Music and Medicine
4(4) 205-214

DOI: 10.1177/1943862112458706
http://mmd.sagepub.com
SAGE

# Research Strategies to Achieve a Deeper Understanding of Active Music Therapy in Neonatal Care

**Friederike Barbara Haslbeck, DMtG**[1]

**Abstract**

Music therapy in the neonatal intensive care unit (NICU) is an emerging field with various active and receptive approaches. Research in this area has predominantly focused on evaluating the effects of receptive stimulation programs on the premature infant using primarily quantitative study designs. Methodological questions about how to approach the phenomenon of active music therapy with flexible designs still need to be addressed. This article proposes a flexible methodology that achieves a deep understanding of the therapeutic process of active music therapy in premature infants and their parents using a qualitative, multiperspective study design based on the principles of therapeutic narrative analysis.

**Keywords**

music therapy, NICU, research methodology, qualitative research

Over the past few decades, various interventions have been developed to support the vulnerable group of premature infants and their parents. These approaches intend to address challenges in neonatal care, to offer adequate assistance in this traumatic process, to prevent risks of lasting effects, and to improve the quality of life.[1] One particular intervention in the neonatal intensive care unit (NICU) with a variety of possibilities is music therapy. Working with both the premature infant and his or her parents, music therapists use various active and receptive approaches with live or recorded music or singing (with or without involving the parents), sometimes even engaging an entire family or inpatient environment.[2-5] Research on music therapy in the NICU is expanding and demonstrates its plethora of positive effects, in particular, on the premature infants' physiological and behavioral state.[6,7]

To date, most studies in this area have focused on the effects of music therapy on the premature infant directly, and predominantly quantitative designs have been used to evaluate the receptive generalized stimulation programs.[6] Recently, growing attention has been given to the effects of music therapy on the parents of premature infants[8-12] as well as on active live music therapy.[13,14] However, following four decades of research in this area, what actually happens in the therapeutic process itself between the therapist and the premature infant or between the parents and the infant, especially in more active/interactive music therapy approaches, has hardly been addressed. What exactly defines a successful therapy? Is it more than just relaxation or stimulation? How does therapeutic change happen, how can it be triggered, and what are the possible limits of music therapy in the NICU? These questions still need to be addressed. Some information is currently available, for example, markers of interplay between the music therapist and the high-risk full-term infant.[15]

The intradisciplinary and interdisciplinary focus in neonatal care is also shifting from standardized interventions toward more individualized relationship-based approaches and to an inclusion of parents in the therapeutic process.[16-18] The Newborn Individualized Developmental Care and Assessment Program (NIDCAP), defined by Als and Gilkerson,[19(p184)] calls for highly attuned and individualized approaches in neonatal care characterized by a flexible process that continuously assesses the infant's needs in order to creatively adapt the provided intervention. Not only has the setting in neonatal care changed dramatically over the last 10 to 15 years because of technological and medical improvements and new concepts of care, but the clinical practice of music therapy in the NICU has also moved toward more active therapeutic approaches with live music or singing.[14,20-22] These individualized and interactive approaches take into account the complex system of infants, family, staff, and NICU environment which may be inclusive of a hazardous sound environment.[23-25] By engaging and encouraging parents to sing for their infant, for example, by

[1]University Witten/Herdecke, Witten, Germany

**Corresponding Author:**
Friederike Barbara Haslbeck, Bordackerstr 62, CH-8610 Uster/Zürich, Switzerland
Email: musiktherapie@haslbecks.info

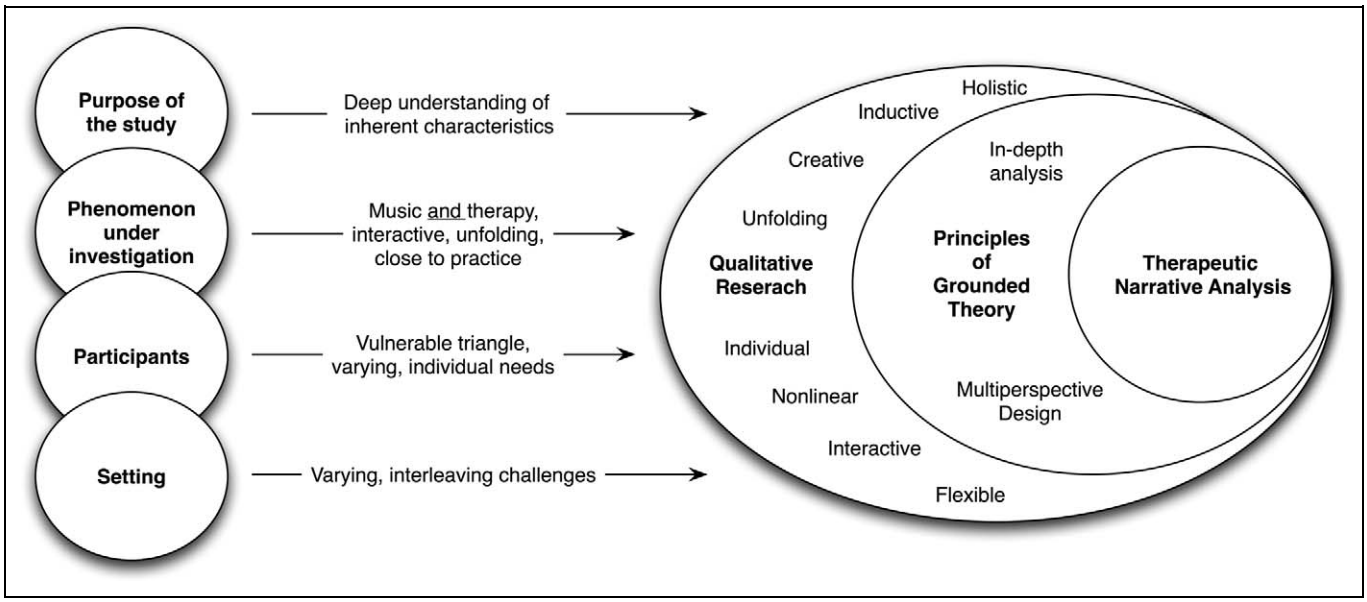


**Figure 1.** Exploration of methodology

singing a "song of kin"[2,26] as well as by attuning to the infant, the environment in music active music therapy may support the infant, the sound environment, and the infant–parent bonding process.[8,12,17,27] They also provide a challenge for the researcher seeking to make generalizations.

Such developments in neonatal care raise the question as to whether the complex phenomena of (active) music therapy in the NICU can be addressed with sole emphasis on evaluation of the infant's physiological data (oxygen saturation, heart and respiration rate). Authors studying premature infants have questioned whether the exclusive use of quantitative research methods is suitable and sufficient enough to fully evaluate the impact of music therapy in neonatal care.[11] For instance, Whipple[28] concludes that her study findings on evaluated physiological data are inconclusive; she doubts their suitability as sole measures of therapeutic effectiveness, particularly since older premature infants may demonstrate an increased heart rate not only as a sign of stress—one common interpretation—but also due to becoming more alert and active during music therapy. In addition, Cevasco,[9(p306)] who conducted one of the few studies that included the parents' perspective, points out that in terms of answering predetermined questions on the study's questionnaire "some mothers indicated that the answers were not appropriately weighted to indicate how they felt."

The developments in clinical practice toward individualized relationship-based approaches that incorporate the parents to the whole inpatient environment in the therapeutic process may be better met by more infant–parent attuned research methods. Interestingly, to date, only a small number of studies have addressed interactive music therapy and the methods used in those studies were exclusively quantitative, focusing on outcomes.[6] Therefore, it is time that research strategies for music therapy in neonatal care are reconsidered to better understand the parents' perspective, the individual age-related infant responses, and clinical therapeutic phenomena of more active approaches.[29,30] In addition, we can consider incorporating methods that are suitable for an in-depth analysis of active music therapy focusing on specific interactions between music therapist and infant and emotional regulation and addressing the therapeutic process of change. By filling this research gap, we may gain insight into how therapeutic change takes place and what parameters in the interactional process with premature infants and their parents are meaningful for music therapy.[15] Such insight may function to inform music therapy practitioners the kind of methods and techniques with which they can support and empower the vulnerable group of premature infants and their parents and the possible limitations and contraindications of active music therapy in neonatal care.

The aim of this article is to propose a methodology that can be used for an in-depth exploration of the therapeutic process in active music therapy in the NICU, as exemplified by creative music therapy (CMT) after Nordoff and Robbins. Special attention is given to therapeutic change and those interactions that include the parents. Research methods will be discussed "that are appropriate to the purpose of the study, the participants, the phenomenon under investigation and the setting"[31(p5)] to identify suitable research strategies[32,33] (see Figure 1).

## *Identifying Research Needs of Creative Music Therapy in Neonatal Care*

Research on active music therapy in neonatal care needs to address the methods that are "best suited to the line of inquiry" to obtain the "desired results."[34(p1372),35]

## Embracing the Vulnerability of the Participants and the Complexity of the Setting

The participants of music therapy in the NICU are premature infants and their parents, both regarded as an inseparable unit.[36,37] They are a highly vulnerable group with varying needs in the complex setting of neonatal care. Premature infants, particularly the youngest, are fragile individuals with tremendous challenges due to intense and lasting treatment necessary for their survival, often facing painful experiences and various treatments.[38,39] The infants' premature birth may be a traumatic experience for the parents as well accompanied by uncertainty about their infant's survival and feelings of fear, guilt, or grief that can have a negative impact on the attachment process.[40-43] The overwhelming environment in the NICU, characterized by noise, rush, and unpredictable procedures, is potentially stressful.

The special circumstances and the complexity of the setting call for a research design that is case sensitive and distinctive. This means that the researcher needs a method available to adjust the data collection based upon the varying circumstances of the setting and the individual changing needs of the participants (Figure 1). A flexible design allows us to gain insight into those phenomena that spontaneously unfold in everyday clinical practice and develop over time by concentrating "on the authenticity of the process and the perspective of the patient."[44(p248),45] Using a flexible and integrative approach in research methods facilitates the incorporation of unique perspectives from parent and therapist that addresses the complex changing system of the participants and setting.[30(p135)] This may gain insight into a deeper understanding of the therapeutic process, for example, the bonding process or the ability of the premature infant to engage in social–emotional interactions. A deeper understanding of these phenomena that emerged from clinical pratice may inform practitioners how to create a successful individualized relationship-based therapeutic process. Research of additional areas of interest may arise, for example, possible longitudinal influences of active music therapy on the bonding process or on the socioemotional development of the infant.

## Unfolding Flexibility, Interactivity, and Closeness to Practice

Active music therapy in neonatal care implies an active role for all participants.[20] If we accept that everyone shows sensitivity to music, which can be utilized for personal growth, health, and development, then we can accept that through interaction with music, therapists can support and enhance the clients' expressive skills and their ability to relate to others.[46] The noninvasive potential of active music therapy for prelinguistic communication allows even vulnerable, severely affected individuals such as premature infants to become "active" rather than being given a solely receptive passive role.[25,47,48]

An example of active music therapy in the NICU is CMT with premature infants and their parents, which is an interactive, needs-oriented music therapy approach initially developed by Paul Nordoff and Clive Robbins.[46,49] The CMT in the NICU is adapted for the specific needs of the vulnerable group of premature infants and their parents[25,50] and is based on the principles of CMT with patients in coma.[47] In this approach, the music therapist establishes human contact with the patient in coma through improvised "wordless singing based upon the tempo of the patient's pulse and more importantly, the patient's breathing pattern."[47(p345)] Also in CMT in neonatal care the improvised humming is based upon the "music" of premature infants, which is their breathing pattern as the most fundamental rhythm of a human being together with their facial expression and gesticulation. The improvised humming is adjusted constantly to the fragile rhythms and subtle expressions of the premature infants ensuring that they are not overwhelmed.[25,51] The parents, if available, are integrated in the therapeutic process to promote the parents' autonomy and to support the intuitive parent–infant interaction and thus the bonding process as described elsewhere.[17,37,52] Moreover, the focus of active music therapy with premature infants and their parents is creating an individual relationship with the infant. This takes place through music as well as by facilitating his or her relationship with the parents to support the infant "coming into being,"[53(p58)] the parents into parenthood, and the triad into bonding.

Given these characteristics of active music therapy, research design that focuses on an in-depth investigation of process-orientated interactions is warranted (Figure 1). Researchers need methods that are flexible and capable of evolving, and developing, over time. Data collection and analysis methods should facilitate to explore the relevant phenomena under investigation by evaluating both the musical and the therapeutic process. As Aldridge frames it, "What we are challenged to develop is a way of presenting the work of art itself as it appears in the context of therapy."[32,44(p17)] We need research designs that strive "to 'save the phenomenon,' meaning that a phenomenon should not be reduced or replaced with an explanation that omits human experience and its involvement in any understanding."[30(p131)] Robson[54] refers to this as real-world research that stays close to practice.

## In-Depth Understanding of Inherent Characteristics

Real-world research on music therapy in the NICU will focus on *how* therapeutic change happens, taking into account that clinical practice is changing toward more interactive, individualized and integrative approaches in neonatal care. An in-depth understanding of the therapeutic process of both receptive and active music therapy approaches in the NICU is needed to identify relevant patterns, therapeutic change, and interaction. This will gain insight into resources of premature infants and their parents that might be activated through music therapy and will explore indications and contraindications of music therapy on the infants' and their parents' well-being with regard to the bonding process.

To address these needs, research on music therapy in neonatal care may need to embrace mosaic designs that explore the

phenomena from the multiple perspectives of all participants (Figure 1). This will take us beyond the predominat current focus on physiological parameters and open us to considering a variety of clinical parameters from clinical practice. These will also include elements pertinent to the setting. Rather than reducing or manipulating the phenomenon under investigation, we concentrate on the ecology in which they occur.[30,31,44,55]

## Toward a Strategy for Research on Active Music Therapy in Neonatal Care

*Using qualitative research.* Bearing the outlined research needs in mind, the author will underline the usefulness of qualitative research for music therapy in neonatal care (Figure 1). Qualitative methods can be applied in clinical practice as a particular study unfolds. As active music therapy itself, they can be creatively and flexibly used and allow the researcher, as a therapist, to be an important instrument used in the investigation.[56] Since qualitative research tends to be holistic, it can facilitate a deeper understanding of the triadic system of infant, parents, and therapist. It can also elicit how interactions embedded in the therapeutic process evolve and how they are given meaning.[57] In general, qualitative research has proved its potential in the field of music therapy,[32,44] in particular with vulnerable groups, for example, with individuals lacking the ability to speak to better understand their nonverbal communication and interaction.[15,47,58]

Using qualitative research designs allows us to work toward a more comprehensive middle-range theory of music therapy in the NICU compared to those existing in the literature to date. Moving beyond the prevailing focus on effectiveness, qualitative methods offer the possibility of adding both breadth and depth to the existing evidence and offer explanations for unexpected or anomalous findings as well as being open for the nouveau in the data.[54,59] Finally, insights from qualitative studies can provide a rationale as to why particular interventions succeed or fail, for example, the previously mentioned study of Whipple.[28]

## Multiperspective Designs

Given the complexity of the system, the study participants of infants and parents, and the multiple facets of the phenomenon under investigation, a multiperspective research design should be applied (Figure 1).[54,60] The author suggests obtaining the typical material traces of active, exemplary CMT in the NICU for data collection in a multiperspective way in order to follow the recommendations made by Aldridge and Aldridge, "If we wish to discover how a particular creative art therapy works, it is of paramount importance to maintain a focus on the work using the material traces of that work."[29(p1)] Hence, the researchers can (a) videotape the music therapy sessions (eg, as standard part of CMT in clinical practice)[30,46] and (b) interview the parents (continous conversations with the parents as standard part of most active music therapy approaches in neonatal care).[20,27]

By analyzing video footage, various facets of the interactive processes in music therapy in the NICU can be explored, for example, implicit characteristics and interactions of successful sessions.[15,32,61] We may gain insight into the infant's interaction and reaction/action to or with the therapist, the environment, and, if available and recordable, the parents, for example, by analysis of the infants' facial expression, gesture, breathing, and vocalization. Furthermore, the video analysis may allow us to explore how the therapist's behavior and therapeutic techniques are characterized, how they may influence the therapeutic process, and how therapeutic change may happen. Analyzing the parents' perspective may facilitate additional insight into the outcome of music therapy as well as an in-depth understanding of their perspective. Finally, it is a standard part of clinical practice of CMT in the NICU to obtain and to observe physiological data of premature infants (oxygen saturation, heart rate, and respiration rate) to ensure that the infants are not overwhelmed. Therefore, the author recommends collecting this additional data to guarantee the safety of the participants.

## Triangulation

In qualitative research, it is particularly important to deal with possible bias inherent in a single perspective, for example, the researchers' dual role as therapist and researcher. Therefore, various ways of triangulation are proposed to facilitate truthworthiness.[62] First, between-method triangulation[63(p157)] can be applied by completing audiovisual data of the sessions with observational data (protocols and memos) and verbal data (comments of staff and parents). Objective data (physiological data of oxygen saturation, heart, and respiratory rates via monitor prints) may be useful to further explain and validate video episodes where the infants calm down. The credibility of the interview data can be enhanced by adding data of memos, protocols, and comments. Second, researchers can apply the principles of within-method triangulation[63(p157)] by completing and synthesizing the infants' data with the data from the parents' interviews by including their perspective on the therapeutic process. Third, investigator triangulation can be particularly useful because it can prove as well as enrich the data selection and analysis process. One way to achieve this is to involve experts from other health care professions to discuss their perspectives on preliminary findings on anonymized and coded data.[15] Ultimately, the researchers can verify the interview results by applying a member check, returning the interview findings and interpretations to the parents, and collecting their feedback on it.[63]

## A Grounded Theory Basis

To deal with the previously mentioned needs, principles and strategies of Grounded Theory seem to be particularly useful for taking into account the complexity and process of human action and interaction (Figure 1).[64-66] It allows an in-depth investigation of interactions, behaviors, and experiences, as well as individuals' perceptions and thoughts about them.

Initially Strauss[60] and Glaser[65] aimed to develop an inductive theory derived from data of various contrasting cases collected by the researcher. The process of constant comparison of categories elicited from case material enabled the theory to be generated by discovering precepts grounded in data gleaned from everyday clinical reality. This is as an interactive, interpretative process in immediate communication with others and oneself[63] and adapts itself well to understanding the processes of CMT. In the discipline of music therapy an orientation toward Grounded Theory has already been proven plausible and useful for theory building.[29,32,58,67-69]

### *Orientation Toward Therapeutic Narrative Analysis*

Therapeutic Narrative Analysis, developed by Aldridge and Aldridge,[29] built on the principles of Grounded Theory and applied these to music therapy (Figure 1) by incorporating a specific constructivist approach to generating categories of analysis. It is a case study approach and can be used within flexible research designs to analyze both quantitative and qualitative data using structured observations and then eliciting categories for the coding of those observational events characterized by constant comparison. The researcher searches constantly for similarities and differences between events and categories. The categorization of the collected data across cases enables the researcher to further identify major overarching categories. At the final stage the researchers search for relationships between these overarching categories to find patterns and links that enable them to develop a coherent theory albeit limited to the cases being included. The "narrative" is seen as the story line that brings these events together.[70,71] Aldridge and Aldridge point out that "the research part is the analysis of those narrative materials that bring forth new therapeutic understandings."[72(p64)] It is important to point out that the theory generation suggested here is limited and parochial, that is, not a grand theory universally applicable.

### *Strategies for Collecting Data When Working With a Vulnerable Group*

*Recruitment.* When recruiting data in this field of interest, one has to be highly aware of the vulnerability of the participants and the setting. Therefore, the basic requirement should be to obtain the approval of an ethics committee. Special rigor is warranted in outlining and conducting an ethical correct emergent research design as well as video taping and interviewing the participants without offending their privacy and safety. It might be helpful to point out the sensitivity and responsiveness of a well-trained research-therapist in recruiting data.[61,63]

The researcher-therapists should inform the parents about the music therapy procedure and the study protocol in detail as well as obtain informed consent of the parents before collecting any data. The researcher should also continuously adjust the data collection to the setting and the specific needs of the participants. This means that they should refine the exact study design, for example, how best to obtain data, from whom and when, over the course of the project.[62] The process may be guided by their "theoretical sensitivity,"[63(p82)] supervised throughout by medical personnel and based on their professional and personal experience in the field, and a continuous study of literature conducted in parallel.

Since this article proposes "real-world research," the research-therapists may be able to easily obtain access to study participants. Inclusion criteria for participants should be the same as for standard clinical practice. Following the principles of contrastive case selection and the systematical search for control groups of Grounded Theory, it will be important to focus on cases that reflect maximal variation and diversity in order to reach a high level of abstraction.[60,66] The process of data recruitment and data selection might best develop from convenience and reality sampling, the sampling we have at hand,[29] to a more purposeful sampling, a maximum variation sampling, and a sampling of confirming and disconfirming cases.[56]

### *Process*

In order to address further principles of real-world research, the author suggests conducting the data collection in accordance with a particular infant's development, that is in the course of music therapy sessions until discharge. Continuous video recording, prior, during, and after the session, is recommended. Subsequent to the video data, the researchers can document the infant's objective monitor data as well as detailed reflections on methodological and therapeutic procedures inherent in the sessions. Environmental circumstances, for example, the influence of noise, light, parents, or staff involvement, as well as the parents' comments and their interaction with their infant (if occurred), can be captured in memos and protocols. For ethical reasons, it is suggested to videotape interactions with the parents only when they provide consent. Given the need to facilitate the parents' autonomous narrative and to obtain their individual subjective perspective, the author argues to conduct the parents' interviews in a narrative style.[9,73]

### *Measures*

Bearing the topic of the participants' vulnerability in mind, it may be useful to videotape data with a digital video camera that allows for close range and high-quality facial images during dimmed light in order to not disturb the premature infants by using bright lights. Also the parents' interviews can be recorded with an inconspicuous recording system of high quality in order to minimize any interference with the intimate interview as much as possible. The researchers can use the monitor systems of the NICU that should be proven for reliability, validity, and clinical utility to collect the infant's physiological data. Finally, all collected data should be transmitted to a computer system, de-identified, coded, and kept in safe custody to guarantee data security and anonymity.

## Strategies for In-Depth Data Analysis

*Data selection.* Data selection, data collection, and data analysis can be performed in an intertwining way in order to follow the empirical collection and analysis strategies of Grounded Theory,[60] specifically the contrastive case selection and the systematical search for control groups.[62,74]

Episodes that seem relevant as examples significant for clinical practice[15,58,75,76] and appropriate to further examine the emerging ideas of active exemplary CMT in the NICU[25] will inform the researchers' decision making for cip bracketing. Researchers who are simultaneously the music therapists therefore have important background knowledge about the patients and the therapeutic process will make informed decisions.[45] Episodes across cases can be chosen, which reflect significant moments of therapeutic change and patterns of interaction, pivotal phenomena, as judged by the researchers based on their theoretical sensitivity, their detailed knowledge of the evidence base, and the ongoing presentation of video material and its discussion in interdisciplinary teams.[63,77,78]

The final selected episodes that clearly illustrate the focus of interest as an initial form of categorization may then be submitted to a structured microanalysis conducted by independent analysts. The results of this process may lead to refined constructs and categories that may guide the continuing selection process of cases and their episodes to further test and refine the working hypothesis and to develop more and more abstract categories.[63(p82)]

Moreover, the researchers can conduct the data selection by searching for similar episodes retained from contrasting cases but also for contrasting material in similar cases. They can choose episodes that reflect advantages but also limits of the therapy. This described systematic and transparent selection process is also recommended for the selection of the parents' interview material.

## Analyzing Audiovisual Material

Drawing on the principles of Therapeutic Narrative Analysis, the author argues for a structured and in-depth analysis of preselected episodes as a phenomenon-oriented starting point for the whole analysis—audiovisual observation sequences from music therapy sessions with premature infants, triangulated by memos, protocols, interdisciplinary comments, and physiological data.[77]

Since music therapy is seen as an "intrinsically dyadic experience,"[15(p328)] the analysis of selected video episodes should comprise the evaluation of the infant's as well as the therapist's particular behavior. Given the need to explore both the musical and the therapeutic process and interaction over time, the author recommends transcribing and analyzing the selected episodes in 3 layers on the same time scale: environmental circumstances (noise), the infant behavior (musicality), and the therapist behavior (singing). The author suggests applying the principles of a conventional notation system for transcription because it allows conducting a detailed musical and interactive analysis with musical parameters of rhythm, tempo, phrasing, dynamics, and tonality by displaying the musical and temporal activity inherent in the therapeutic process.

Following the recommendations made by Hanson-Abromeit,[20,79] the description and interpretation of the infant's behavior can be informed by the Naturalistic Observation of Newborn Behavior (NONB) sheet, which is a tool for the Assessment of Preterm Infants' Behavior (APIB) specifically designed to document the spectrum of premature infants' neurobehavioral functioning by focusing "on the assessment of mutually interacting behavioral subsystems in simultaneous interaction with the environment."[80(p94)] Referring to Als,[80,81] the transcribed infant's behavior should reflect 4 layers: the premature infants' autonomic stage, motor stage, state, and attention stage. Pattern generalization of these detailed transcripts can be obtained through horizontal and vertical analyses whereby the common timescale facilitates the exact description of the relationship of the superior layers to each other in time.[53,82] While a horizontal analysis can provide insight into longitudinal processes, a vertical analysis can allow identifying patterns of interactions, coherences, and causal relations between the particular layers and thus among infant, therapist, and environment in the context of the therapeutic process.

To minimize bias and to enhance the interpretative expertise of the "knowledge of the population in question,"[82(p34)] several interdisciplinary analysts with a "diversity of theoretical and professional backgrounds"[15(p311)] can conduct the analysis in parallel; analysts who have experiences in (1) interpretation of musical analysis, (2) interpretation of the premature infant's state and behavior, and (3) interpretation of the whole interaction.[15,83] In addition, group interpretations of the analysis results are recommended.

## Analyzing Narrative Data

For the analysis of the narrative interview material, the author argues to apply the principles of Grounded Theory and Therapeutic Narrative Analysis. Referring to Polit[56(p581)] initially, first interviews should be transcribed verbatim and analyzed line by line to identify key statements.[84,85] Collapsing actual words into more abstract categories will allow making data manageable and reaching abstraction in order to "add scope beyond local meanings."[56(p581)] This first abstraction will enable the researchers to formulate a preliminary working hypothesis that can then guide the selection of further episodes of contrasting cases to synthesize more abstract categories from data across cases.[86] During the whole selection process, the researchers can focus on episodes that reflect the subjective parents' experience and perspective from the most contrasting cases and viewpoints as possible. Data triangulation can be reached by including memos and parents' comments in the analysis process. Peer discussions in interdisciplinary teams and premature parents' groups as well as member checks are recommended to facilitate trustworthiness.[57,63]

### *Eliciting the Therapeutic Narrative*

At the final stage of analysis another level of abstraction can be reached by subsuming the particular into the general. The researchers can piece together the evolved categories of the video analysis and the interview analysis triangulated with memos and protocols to draw a holistic picture of active music therapy in neonatal care. Or as Aldridge frames it, "It is the stage where the understandings are then woven together to form the narrative again based upon the categories discovered during the analysis."[29(p19)] Through this final conclusion drawing and verifying the therapeutic narrative of active, exemplary CMT with premature infants and their parents may be explicated and a substantive theory built. This process will reach saturation when the theory and research narrative fully explain variations in data.

## Discussion and Conclusion

In developing a research methodology appropriate to achieve an in-depth understanding of the therapeutic process of active music therapy in neonatal care, a qualitative multiperspective design based on the principles of Grounded Theory and Therapeutic Narrative Analysis is proposed. Applying these flexible, case-sensitive, interactive, and holistic research principles appears to be promising to address both the vulnerability of the participants and the complexity of the setting as well as to comprise the diversity of the phenomenon under investigation. In order to establish trustworthiness and to decrease bias and error, the author recommends various multiperspective techniques of data collection and analysis enhanced by various types of triangulation.

However, conducting qualitative research may be complex and challenging, especially in a setting that urges sensitivity and cautiousness. Obtaining and analyzing qualitative data from such vulnerable participants calls for well-trained, flexible and experienced research therapists: "Personal qualities such as having an open and enquiring mind, being a 'good listener,' general sensitivity and responsiveness to contradictory evidence are needed."[54(p167)] The research-therapists must rise to the challenge of being extremely aware of when and for how long stimulation can be provided and data obtained. In the whole process of data collection, they continuously have to consider and adapt to the individual participant's and setting's needs, for example, the overriding potential danger of overwhelming the premature infants or offending the feelings of the vulnerable parents. These demands of being highly flexible and sensible combined with the demand to evaluate inductively could interfere with the systematic approach of Grounded Theory, so that the researchers have to find a balance inherent in this tension.

Furthermore, it will be difficult to reach real theoretical saturation, since there is always a certain time frame rather than an intellectual boundary that determines when the processes of data collection and analysis will stop.[44,86,87] It may also be challenging to demonstrate enough information to a reader on a comprehensible method and the path that "has led him to his interpretations, thus enabling the reader to follow the arguments by the researcher" but also not to extend the required article or research report size.[32,72(p61)]

Another limitation of the evolved methodology may be that the focus lies more on analyzing therapeutic pivotal moments between therapist and premature infant rather than focusing on the parents' perspective and the parents' involvement. However, this investigation should be seen as a starting point. By integrating the findings of a study that is based on the presented methodology, similar investigations may be conducive to a comprehensive knowledge and theory building about music therapy with premature infants and their parents, "potentially leading to a dynamically evolving theory offering 'logical' rather than 'probabilistic' predictive power."[83,86(p170)]

Future investigations should therefore intensify the focus on the parents' perspective, for example, by introducing a methodology to conduct several interviews with a qualitative longitudinal design[83] and by introducing an appropriate methodology to explore whether and how music therapy may influence the well-being of the parents and the family as well as the bonding process.[37] In addition, research activities should expand toward a methodology that will facilitate gaining insight into possible long-lasting and sustainable outcomes of music therapy in the NICU. Increasingly used mixed-method designs and interdisciplinary multicenter studies appear to be promising to address some of the implications listed here.[45,87] Moreover, there is a call to find a balance between quantitative and qualitative research to "provide the most fruitful answers to the ongoing enigmas of music therapy."[82(p148)]

In conclusion, the choice of methodology always depends on the individual research objectives, the participants, the setting, and the phenomenon under investigation, and it is crucial to choose a methodology that is best suited to the maxim of inquiry in an individualized and judicious manner. Therefore, the strategies of a methodology to evaluate the therapeutic process of active music therapy in neonatal care presented here can only be seen as guiding principles since, unlike in quantitative research with its standardized methodological designs, every qualitative design is unique to a particular study such as every music therapy session is unique to every individual human being.

### Acknowledgments

I thank Prof Dr Aldridge as my doctoral supervisor for his scientific support and my husband, Dr Jörg Haslbeck, for his scientific and personal support. I am grateful to J. Sholits's advice on the English. The article is supported in part by the German foundation 'Evangelische Studienstiftung Villigst.'

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The author

received financial support for this publication as part of the supported research project "Creative music therapy with premature infants and their parents" by the German Foundation 'Ev. Studienstiftung Villigst.'

## References


1. Field T, Hernandez-Reif M, Feijo L, Freedman J. Prenatal, perinatal and neonatal stimulation: a survey of neonatal nurseries. *Infant Behav & Deve*. 2006;29(1):24-31.
2. Loewy J, ed. *Music Therapy in Neonatal Care Unit*. New York, NY: Satchnote Press; 2000.
3. Abromeit DH. The Newborn Individualized Developmental Care and Assessment Program (NIDCAP) as a model for clinical music therapy interventions with premature infants. *Music Therapy Perspectives*. 2003;21(2):60-68.
4. Standley JM, Walworth D, eds. *Music Therapy With Premature Infants. Research and Developmental Interventions*. 2nd ed. Silver Spring, MD: The American Music Therapy Association; 2010.
5. Nöcker-Ribaupierre M, ed *Music Therapy for Premature and Newborn Infants*. Gilsum, NH: Barcelona; 2004.
6. Haslbeck F. Music therapy for premature infants and their parents: An integrative review. *Nord J Music Ther*. 2012;iFirst article:1-38.
7. Standley JM. A meta-analysis of the efficacy of music therapy for premature infants. *J Pediatr Nurs*. 2002;17(2):107-113.
8. Schlez A, Litmanovitz I, Bauer S, Dolfin T, Regev R, Arnon S. Combining kangaroo care and live harp music therapy in the neonatal intensive care unit setting. *Isr Med Assoc J*. 2011;13(6):354-358.
9. Cevasco AM. The effects of mothers' singing on full-term and preterm infants and maternal emotional responses. *J Music Ther*. 2008;45(3):273-306.
10. Lai HL, Chen CJ, Peng TC, et al. Randomized controlled trial of music during kangaroo care on maternal state anxiety and preterm infants' responses. *Int J Nurs Stud*. 2006;43(2):139-146.
11. Blumenfeld H, Eisenfeld L. Does a mother singing to her premature baby affect feeding in the neonatal intensive care unit? *Clin Pediatr (Phila)*. 2006;45(1):65-70.
12. Whipple J. The effect of parent training in music and multimodal stimulation on parent-neonate interactions in the neonatal intensive care unit. *J Music Ther*. 2000;37(4):250-268.
13. Arnon S, Shapsa A, Forman L, et al. Live music is beneficial to preterm infants in the neonatal intensive care unit environment. *Birth*. 2006;33(2):131-136.
14. Teckenberg-Jansson P, Huotilainen M, Pölkki T, Lipsanen J, Järvenpää AL. Rapid effects of neonatal music therapy combined with kangaroo care on prematurely-born infants. *Nordic J Music Ther*. 2011;20(1):22-42.
15. Shoemark H, Grocke D. The markers of interplay between the music therapist and the high risk full term infant. *J Music Ther*. 2010;47(4):306-334.
16. Als H. NIDCAP: testing the effectiveness of a relationship-based comprehensive intervention. *Pediatrics*. 2009;124(4):1208-1210.
17. Shoemark H. Translating "infant-directed singing" into a strategy for the hospitalized family. In: Edwards J, ed. *Music therapy and parent-infant bonding*. Oxford, UK: Oxford University Press; 2011:161-178.
18. Melnyk BM, Feinstein NF. Reducing hospital expenditures with the COPE (Creating Opportunities for Parent Empowerment) program for parents and premature infants: an analysis of direct healthcare neonatal intensive care unit costs and savings. *Nurs Adm Q*. 2009;33(1):32-37.
19. Als H, Gilkerson L. The role of relationship-based developmentally supportive newborn intensive care in strengthening outcome of preterm infants. *Semin Perinato*. 1997;21(3):178-189.
20. Hanson-Abromeit D, Shoemark H, Loewy J. Music therapy with pediatric units: Newborn intensive care unit (NICU) In: Hanson-Abromeit D, Colwell C, eds. *Medical Music Therapy for Pediatrics in Hospital Settings. Using Music to Support Medical Interventions*. Silver Spring, MD: AMTA; 2008:15-69.
21. Haslbeck FB. International Summit of Music Therapy in the NICU: First Sounds: (RBL) Rhythm, Breath and Lullaby, 2-4. August 2010. http://www.musiktherapie.de/fileadmin/user_upload/medien/pdf/arbeitskreise/DMTG-online-_summitbericht_Rev__PK.pdf. Accessed August 15, 2012.
22. Gilad E, Arnon S. The role of live music and singing as a stress-reducing modality in the neonatal intensive care unit environment. *Music Med*. 2010;2(18):18-22.
23. Philbin MK. The influence of auditory experience on the behavior of preterm newborns. *J Perinatol*. 2000;20(8 Pt 2):76-87.
24. Mazer SE. Music, noise, and the environment of care: History, theory, and practice. *Music Med*. 2010;2:182-191.
25. Haslbeck F. Music Therapy with preterm infants – Theoretical approach and first practical experience. *Music Ther Today*. 2004;05(4). http://www.wfmt.info/Musictherapyworld/modules/mmmagazine/index.html. Accessed September 11, 2012.
26. Azoulay R, Loewy J, eds. *Music, the Breath and Health: Advances in Integrative Music Therapy*. New York, NY: Satchnote Press; 2009.
27. Loewy J. Music therapy for hospitalized infants and their parents. In: Edwards J, ed. *Music Therapy and Parent-Infant Bonding*. Oxford, UK: Oxford University Press; 2011:179-190
28. Whipple J. The effect of music-reinforced nonnutritive sucking on state of preterm, low birthweight infants experiencing heelstick. *J Music Ther*. 2008;25(03):227-272.
29. Aldridge D, Aldridge G. Therapeutic narrative analysis: A methodological proposal for the interpretation of music therapy traces. *Music Ther Today (online)*. 2002;02. http://www.wfmt.info/Musictherapyworld/modules/mmmagazine/index.html. Accessed September 11, 2012.
30. Ansdell G, Pavlicevic M. Practicing "Gentle Empiricism" - The Nordoff Robbins heritage. *J Music Perspect*. 2010;28(2):131-139.
31. Bruscia KE. Standards of integrity for qualitative music therapy research. *J Music Ther*. 1998;35(3):176-200.
32. Aigen K. An analysis of qualitative music therapy research reports. *Arts Psychother*. 2008;35:251-261.
33. Ansdell G, Meehan J. "Some light at the end of the tunnel": Exploring users' evidence for the effectiveness of music therapy in adult mental health settings. *Music Med*. 2010;2(1):41-47.
34. Starks H, Trinidad SB. Choose your method: a comparison of phenomenology, discourse analysis, and grounded theory. *J Qual Health Res*. 2007;17(10):1372-1380.

35. Ansdell G, Pavlicevic M. *Beginning Research in the Arts Therapies*. London, UK: Jessica Kingsley; 2001.
36. Edwards J. Introduction. In: Edwards J, ed. *Music Therapy and Parent-Infant Bonding*. Oxford, UK: Oxford University Press; 2011.
37. Edwards J, ed. *Music Therapy and Parent-Infant Bonding*. Oxford, UK: Oxford University Press; 2011.
38. Markestad T, Kaaresen PI, Ronnestad A, et al. Early death, morbidity, and need of treatment among extremely premature infants. *Pediatrics*. 2005;115(5):1289-1298.
39. WHO. *The World Health Report 2005. Make Every Mother and Child Count*. Geneva, Switzerland: WHO; 2005.
40. Bialoskurski M, Cox CL, Hayes JA. The nature of attachment in a neonatal intensive care unit. *J Perinat Neonatal Nurs*. 1999;13(1): 66-77.
41. Baum N, Weidberg Z, Osher Y, Kohelet D. No longer pregnant, not yet a mother. *J Qual Health Res*. 2012;22(5):595-606.
42. Jotzo M, Poets CF. Helping parents cope with the trauma of premature birth: an evaluation of a trauma-preventive psychological intervention. *Pediatrics*. 2005;115(4):915-919.
43. Stewart K. Patterns—A model for evaluating trauma in NICU Music Therapy: Part I—Theory and Design. *Music Med*. 2009; 1(1):29-40.
44. Aldridge D. *Case Study Designs in Music Therapy Research*. London, UK: Jessica Kingsley Publishers; 2005.
45. Ridder HM. Microanalysis on selected video clips with focus on communicative response in music therapy. In: Wosch T, Wigram T, eds. *Microanalysis in Music Therapy: Introduction in Theoretical Basis*. Philadelphia, PA: Jessica Kingsley Publishers; 2007:54-66.
46. Nordoff P, Robbins C. Creative music therapy: Individualized treatment for the handicapped child. New York, NY: John Day Company; 1977.
47. Aldridge D, Gustorff D, Hannich HJ. Where am I? Music therapy applied to coma patients. *J R Soc Med.* 1990;83(6):345-346.
48. Loewy LV. Integrating music, language and the voice in music therapy. *Voices*. 2004;4(1). http://www.voices.no/mainissues/mi40004000140.html. Accessed October 26, 2008.
49. Aldridge D. Musiktherapie in der Medizin. *Forschungsstrategien und Praktische Erfahrungen [Music Therapy in Medicine. Research Strategies and Practical Experience]*. Bern, Switzerland: Verlag Hans Huber; 1999.
50. Tirpitz F. *Music Therapy With Premature Infants—Literature Review and Observations of Clinical Practice* [in German] [master's thesis]. Witten, Germany: Faculty of Medicine, University Witten/Herdecke; 2001.
51. Haslbeck F. Music therapy with premature infants: Insights into systematic review findings and practical approaches. *Infant Mental Health J*. 2010;32(3):36.
52. Edwards J. The use of music therapy to promote attachment between parents and infants. *Arts Psychother*. 2011;38:190-195.
53. Aldridge D. *Music Therapy Research and Practice in Medicine: From Out of the Silence*. London, UK: Jessica Kingsley Publishers; 1996.
54. Robson C. *Real World Research*. Vol 2. Oxford, UK: Blackwell Publishers Ltd.; 2002.
55. Robbins C. *A Journey into Creative Music Therapy*. Gilsum, NH: Barcelona; 2005.
56. Polit DF, Beck CT. *Nursing Research: Principles and Methods*. Vol 7. Philadelphia, PA: Lippincott; 2004.
57. Creswell JW. *Qualitative Inquiry & Research Design. Choosing Among Five Approaches*. 2nd ed. London, UK: Sage Publications; 2007.
58. Gilbertson S, Aldridge D. *Music therapy and traumatic brain injury. A light on a dark night*. London and Philadelphia: Jessica Kingsley Publishers; 2008.
59. Denzin N, Lincoln YS. *The Landscape of Qualitative Research. Theories and Issues*. Thousand Oaks, CA: Sage Publications; 1998.
60. Strauss AL. *Grundlagen Qualitativer Sozialforschung [Basics of Qualitative Empirical Social Reseach]*. München, Germany: Wilhelm Fink Verlag; 1994.
61. Ridder HM, Wigram T, Ottesen AM. A pilot study on the effects of music therapy on frontotemporal dementia - developing a research protocol. *N J Music Ther*. 2009;18(2):103-132.
62. Denzin N, Lincoln YS. *Strategies of Qualitative Inquiry*. Thousand Oaks, CA: Sage Publications; 1998.
63. Holloway I. *Basic Concepts for Qualitative Research*. Oxford, UK: Blackwell Science; 1997.
64. Strauss AL, Corbin J. Grounded theory methodology. An overview. In: Denzin N, Lincoln YS, eds. *Strategies of Qualitative Inquiry*. London, UK: Sage Publications; 1998:158-183.
65. Glaser B, Strauss A. *The Discovery of Grounded Theory*. New York, NY: Aldine; 1967.
66. Lincoln S, Guba E. *Naturalistic Inquiry*. Beverly Hills, CA: Sage; 1985.
67. O'Callaghan C, Hiscock R. Interpretive subgroup analysis extends modified grounded theory research findings in oncologic music therapy. *J Music Ther*. 2007;44(3):256-281.
68. Amir D. Grounded Theory. In: Wheeler B, ed. *Music Therapy Research*. 2nd ed. Gilsum, NH: Barcelona; 2005:365-378.
69. Daveson B, O'Callaghan C, Grocke C. Indigenous music therapy theory building through grounded theory research: The developing indigenous theory framework. *Arts Psychother*. 2008;35: 280-286.
70. Riessman CK. *Narrative Analysis. Qualitative Research Methods Series, No. 30*. Newbury Park, CA: Sage; 1993.
71. Mishler EG. Models of narrative analysis: A typology. *J Narrative Life Hist*. 1995;5(2):87-123.
72. Aldridge G, Aldridge D. *Melody in Music Therapy. A Therapeutic Narrative Analysis*. London, UK: Jessica Kingsley Publishers; 2008.
73. Hopf C. Qualitative Interviews- ein Überblick. In: Flick U, von Kardoff E, Steinke I, eds. *Qualitative Forschung. Ein Handbuch*. Reinbek Hamburg, Germany: Rowohlt Taschenbuch Verlag; 2008:349-360.
74. Corbin J, Hildenbrand B. Qualitative Forschung. [Qualitative research]. In: Rennen-Allhoff B, Schaeffer D, eds. *Handbuch Pflegewissenschaft [Handbook Science in Nursing]*, Vol 2. Weinheim und München, Germany: Juventa; 2003:159-184.
75. Elliott R, Shapiro D. Client and therapist as analysts of significant events. In: Toukmanian S, Rennie D, eds. *Paradigmatic and Narrative Approaches*. Newbury Park, CA: Sage; 1992:163-186.
76. Trondalen G. 'Significant moments' in music therapy with young persons suffering from anorexia nervosa. *Music Ther Today*. 2005;VI(3):396-429.

77. Wosch T, Wigram T. Microanalysis in music therapy: Introduction in theoretical basis. In: Wosch T, Wigram T, eds. *Microanalysis in Music Therapy. Methods, Techniques and Applications for Clinicians, Researchers, Educators and Students*. Philadelphia, PA: Jessica Kingsley Publishers; 2007: 13-26.
78. Flyvjberg B. Five misunderstandings about case-study research. *Qual Inquiry*. 2006;12(3):219-245.
79. Als H. *Manual for the Naturalistic Observation of Newborn Behavior: Newborn Individualized Developmental Care and Assessment Program (NIDCAP)*. Boston, MA: Harvard Medical School; 1995.
80. Als H, Butler S, Kosta S, McAnulty G. The Assessment of Preterm Infants' Behavior (APIB): Furthering the understanding and measurement of neurodevelopmental competence in preterm and full-term infants. *Ment Retard Dev Disabil Res Rev*. 2005; 11(1):94-102.
81. Als H. Toward a synactive theory of development: Promise for the assessment and support of infant individuality. *Infant Ment Health J*. 1983;3(4):229-243.
82. Holck U. An ethnographic descriptive approach to video microanalysis. In: Wosch T, Wigram T, eds. *Microanalysis in Music Therapy. Methods, Techniques and Applications for Clinicians, Researchers, Educators and Students*. Philadelphia, PA: Jessica Kingsley Publishers; 2007:29-40.
83. Lee C. A method of analyzing improvisations in music therapy. *J Music Ther*. 2000;37(2):147-167.
84. Haslbeck J, Schaeffer D. Routines in medication management: the perspective of people with chronic conditions. *Chronic Iln*. 2009; 5(3):184-196.
85. McFerran K, Grocke D. Understanding music therapy experiences through interviewing: A phenomenological microanalysis. In: Wosch T, Wigram T, eds. *Microanalysis in Music Therapy. Methods, Techniques and Applications for Clinicians, Researchers, Educators and Students*. Philadelphia, PA: Jessica Kingsley Publishers; 2007: 273-284.
86. O'Callaghan C, McDermott F. Music therapy's relevance in a cancer hospital researched through a constructuvistis lens. *J Music Ther*. 2004;41(2):151-185.
87. Brown AP. Qualitative method and compromise in applied social research. *J Qual Res*. 2010;10(2):229-248.

## Bios

**Friederike Barbara Haslbeck**, DMtG, Neonatal Intensive Care Music Therapist, is a doctoral student at the Faculty of Medicine at the University Witten/Herdecke in Witten, Germany. She also is a master of music education and a master of music therapy, was specially trained in NICU music therapy by Loewy and Standley, has implemented music therapy service in NICUs in Germany, and is completing her PhD with Prof Dr David Aldridge on ''Creative Music Therapy With Premature Infants and Their Parents'' at the University Witten/Herdecke funded by the German foundation 'Evangelische Studienstiftung Villigst.'