

# FOSTERING THE DEVELOPMENT OF SOCIAL-EMOTIONAL COMMUNICATION THROUGH MUSIC

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## ABSTRACT

**Background.** Music is known to have a potential of establishing emotional and social communication. Music therapy successfully uses this potential for establishing a musical contact and developing a musical dialogue. This kind of preverbal social-emotional communication relates to musical elements in early communication patterns with fundamental importance for emotional regulation, for communication through speech and song, and for creativity.

**Aims.** To evaluate how and to what degree music is able to foster the development of social-emotional communication of multiple handicapped children ( $n = 12$ ) a clinical intervention study has been conducted in the Centre for Social Paediatrics in Munich, Germany. The effect and the process of music therapy has been analysed with a focus on the preverbal communication through joint attention, turn taking and intentional reference.

**Method.** There has been a multi-method research design with a detailed micro analysis of music therapy video tapes by a computerized category system. On a rating scale the music therapists gave their estimation of experienced contact, emotional state and communicative activity. The status of preverbal communicative development has been tested during the treatment by the Early Social Communication Scales (ESCS). In a semi-structured interview the parents reported the children's communicative development at home.

**Results.** The results show significant improvements in the ability of preverbal social-emotional communication. This has been demonstrated for all kind of data and is especially impressive for the ability to regulate emotion and behaviour. Here all children developed more intentionality, more intensity and more self-confidence.

**Conclusions.** The details of the video micro analysis reveal how the music therapist creates the musical environment. This zone of proximal development is characterised by a specific set of musical features and a special form of therapeutic co-regulation.

## 1. BACKGROUND

Intuitive parenting - a communicative behaviour that adult and children demonstrate in interacting with babies - is rich in musical elements. Hanuš and Mechthild Papoušek (1995) concluded that infants are biologically predetermined for musicality as from the very beginning they are able to understand the meaning of these musical messages. These inborn musical abilities of infants are fostered by the interaction with the parents. They provide the possibility for emotional signalling and regulation both for infant and parents. Moreover they foster the development of

basic social communicative functions like joint attention and behavioural regulation. The infant learns to direct the behaviour of other persons through its expressions. It learns through musical communication to regulate its behavioural state and to express its mood (Stadler Elmer, 2000).

These biological and cultural origins of early musicality (Papoušek, 1996) represent an essential foundation of the therapeutic use of music especially in fostering emotional and social aspects of communication (Ruud, 2001). As music is a genuine social activity some use the term *musicizing* or the verb *to music* to characterize the co- constructions of musical performance (Ansdell, 2001).

## 2. AIMS

Due to different mental and motor impairments multiple handicapped children have special difficulties in acquiring preverbal communicative abilities. Orff music therapy (Orff, 1974) - relating to the ancient Greek concept of *musiké* and characterized as a developmental music therapy (Bruscia (1998) - demonstrated to encourage social and emotional aspects of the preverbal development especially of multiple handicapped children.

To evaluate both the effect of the music therapy treatment and analyse the process of the music therapy treatment a clinical intervention study has been conducted in the Centre for Social Paediatrics in Munich, Germany. 12 multiple handicapped children, aged 2 to 6 years - with a developmental age from 8 to 32 months - received a two phase music therapy treatment comprising 10 sessions.

Criteria for the outcome evaluation have been preverbal communicative abilities like joint attention, turn taking and intentional reference. For the process evaluation of the music therapy sessions the interaction of child and music therapist has been analyzed for fostering communicative patterns - thus identifying those behavioural and musical aspects that create a zone of proximal development (Vygotsky, 1978).

## 3. METHOD

The multi-method research design comprised different measurement methods for a variety of data from different data sources. At the beginning and at the end of each treatment period preverbal communication abilities have been assessed by the psychological tests and interviews of the ESCS Early Social Communication Scales (Seibert & Hogan, 1982). All music therapy sessions have been videotaped and after each music therapy session the music therapist gave a subjective evaluation

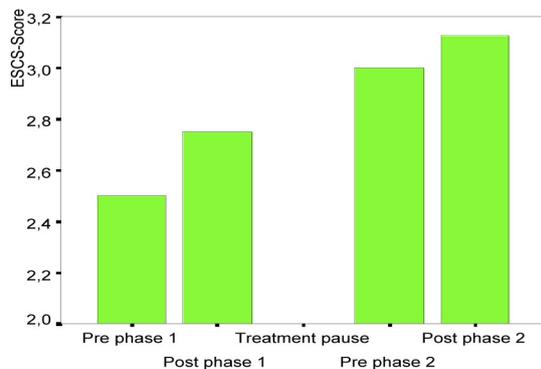
on the Music therapy Profile, a 20-item bipolar rating scale examining the dimensions of activity, relationship, emotion and expression of child-therapist interaction. At the beginning of the second treatment phase the parents have been interviewed on musical experiences at home, the child's reaction to the music therapy treatment, behavioral changes, and communicative development.

For the computerized microanalysis of music therapy sessions a category system has been developed. The category system KAMUTHE (Plahl, 2000) consists of four categories for the analysis of the child's behavior and three categories for the analysis of the music therapist's behavior. The communicative behavior of the child is categorized into gaze, musical activity, vocalizations and gestures. The behavior of the music therapist is categorized into musical, verbal and nonverbal communicative behavior. To achieve a differentiated behavior analysis the technique of real time event coding has been used.

Both a data triangulation and a methodological triangulation (Patton, 1987) have been undertaken to improve the quality of the evaluation study. The chosen multi-method approach is monitoring both qualitative and quantitative indicators of process and outcome and thus will enhance the scientific reliability and the clinical relevance of the findings.

#### 4. RESULTS

The results show that the studied children improved their their basic preverbal communicative competences: shared attention and behaviour regulation - the two dimensions of the ESCS. Figure 1 shows the mean scores for the treatment group, that increase significantly on the 0.01 level in between one treatment phase and in the course of the whole treatment.



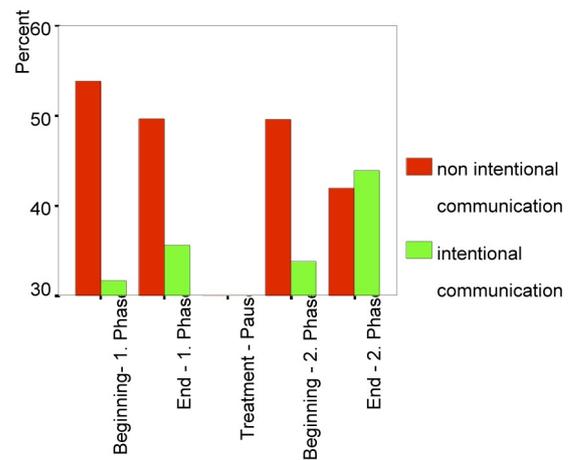
**Figure 1:** Mean scores of preverbal communicative abilities. ( $p < 0.001$ ; Wilcoxon signed ranks test).

The intensity of interaction and communication has been assessed by the music therapists using the rating scale *Music Therapy Profile* (Plahl, 2000). Especially on the dimension of emotion/relaxation and on the dimension of expressive communication the differences are significant at the 0.5 level. The perceived intensity of the children's social emotional communication has clearly grown.

The observed frequencies in the communicative modalities of gestures, vocalizations and activities with music instruments increase significantly at the 0.1 level comparing the beginning and the end of each session both for the first and for the second treatment phase.

The most important finding, however, is the growing percentage of intentional communication. Intentional communicative acts are defined as all communicative activities on musical instruments that are followed by a gaze to the music therapist - thus signalling communicative reference after a communicative contribution.

Figure 2 shows the clear decrease of non intentional communicative combined with a simultaneous significant increase of intentional communication.



**Figure 2:** Percentage of non intentional and intentional communication. ( $p < 0.05$ ; Wilcoxon signed ranks test).

The parents reported more intentionality in the child's communicative abilities and communicative expressions. This means the children succeeded better in expressing their needs and so regulating their own and their parent's behaviour. Additionally the parents reported a more intensive relationship to their children as well as more independence in their children's behaviour - which is connected with more self esteem and self confidence of the children.

The results of the study show, that the examined children significantly improved their ability to express their needs and desires, to regulate their own emotions and the behaviour of their social partners in a more intentional and therefore more effective way and to gain by this way more self-confidence, independence, and more intense relationships to other persons. This not only helps to prevent secondary disorders caused by deficits in communicative competences but represents an improvement of living quality for the multiple handicapped children as well as for their parents and other relating persons.

## 5. CONCLUSIONS

Music can be understood as a transforming co-constructed process between two or more persons or as a transforming constructed process in one person. To support this transforming effect and to succeed in fostering the social emotional communication of multiple handicapped children the music therapy context has to be characterized by 'good' coordinated interactions (Tronick, 1989).

Figure 3 shows the interaction analysis of a dance where the music therapist is creating a sustainable frame of coherence: She is accompanying her dancing with a song, she is praising the child after each dance session, and she is asking her before the next session if she wants a repetition. The child, a four year old girl with Cornelia-de-Lange-Syndrome, who is not able to use language for communication, obviously is expecting the question and is signalling her wish for repetition by a gesture that is referring to the music therapist.

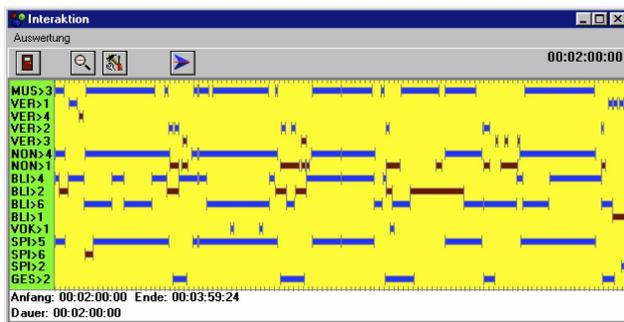


Figure 3: Interaction analysis example for coherence.

These interactions are characterized through a coherent pattern of child and therapist communications, which means they provide a situation that is structuring a sustaining frame for the social and emotional regulation of the child.

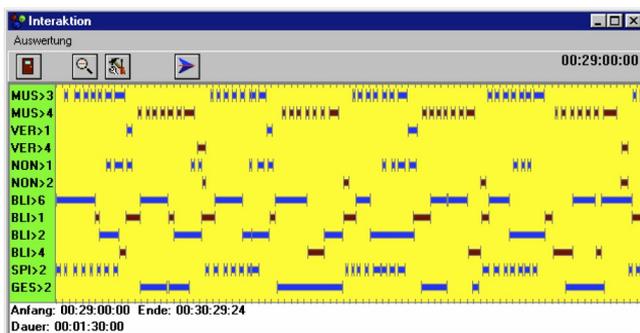


Figure 4: Interaction analysis example for synchronicity.

In Figure 4 three patterns of synchronizing can be revealed: First the music therapist is accompanying the child's play on the guitar by a song. Then the music therapist is playing herself the guitar and the child is gesturing her wish to have the guitar again. Finally the gaze of the child to the therapist is responded by the confirming gesture of nodding her head. It is this responding

structure of the music therapist's behaviour - in rhythmically accompanying and answering the child -, that not only creates a sustainable frame but also reinforces the child through synchronized resonance.

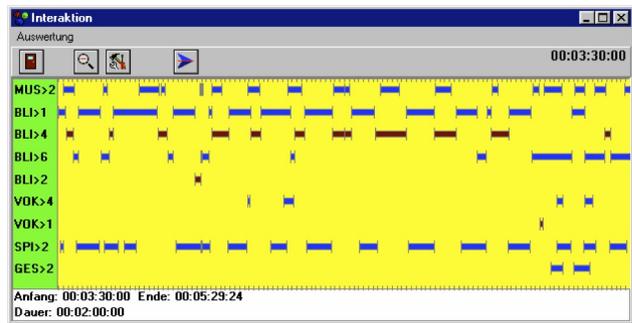


Figure 5: Interaction analysis example for reciprocity.

A still more detailed analysis of reciprocities reveals the elements of a musical dialogue. Figure 5 shows the interaction pattern of a sequence from the ninth session with a five year old autistic boy. The communication pattern of this sequence clearly demonstrates a dialogical structure. The boy is signalling his communicative reference by directing his gaze to the hands of the music therapist after finishing his contribution. This musical dialogue is characterized by reciprocal turn taking, that is very well tuned and by musical contributions, that are shaped both by the own preceding contribution and the contribution of the partner.

The analyzed interaction patterns of different music therapy sequences are characterized by an impressive pattern of coherence, symmetry and reciprocity. Rhythmic changes in the communicative behaviour of the music therapist facilitate joint attention and reciprocal reference. Synchronicity created by several musical and behavioural means allows for resonating actions and affections of the child. Finally reciprocity in the communication of music therapist and child enables a mutual exchange of turn taking – the ground for behavioural and social regulation.

This kind of musical context enables the child to move frequently from affectively positive, mutually coordinated states to affectively negative not coordinated states and back again and is thus providing a central condition for therapeutic change. A specific mixture of repetition and variance in musical patterns combined with elements of recognition and surprise in the musical dialogue motivates the child for emotional expression and social behaviour regulation.

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