underwent a profound examination in which their occurrence rate in one year was summed up and the results were correlated with each other (figure 4: Ratio of motherese/vocalization).

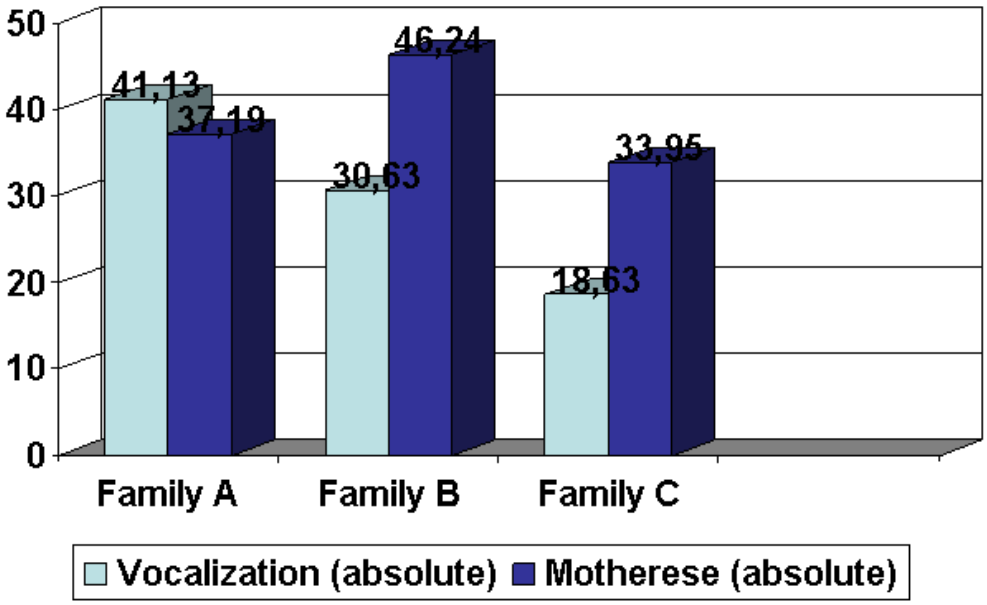

Figure 4: Ratio of motherese and vocalization for three families, data analysis via *interact*.

The comparison of the diagrams shows as a first result, that the child in family 1 vocalizes relatively more than the parents offer him linguistically through motherese/fatherese, in family 2 and 3 however the linguistic offers lie

approximately one third to one half above the offers of the child, which points to a strong individual fit.
It is now interesting to relate these results to the results of the ELFRA-2 assessment, in which the expressive vocabulary as well as the most important grammatical developmental milestones are in the foreground (figure 5). The following diagrams show the results.

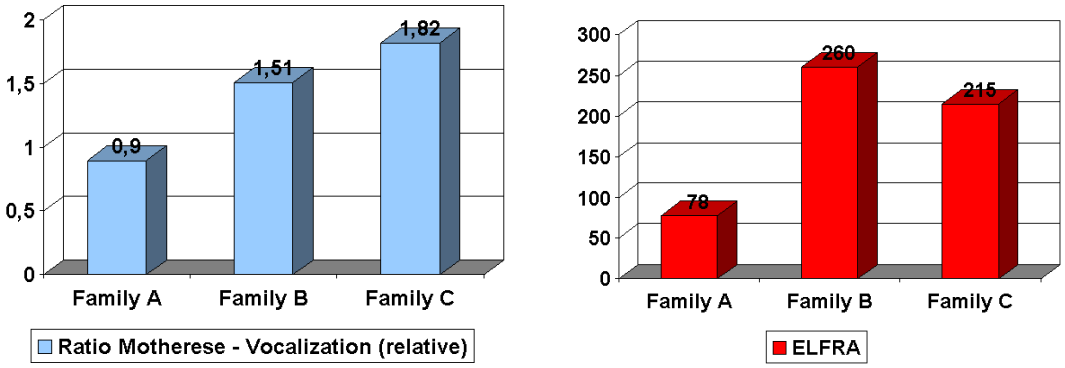

Figure 5: result comparison: relative ratio of motherese/vocalization in comparison with ELFRA-2.

It is apparent in the contrastive comparison of the ELFRA-2 results, that the developmental results of the child in family 1 are considerably weaker than the ones of the other evaluated children from family 2 and 3. The mean in the standardized procedure of ELFRA is at 150, the low score that is rated as critical is 50. Even if one accounts for the fact that in this assessment the parents rate the development of their child, it is possible to determine a first tendency due to the standardization of the assessment. It allows, with all due caution, the thesis that the results provide an indication that the dialogic elements and their individual fit provide an important contribution to childhood development, which is relevant to Bildung. This can be at least determined in regard to the development of knowledge that is assessed through ELFRA-2. However further tests with a larger group are in order and are already planned.

A **conclusion at a glance** could look like this:

First evidence based proof could be found that
- dialogic elements are constitutive for early interactions
- selected dialogic elements show significant correlations
- dialogic elements are relevant to Bildung (regarding knowledge)
- Bildung starts at birth (evidence based analysis 1-12 months of life)
- parent-child-interactions function as motor for Bildung

The research projects are in progress. On the basis of the thereby ascertained data, a thorough results discussion will be performed.

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A list of references can be requested from the author.